# Exploring the location of missing persons as homicide victims in Queensland

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# Contents

**Statement of Authentication**

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I hereby declare that I have not submitted this material, either in full or part, for a degree at this or any other institution.

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- Australian Police Journal: 2023 *The Perfect Storm; The search for Donald Marchant*
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- Australian Police Journal: 2017 *Search and Rescue; Sometimes they are hard to find.*
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**Abstract**

**Introduction**: Not finding a murder victim poses challenges for homicide investigators in solving crime and impacts closure for the victim's family and friends. Existing literature focuses on identifying offenders through criminal profiling, largely based on forensic evidence found both at the murder scene and victim location site, and through that provided by the victim themselves. However, without the victim's body much of this evidence is unavailable to investigators. There is, therefore, a need to determine the most likely places to search for a disposed murder victim to help find the body.

The aim of this study was to address the challenge of locating a deceased homicide victim from the perspective of search coordinators assisting investigators. To improve our understanding of victim disposal we focused on three (3) areas: (1) identifying the current search and rescue strategies and considered adaptation to searches for disposed victims of homicide; (2) analysed Queensland homicide incidents between 2004 and 2020 where the victim was disposed to identify common characteristics; and (3) developed a Disposed Homicide Victim Matrix to find victims. Lastly, we applied the new matrix to current missing cases to see how well it works.

**Methods**: Two data collection processes were undertaken in this study. Firstly, an internal Queensland Police survey was conducted with search coordinators to establish what search strategies were being used and their effectiveness in locating responsive (alive) and unresponsive (deceased) missing people. Secondly, using all homicide incidents during the period 2004-2020 inclusive recorded on the Queensland Police QPRIME database a disposed victim dataset was generated. The disposed victim dataset included the age, sex, height and weight of the offender and victim, murder scene and victim location, method of transport, method of murder, method of disposal and how the victims were located. Utilising this

dataset, a descriptive statistical analysis was conducted using IBM SPSS™ v27 software to identify patterns and characteristics within homicide victim disposal.

**Results**: The study identified four (4) key commonalities, (1) East is the prominent direction for victim disposal, with the average distance from the murder site to deceased location site being 17km; (2) The offender's vehicle was the most frequent method of victim disposal transport; (3) concealing the victim with leaf litter and locally found debris was the most frequent method of concealment; and (4) 83% of victims were moved less than 50m from a road or track after transport. These commonalities were identified and used to develop a tool to assist search coordinators in future homicide cases where the victim has been disposed, the Disposed Homicide Victim Matrix (DHVM).

Pilot testing of the DHVM demonstrated the matrix as being useful in locating seven disposed homicide victims in six of the eight cases to which it has been applied.

**Conclusion**: Finding a victim has implications throughout the wider community, providing evidence that has aided in securing a conviction, allowing a measure of grief closure to the co-victims, and inspiring confidence in the police. This study has developed a successful model (DHVM) to help find these disposed victims.

**Key Words: Homicide, Manslaughter, murder, disposed victim, victim, co-victim, disposal, search, search and rescue**

## List of Tables

## List of Acronyms

| | |
|---|---|
| ABS | Australian Bureau of Statistics |
| ACT | Australian Capital Territory (Territory of Australia) |
| ADF | Australian Defence Force |
| AIC | Australian Institute of Criminology |
| AMSA | Australian Maritime Safety Authority |
| ANPR | Automatic Number Plate Recognition |
| ARC | Australian Rescue Centre |
| CC | Queensland Criminal Code |
| CMF | Citizen's Military Force |
| CSI | Crime Scene Investigation |
| DNA | Deoxyribonucleic Acid |
| EMA | Emergency Management Australia |
| FA | Forensic Awareness |
| FSC | Field Search Coordinator |
| IAMSAR | International Aviation and Marine Search and Rescue |
| ICAO | International Civil Aviation Organisation |
| IMO | International Maritime Organisation |
| IMOSAR | International Maritime Organisation Search and Rescue Manual |
| ISRID | International Search and Rescue Identification Database |
| LKP | Last Known Position |
| LPB | Lost Person Behaviour |
| LSO | Land Search Operations Manual |
| MERSAR | Merchant Shipping Search and Rescue |
| MM | Mixed Methods research |
| NatSARMan | National Search and Rescue Manual |
| NLSOM | National Land Search Operations manual |
| NHMP | National Homicide Monitoring Program |
| NSW | New South Wales (State of Australia) |
| NT | Northern Territory (Territory of Australia) |
| PRISMA | Preferred Reporting Items of Systematic reviews and Mata-Analysis |
| QLD/Qld | Queensland (State of Australia) |
| QPRIME | Queensland Police Records and Information Exchange |
| QPS | Queensland Police Service |
| SAR | Search and Rescue |

| | |
|---|---|
| SenSARO | Senior Search and Rescue Officer |
| SHIelD | Sexual Homicide International Database |
| SA | South Australia (State of Australia) |
| SP | Splash Point |
| SSARCTO | State Search and Rescue Coordinator & Training Officer |
| SARO | Search and Rescue Officer |
| Tas | Tasmania (State of Australia) |
| TMR | Traffic Monitoring System |
| Vic | Victoria (State of Australia) |
| WA | Western Australia (State of Australia) |

## List of Definitions

| Term | Definition |
|---|---|
| Concealed on ground | The victim was moved from the scene and covered in leaf litter, soil, branches, wood, tin, debris etc |
| Concealed other | The victim was moved from scene and placed in wheelie bin, industrial bin etc |
| Co-victims | The co-victims are those in the victim's immediate family, social circle, workplace and the community. Also know as homicide survivors. |
| Cycle of grief | The physical and psychological process co-victims undertake to eventually come to terms with the murder. |
| Disposed victim homicide | Is defined as a homicide where the victim has been hidden or destroyed. |
| Formal search | Planned search for a missing person, comprising Theoretical, Statistical, Subjective and Deductive strategies. |
| Homicide | Homicide is defined as the unlawful killing of any person. |
| Homicide survivors | See Co-victims |
| Internment | The victim was buried at depth in a purpose dug grave. |
| Mass killer | A person who killed three or more people in a single incident with no 'cooling off' period between each. |
| Missing Person | For the purposes of SAR this also includes Lost person. A missing person is someone who does not know where they are, is unable to return from where they are or who requires assistance to do so. |
| Never located | The victim has not yet been located. |
| No concealment | The victim was moved from scene and left on open ground, paddock, roadside etc |
| QPRIME | The Queensland Police data base for all crime and offence related information. |
| Queensland | A self governing state within the Commonwealth of Australia. Queensland occupies the north eastern quarter of Australia. |
| Reflex Search | The initial search for a missing person, conducted immediately after a person is reported missing. |
| Search and Rescue | Search and Rescue is defined as the provision of aid to people who are, or are believed to be, in grave and imminent or who need assistance.' |
| Search Area Determination | The process of utilising the five SAR strategies to identify viable search areas. |
| SAR Coordinator | A police officer trained to coordinate searches for missing people |
| Serial killer | A person who unlawfully kills two or more victims in separate events with a 'cooling off' period between each. |
| Sexual serial killer | A person who rapes or otherwise sexually interferes with and then unlawfully kills two or more victims in separate events with a 'cooling off' period between each. |
| Shallow Grave | The victim was buried in man-made/natural shallow excavation. |
| Victim | The person murdered. |
| Victim disposal | Victim disposal is the deliberate taking of a homicide victim from the murder scene to another location, whether they have been located or not. |
| Unmoved victims | Homicide victims who have not been moved from where they were killed. |
| Waterways | With respect to victim disposal this means in the ocean/sea, river, creek, pond, dam, drain etc. |

# 1 Introduction

Approximately 46 people are murdered annually in Queensland (ABS, 2020) and a small percentage of the victims are moved from the crime scene by the offender in an attempt to hide the crime and reduce the chances of being identified as a suspect. While most of these disposed victims are eventually located there are a small number, 2.6%, that have never been found (QPS 2020). The net effect of this is the difficulty in proving to a criminal standard in court that the victim is deceased and that they had been murdered. Without a victim's body the successful prosecution rate is low, and it does not provide the victims family and friends, the co-victims, with closure resulting from the death (DiBiase, 2015).

Queensland Police are responsible for missing people and any subsequent searching for them within this State (Whitehead, 2021a), and to this end there are a number of tried and tested search strategies, including Lost Person Behaviour (LPB), that has resulted in a location rate of 99.1% in both living and deceased missing people (QPS 2022). The search for disposed victims of homicide has no equivalent to the Lost Person Behaviour strategy.

This study analyses all Queensland murders between 2004 and 2020 where the victim was moved or disposed by the offender to identify characteristics, trends and similarities in this victim movement. The Disposed Homicide Victim Matrix (DHVM) was the result of this analysis, providing police search coordinators with information around which to determine potential search areas and increase the ability to locate these disposed victims.

## 1.1 Thesis Aim

The aims of this study were to; (1) Identify if the current search and rescue strategies were valid and if they could be adapted to the search for disposed victims of homicide; (2) Analyse the Queensland homicide incidents between 2004 and 2020 where the victim was disposed to identify characteristics, trends and similarities; (3) Develop the Disposed Homicide Victim Matrix.

## 1.2 Importance of the Research

This research was a world's first, the study of victims to identify possible offenders is a common police tactic, the use of offenders to assist in locating missing homicide victims has not been attempted before. The locating of a single victim has to be beneficial and while small in number, not finding a homicide victim impacts all strata of society. This can be tangible, such as any evidence gained and the ability to lay the victim to rest, and non-tangible such as improved confidence in the constabulary. In either instance the finding of even a single outstanding victim should be the aim of every police jurisdiction (DiBiase, 2015). There is also a cost implication involved for extended homicide investigations and the need to keep case files open indefinitely (Allsop, 2017).

Offender profiling (Keppel, 1999) is identifying an offender by their *modus operandi*, personality and behavioural characteristics. This is an investigative tool within police forces to identify potential offenders from a located victim (Beauregard, 2008), but there had been little work on analysing homicide through the use of offender/victim relationships, demographics and biometrics to assist in locating disposed victims. Victims provide a measure of scientific and forensic evidence, regardless of the time they have been missing (DiBaise, 2015; Brookman, 2005). The literature relating to victim disposal had been

conducted on small numbers of homicides, most of which have been sexual serial killing in nature (Davies, 2019). This is the first known project that undertook a state-wide study of homicide offenders and their disposed victims with an aim of developing guidelines, characteristics, and trends similar to the current Australian Lost Person Behaviour database.

There had been no known single jurisdictional study of homicide victim disposal. During the period of this study there were 749 recorded homicide incidents in Queensland. There may have been situations such as a victim being reported missing without evidence of murder, murders attributed to medical conditions, unrecognised murders in aged care facilities and incidents involving biker or other gangs that were not recorded (Mouzos, 2002). Of this total there were 130, 17.4%, that had victims moved from the homicide location and a further 17, 2.27%, homicide victims that have not been located despite intensive investigation and searching (Whitehead, 2020a).

In the Australia justice system there is a requirement on the prosecution to prove each element of a homicide, including the death of the victim. Scientific evidence can always be garnered from the victim, regardless of how long they have been missing (Jones, 2020). Locating a victim is prime facie evidence of death, and can assist in proving murder. The lack of a victim does place considerable pressure on the prosecution to prove death when pursuing a murder indictment, much of which can be alleviated through the production of a body (DiBiase, 2015b; Dowsley, 2003).

## 1.3 Thesis Structure

This chapter provides a summary of the practical problem, gaps in our knowledge of where to search for disposed victims of homicide, and how this gap may be addressed. The chapter commences by introducing the thesis topic and outlining the issues behind not finding those

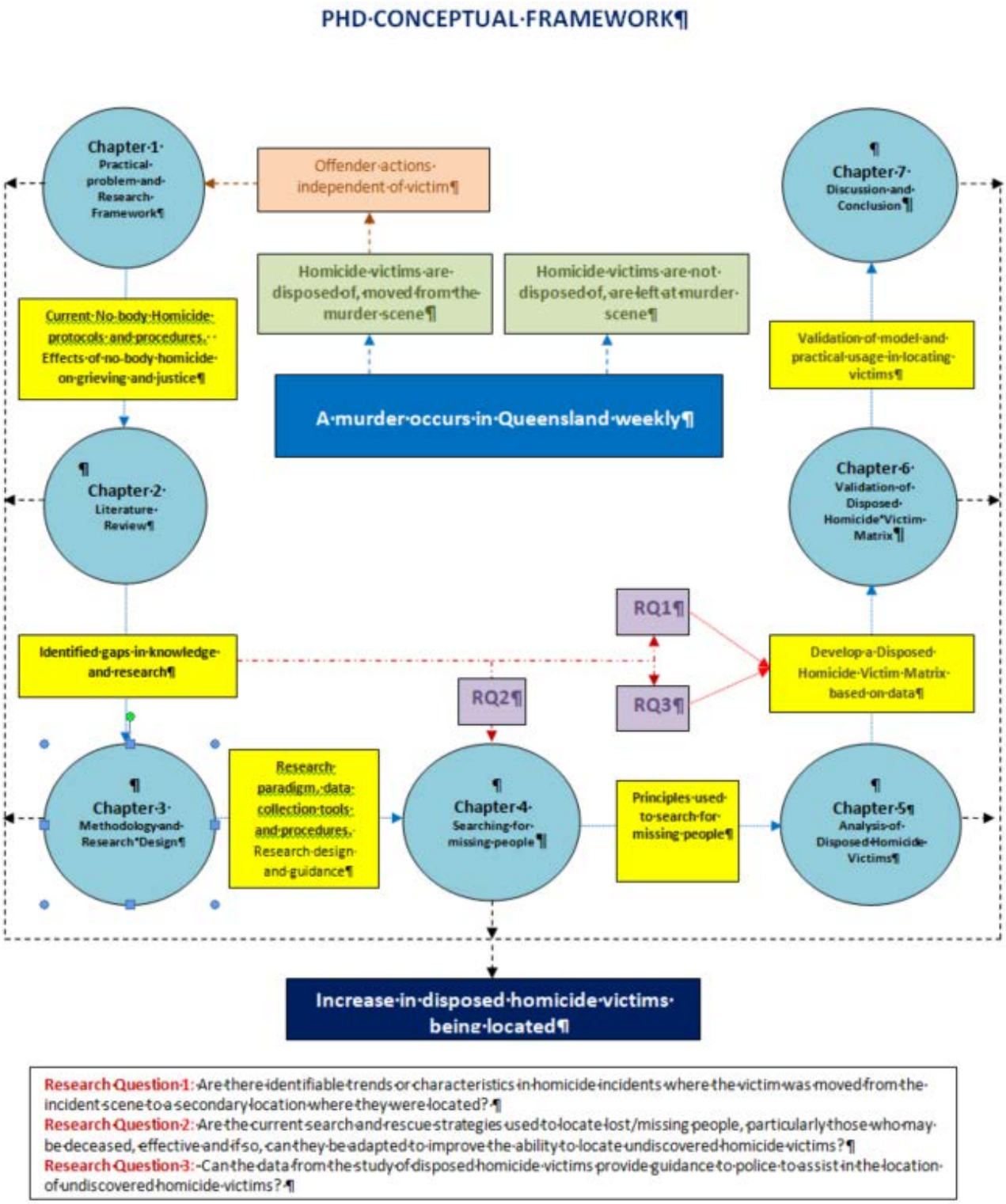
victims of homicide that have been disposed, including the context of the research and how it aligns with the researchers occupation.. This will be followed by the theoretical framework and the research goals and objectives. Further will be the highlighting of the importance of the research, outlining preliminary scoping decisions and key definitions in relation to the context of the research. Finally, a discussion of the delimitations and ethical considerations of relevance to the research was undertaken.

Chapter 2 reviews the literature relevant to this study. Chapter 3 explores the methodology utilised during the undertaking of this research, while chapter 4 explores the search and rescue strategies used to locate missing people and whether they can be adapted to homicide victims. Chapter 5 examines all Queensland homicide incidents between 2004 and 2020 where the victim was disposed and establishes that there are commonalities and trends within victim disposal, making the Disposed Homicide Victim Matrix possible. Chapter 6 is a comparison with non-Queensland homicide incidents to validate the Disposed Homicide Victim Matrix. Chapter 7 is the discussion and conclusion to this project, examining the research objectives and hypotheses to establish they have been addressed.

Victims referred to within this thesis have been allocated an identification number for anonymity and privacy purposes. A full list of de-identified victims used throughout this research is contained in Appendix 10.

Figure 1.1 outlines the thesis framework.

**Figure 1.1 Thesis Framework**



## 1.4 Project context

To place this project into context and identify the drivers behind it, it is necessary to understand the background of the author. The researcher was a career police officer with the Queensland Police Service, recently retiring after 40 years of duty. His interest in SAR commenced on 10 July 1989 with his first missing person at Mt Barney. Since that beginning he rose through the SAR ranks, attaining the most senior SAR position within an Australian Police jurisdiction, the State Search and Rescue Coordinator & Training Officer, in 2006. He had been involved in 14,311 SAR incidents covering land, marine and aviation, with the subsequent locating or recovering of 24,144 persons. Of this total there were 520 persons recovered deceased and 327 never located.

The author has an intimate involvement in sudden death and the effects of grieving as a result of the loss of his eldest daughter at age four. The ostracism and stigmatisation of both himself and his wife occurred because of the perceived poor parenting that resulted in her death, those quick to criticise were unaware it was an incurable brain disease that resulted in her sudden departure, but the damage had been done.

To improve searcher success and reduce the number of missing people not located was the impetus behind the authors development of the Australian Lost Person Behaviour Database in 2010, in an effort to understand what missing people do and how to better search for them. This has had the effect, Australia wide, of reducing the number of deceased persons and to provide a quicker search response. It was a non-SAR request, the search for disposed homicide victims, that identified the lack of usable data for a SAR coordinator, and from that beginning this project evolved.

## 1.5 Practical Problem

Those instances where the homicide victim had been moved and disposed in an unknown location posed many issues for investigators, searchers and co-victims, not least of which is proving homicide without a body and linking a suspect to that crime. It is the locating of these victims that was the practical problem at the core of this research. This problem has two basic components, disposal of the victim, and the SAR system which is charged with finding the victim. There was little in the way of data or behavioural models that could assist in developing search areas based on commonalities and trends in the disposal victims. This research addresses that deficiency through the development of the Disposed Homicide Victim Matrix.

### 1.5.1 Homicide

Part of the practical problem is the homicide incident itself. Homicide is an issue for all societies, each dealing with the criminality and subsequent flow on societal effects depending on the legislation, resources and attitude towards it within each individual country. Australia is no different, recording approximately 250 homicides annually, although the trend has been downwards for several years (Australian Bureau of Statistics, 2020). The nexus between homicide and SAR was tenuous and it was unknown whether SAR strategies could be used on homicide victims, representing a knowledge gap. The killer may be the only one who knows they have committed murder; they can dispose of the victim as they choose; they can dictate the location and any method of concealment within certain confines such as transport and location. Within these actions it appears the killer has the advantage but many of these responses have commonalities beyond the knowledge of each individual offender and it is these commonalities that form the basis for the Disposed Homicide Victim Matrix (Brookman, 2005).

There were two identified factors that could favour the searcher with respect to homicide, the difficulty in disposing of human body (Congram, 2014; Galloway et al., 1989) and the sociological theory that people tend to act similarly under similar stresses (Bateman & Salfati, 2007; Melnyk et al., 2011).

An analysis of Queensland homicides over the period 2004-2020, focused on the social demographics and geography of victim disposal, identifying similarities in victim disposal (Whitehead, 2020). There was considerable literature on parallels among serial sexual killers, but this study was inclusive of all murders during the above period in Queensland and provided an overview of killers and their disposal methods.

A human body is difficult to destroy or otherwise dispose of, and as most homicide incidents are not planned occurrences there are generally no prior arrangements for disposing of the victim (Brookman, 2005; DiBiase, 2015b). Homicide victim disposal patterns have been identified among serial sexual killers, that is, using like locations, concealing or otherwise in like fashion and moving victims around between locations (Beauregard & Field, 2008). Because of these similarities sexual serial killers were an exclusion from this study although it transpired that there were no identified serial killers operating in Queensland during the period of this study.

### 1.5.2 Overview of dataset

Queensland homicide data from 2004 was chosen as comprehensive electronic recording of crime commenced in that year. It was anticipated that collecting information from an electronic storage system would be less problematic than attempting to do the same from an older paper archival system. Although all homicide incidents were used in this study it represented a relatively small sample size, larger sample sizes would provide more accurate data. Studies by Nethery (2004a), Hakkanen et al (2007) and Beauregard and Field (2008a)

worked on sample sizes of 50, 46 and 85 respectively but did suggest that larger data sources would be beneficial. Reference has been made to research articles and studies in the USA, Canada as well as the UK when looking at victim disposal, and while it was acknowledged that most of the current studies in that area had been done overseas this project was an Australian first, but Queensland based.

It has been argued by Walton (2017) that serial and multiple killers represent a separate category within homicide and therefore should be treated separately from single victim murderers. Walton (2017), Fahsing et al. (2016), Hickey (2013), Beauregard and Field (2008a), Alison et al (2002), Lundrigan and Canter (2001) and Mott (1999), and identified that serial killers tended to dispose of their victims in the same or similar locations which may have the effect of skewing any subsequent analysis. During the period of this study there were no identified serial killers within the dataset.

Historically, individual Australian serial killers had disposed of their victims in similar location areas, if not the same location. Milat's known victims were all found within a 750m radius in the Belanglo State Forest, New South Wales (Whittaker & Kennedy, 2015). Three of the Birnie's four victims were found in the same location of the Gleneagles National Park, Western Australia (McNeice, 2005f) . Bunting and Wagner buried three victims in Buntings back yard with a further seven being found in barrels at Snowtown, SA (Marshall, 2006), while Worrell and Miller disposed of four of their seven victims in the same locale outside Truro, SA (Plunkett, 2022; Wilson & Simmonds, 2000). There have been several incidents of multiple or mass homicides occurring, particularly in domestic related situations, during the period of this study, none of which involved the disposal of any victim.

There was no differentiation within this study of either victim or offender based on characteristics such as race or religion. With respect to gender, this project utilised biological

gender as recorded in the respective QPRIME entries, males and females, with no differentiation towards orientation or identification. The largest and only specifically recognised racial group within homicide studies at the Australian Institute of Criminology is aboriginal or first nation people. Aboriginal homicides accounted for 17% of all homicides in Australia and therefore represented a small sub-group within the overall study of homicide victims (Bricknell, 2020a). It was not possible to search QPRIME homicide incidents by first nation status, and therefore it was not a separate category for this study. Criterion for inclusion in this study was that the homicide had been committed in Queensland and that the victim had been moved.

Prior to determining what information would be needed to undertake this project it was necessary to identify whether any previous studies had been done on homicide data and what information was collected and available. Chapter two provided details of current literature, limited in number and mostly based on serial killings (section 2.5). An article by Green (2002) provided a short history of jurisprudence with respect to bodiless murder convictions and the dangers associated with a conviction without a body and was a reinforcement for the necessity of this study.

### 1.5.3 Overview of homicide types

Each of the eight police jurisdictions in Australia recorded homicide incidents electronically in their own particular formats. While most of the information gathered was required for a successful prosecution, Mouzos (2005) identified that little of it was used for statistical purposes. Each jurisdiction produced an annual crime statistical review and they all contained similar broad information provided from the individual incident files (Mouzos, 2002).

The term homicide covers all offences where one person deliberately kills another. Within homicide were a large number of victim/offender combinations, and from a strictly legal sense they had little or no bearing on the laying of charges and prosecution (Fairall, 2012a). From a psychological, physiological and victimology view point they were of critical interest as they often contributed to the post murder actions of the offender (Beauregard, 2008b). The most common of those homicide sub-sets are set out in **Error! Reference source not found.**.

**Table 5.1** *Homicide terms*

| Homicide term | Type of homicide |
|---|---|
| **Amicicide** | Killing a friend |
| **Avunculicide** | killing an uncle |
| **Dominicide** | Killing of master or superior |
| **Familicide** | Killing multiple family members |
| **Filicide** | Parent killing a son or daughter |
| **Fratricide** | Killing a brother |
| **Infanticide** | Killing a child within the first 24hrs of life, or killing a child generally |
| **Mariticide** | Killing a spouse, often associated with a wife killing her husband |
| **Matricide** | Killing a person's mother |
| **Neonaticide** | Killing an infant in the first 24hrs of life |
| **Nepoticide** | Killing a nephew |
| **Paedocide** | Killing a child or children |
| **Parricide** | Killing a mother or father |
| **Patricide** | Killing a person's father |
| **Prolocide** | Killing one's own children |
| **Senicide** | Killing elderly family members |
| **Sororocide** | Killing a sister |
| **Uxoricide** | Killing a person's wife |

### 1.5.4 Homicide or missing person?

Homicides often commenced as missing persons, thus creating challenges about which type of investigative technique was to be used. Approximately 35,000 persons were reported missing each year in Australia with 99.5% being located or return home, leaving

approximately 175 reported missing persons unable to be found in any one year (Australian Federal Police, 2020a).

The investigation into a missing person was initially limited to completing a missing person questionnaire and obtaining a statement from the informant and last person/s that saw them (Queensland Police Service, 2021b). If there was evidence of vulnerability or foul play the investigation would continue. Whereas a homicide investigation generally began with a defined crime scene and a deceased person, and would involve a range of specialist police, examination of the crime scene, investigating and questioning many persons and the collection of evidence in a manner suitable to the Courts (Queensland Police Service, 2021b). Although police should, and do, provide a credible response to each and every incident, challenges arise with the volume and number of inquiries required to find missing persons, particular if they did not want to be found or were transient in nature (Australian Federal Police, 2020a).

Early identification of foul play can assist a homicide investigation in many ways: limiting the effect of time on witness memory; limiting victim decomposition and increasing their evidentiary value; reducing contamination of potential crime scenes and identifying suspects in a timely manner (Queensland Police Service, 2021b). Missing children tend to always raise the alarm early on, as those too young to form an intention to run away normally did not do so whereas those old enough to do so typically return to their families within 48 hours (Whitehead, 2020c). It is a general practice to involve detectives in missing children searches based on their vulnerability (Whitehead, 2020c).

There has been limited work undertaken in trying to identify those missing person cases which are more likely to need additional resources; ie. those where the person is unlikely to return home or it is likely to be a homicide. *'Missing you already'* (Hedges, 2002) was

originally written to assist police to identify which missing person reports needed to be actioned immediately and which could just be monitored. Initial work was done with a small data set of 255 missing person reports. This was later compared to another study with a larger database of 1680 incidents undertaken by the Dyfed-Powys Police three years previous (Hedges, 2002). A questionnaire was developed and used to categorise missing person information into an easy to read and understand format. From the data a search urgency or risk assessment form was created, providing investigating police with a guide to the appropriate response required (Hedges, 2002). A similar, but independently developed, Search Urgency Assessment form is used in Australia to assist in the determination of search urgency for missing people (Whitehead, 2020c). These resulting forms provide the investigator or search coordinator with a sliding scale of response requirements based on the information gathered. The Australian Search Urgency Assessment Form, Appendix E-1 of the National SAR Manual, has eleven categories, each with several options to cover most broad situations (Appendix 8.4). Each category was given a score between 1 and 4, based on the known intelligence, with a 1 being the worst case scenario. A score of 11 to 18 signified an urgent response due to the vulnerability or suspicious nature of the missing person's situation. A score of eleven represented a 1 in each of the eleven categories, the absolute worse case scenario possible. Additionally, a score of 1 in any of the individual categories also required an urgent response. The use of this form at the information gathering stage of an incident provided guidence on a suitable police response. The Search Urgency Assessment Form was difficult to defend against when no action was taken in a situation that indicated an urgent response (Barnes, 2009).

### 1.5.5 The victim

The victim has differing implications for the stakeholders within this study. From a homicide investigation viewpoint the victim can provide the means to secure a successful prosecution of the offender (Brookman, 2005). From a search perspective finding the victim is a successful mission and vindication of the search strategies (Whitehead, 2020c), while the co-victims can fully grieve and mourn a loved one (Prigerson & Parkes, 2013).

Scientific evidence can be obtained from almost all victims although there are time constraints on specific types of forensic evidence such as soft tissue and volatile fluids which disappear early in the decomposition process (Jones, 2020). In order to collect this evidence the victim has to be found in a timely manner to maximise its evidentiary value (DiBiase, 2015b; Dowsley, 2003). The relatively small number of successful disposed victim homicide convictions highlights how important locating the victim is on the justice system (Ferguson, 2019; DiBiase, 2015). Victims, where necessary, have been identified by reference to an alphabetical list out of respect. Section 3.9.3 fully explains the reasoning behind this.

### 1.5.6 Search strategies for missing people

The accumulated search experience of police coordinators in Australia, as contained in the National Search and Rescue Manual (Whitehead, 2020), has resulted in five strategies being developed to assist search coordinators to determine a viable search area that can withstand scrutiny by both the community and the Coroner. Organised searching for missing persons is based on two components; a reflex search, and if unsuccessful, a formal search as explained in chapter 4 (Whitehead, 2021b). The SAR system of Australia has been designed around the search for people in distress, missing or incapable of self-recovery, and in most instances these people want to be found (Whitehead, 2021). There are a small number of target people who actively avoid searchers, mainly because of mental issues or despondency and the desire

to suicide (Whitehead, 2021b). The use of the search strategies has resulted in a 99.1% success rate in Queensland for all land search incidents in the period 2007-2022 (Queensland Police Service, 2021d).

The search and rescue system was not designed to assist in the search for unlocated homicide victims, and up until the last decade there had been a separation between homicide, or crime investigation generally, and the search for missing people (Whitehead, 2015). The convergence initially started with SAR coordinators undertaking evidentiary searches for criminal investigators because of their ability to provide excellent mapping of search areas and assurance that the areas were searched in a methodical manner with a high coverage factor (Whitehead, 2008).

Assistance to criminal investigations has extended to the search for disposed homicide victims although it was identified that suitable tools were lacking for coordinators to develop appropriate search areas. While searching had been previously undertaken, it was not based on any studies as is the search for missing people, and therein laid the problem for the SAR system. The knowledge gap was how to determine suitable search areas for unlocated homicide victims. The main difference between the two types of deceased persons is that those resulting from a SAR generally perish on the surface of the ground or in the water, and while they decompose and are sometimes difficult to locate, none have been deliberately concealed, as is the case with many homicide victims (Whitehead, 2020).

While Chapter 4 looks at the SAR system in greater depth, search area determination for missing people is based around five strategies outlined in the National Search and Rescue Manual, the second of which is Lost Person Behaviour (LPB)(Whitehead, 2021b). LPB is a

Bayesian Theory based compilation of the behaviours of all recorded people who are lost/missing or in distress in Australia, from which characteristics, trends and distances travelled have been plotted to show similarities within each lost person category (Sections 1.10.7 & 4.2.3) (Whitehead, 2021b). It is these similarities that are used for average distances travelled and action taken. It was theorised that a study of homicide incidents would provide a comparable analysis to identify similarities around the disposal of homicide victims.

## 1.6 Co-victim and Justice System.

An understanding of co-victims and the justice system is necessary to provide further context on the importance of this research. Homicide is a heinous crime, and when committed, has an immediate traumatic effect on the victim's family, friends and community, and also creates concern within the wider population and government (Brookman, 2005). This trauma is compounded further when the victim has been disposed of and cannot be found, resulting in the inability to fully grieve and difficulties in identifying a suspect and obtaining a conviction for the crime (Prigerson, 2013).

There are two major effects of homicide on the co-victims: the first is the sudden loss of a valuable life and the associated grief that ensues, while the second is the judicial system (Section 1.7). Not locating the victim often leaves these issues unresolvable. Without a body, the never knowing can only continue and this can have a detrimental effect on grieving. In some instances grieving may never commence because of the non-acceptance that something has happened to the victim, this occurred in the case of Victim 175. The victim's family suspected but refused to admit she had been subject to foul play until her body was found seven weeks after her death (McNeice, 2007a). At very least there can never be closure, often with the co-victims passing without ever having the opportunity to lay a loved one to rest.

Grieving and mourning under normal circumstances has been well studied. Grieving from homicide incidents has had little in the way of study, particularly within Australia given the small number of incidents and victims. Finding a victim of homicide does not alleviate the grieving or the suffering for those involved but the non-location of a victim does compound the anxiety of never knowing if they are deceased, how they died and does not allow for the grieving process to be completed (Doka, 2014).

Notwithstanding the above, the effect of a disposed victim homicide on the co-victims can be summed up in three words; '*endless never knowing'* (Morcombe and Morcombe 2016). Without the victim's body or parts thereof, and therefore definitive proof of death, the co-victims are often unable to fully grieve, lay to rest the victim or move on with their lives (Morcombe and Morcombe 2016).

The location of a single homicide victim through this research will contribute towards the closure of the grief cycle for the co-victims. Development of better search tools for SAR coordinators will assist in finding more of these undiscovered homicide victims, hopefully faster. Having a victim returned will enable the co-victims to be able to lay a family member to rest and to complete the cycle of grieving. A located victim may also provide evidence of their murder, aiding in a successful prosecution, maintaining community confidence in their judicial system and the police.

### 1.7 Development of the Search and Rescue System

With the current overall success rate of SAR at 99.1% (Whitehead, 2022), missing people in Queensland have an excellent chance of being found and recovered; however, can this translate to the search for undiscovered victims of homicide? A questionnaire of Queensland

SAR coordinators indicated that the current land search strategies were being utilised in almost all incidents. Validation of these strategies was proven through the success rate in locating terrestrial missing persons and for Queensland this was 99.1% in the period 2016-22, representing 2,357 targets located and recovered from a total of 2379 (Queensland Police Service, 2021d).

At 1.8 million km² Queensland represents 23% of the Australian land mass (National Geographic, 2019), and 20.4% of the national population with 5,265,000 people (Australian Bureau of Statistics, 2021). Notwithstanding the above, Queensland has 34% of the reported missing people within Australia (National Search and Rescue Council, 2021). Police search and rescue coordinators search for missing persons, some of whom are deceased, under the guidelines contained in the National SAR Manual (Whitehead, 2021b) although over the last decade they have increasingly become involved in the search for homicide victims.

Historically, land search and rescue has been a function of each state/territory police force within Australia (Commonwealth of Australia, 2017). The vastness of Australia and relatively sparse population limited any serious research into SAR practices and methods, resulting in most early SAR situations being initially run by those people physically closest to the incident using their local knowledge (Whitehead, 2015). There are recorded searches for two separate missing people vying for the title of the first formal search conducted in Australia. The first occurred in 1834 when the New South Wales Mounted Police searched for Dr Robert Wardell after he was believed to have gone missing from his Petersham property, south-west of Sydney on 07 September. Dr Wardell was the first lawyer to be admitted to the Sydney Bar and was a co-founder of the *Australian* newspaper. It transpired that he had been murdered by escaped convicts who were eventually caught near Punchbowl (Wangka et al, 1966). The second was the search for botanist Richard Cunningham, brother of explorer Allan Cunningham, in 1835 near the present town of Nyngan in New South

Wales. Mr Cunningham's remains were located the following year, after apparently being killed by local aboriginals, fearful he was a dangerous spirit due to his Caucasian appearance (Challenor, 2022). The difficulty in determining the first proper search is the limited information relating to when and how searching was done. In either case, search and rescue in Australia has a significant history.

The Queensland Police Service has been undertaking the search role since 1859, when it was established. Up until the time of mobile telephones and emergency beacons it may have taken hours or days before the alarm was raised on a missing person and resources gathered to conduct a search (Whitehead, 2015). One of the oldest recorded incidents occurred at Clermont on Christmas Eve 1905 when a search was organised to locate Constable Robert Orme. The constable had failed to return from investigating a deceased person on the side of Emerald Road. The ensuing search found the grave Constable Orme had dug for the deceased man, then tracks leading from the road into bushland towards the nearest homestead. Constable Orme's horse was then found, suffering deep wounds to its neck, and a short distance away the body of the constable was located. He had severe lacerations to his face. Re-enactments suggested that the horse tripped, struck a tree as it fell, resulting in the death of the constable (Grier, 2016).

One of the first Queensland SAR incidents that had national interest was the search for an overdue Airlines of Australia Stinson mail plane travelling from Archerfield Aerodrome, Brisbane, to Lismore in New South Wales (O'Reilly, 1981). The plane disappeared on 19 February 1937 and the official search was halted on 23 February without success. On 29 February Bernard O'Reilly located the aircraft and two survivors on the northern side of the McPherson Ranges, 120km south of Brisbane. After raising the alarm at the nearest farm, 110 men, cut a 4m wide track for 11km through dense rain forest to enable the survivors to be carried to safety by stretcher (O'Reilly, 1981).

The largest SAR incident coordinated in Queensland was the 2011 search for twenty-seven missing people arising from the Lockyer Valley floods west of Brisbane. Over an eighteen day period and 86,000 person hours of searching twenty-four deceased people were located buried in mud. The remaining three missing people have never been found (Whitehead, 2011).

The SAR situation has evolved within Australia, with the eight policing jurisdictions, the Australian Maritime Safety Authority and the Australian Defence Force now part of a unified national system that provides a world class SAR response anywhere in Australia within a matter of hours (National SAR Council, 2022). Although the primary purpose of the SAR system is to search for, and rescue, missing people it is also increasingly being employed to assist detectives in forensic searching and in homicide incidents. The systematic search for evidence is the main aspect where the SAR system aids a homicide investigation, although searchers are being used to search areas in an attempt to locate undiscovered victims of homicide (National SAR Council, 2021).

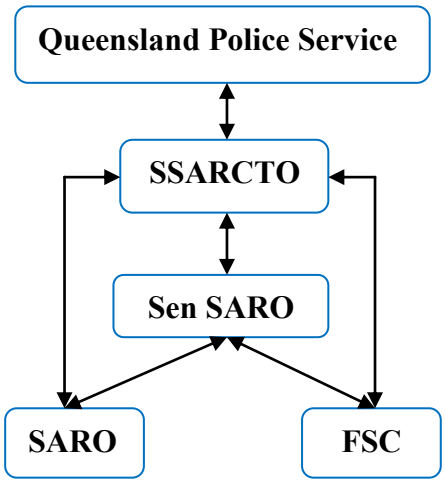
In Queensland there are four levels of SAR coordinator, **Error! Reference source not found.**, developed from a historical need for differing skills depending upon the location of the incident (National SAR Council, 2021). At the apex of the SAR pyramid is the State Search and Rescue Coordinator & Training Officer (SSARCTO) who has the responsibility of managing the state for all SAR incidents, peer reviews, presenting evidence at coronial inquest matters and providing to the three lower levels of SAR training. The position also represents the state in the national SAR forum. In order of descent the three other levels are: Senior SAR Officer (Sen SARO); Search and Rescue Officer (SARO); and Field Search Coordinator (FSC). The FSC role was specifically developed to provide a SAR capacity in those areas away from the coastline and in the more remote parts of the state.

**Table 1. 1** *SAR Coordinator level and roles*

| SAR Coordinator Level | Title | Role | Qualification |
|---|---|---|---|
| **1** | State Search and Rescue Coordinator & Training Officer (SSARCTO) | Managing SAR System and providing training | Advanced Diploma of Police Search and Rescue Management<br>Certificate IV – Training and Assessment |
| **2** | Senior Search and Rescue Officer (Sen SARO) | Marine, Aviation and Land SAR (SAR Management) | Advanced Diploma of Police Search and Rescue Management |
| **3** | Search and Rescue Officer (SARO) | Marine, Aviation and Land SAR (Coordination) | Diploma of Police Search and Rescue Coordination |
| **4** | Field Search Coordinator (FSC) | Land SAR only | Internal Police SAR Course |

The first three tiers require nationally recognised qualifications in SAR, while the FSC role is an internal course. A flow chart of the system is shown in **Error! Reference source not found.**.

**Figure 1. 2** *Flow chart of Queensland SAR Structure*




The annual reports on the Queensland search and rescue system identified that between 2016-2022 there was a yearly average of 2,156 missing people located alive, 42 persons located deceased and 22 people that were never found. The deceased people perished mainly as a result of suicide, hypothermia, hyperthermia or accidents (Queensland Police Service, 2021d)

and it is suspected that those never located succumbed in a similar manner but in locations unable to be identified or searched.

Police have been historically responsible for undertaking search and rescue operations. This was an unwritten obligation until 1976 when the first National Search and Rescue Council Conference occurred and established the current hierarchy of SAR responsibility as contained in Appendix B of the National SAR Manual (Whitehead, 2021b).

### 1.7.1 SAR Co-victims

Grieving and co-victims are not confined to homicide, they also occur within SAR. In every SAR incident there was a time when searching would cease, and in most cases, this was when a target was located, alive or deceased. In those incidents where a target was not located a Search Termination process was initiated, including a Peer Review of the incident (Whitehead, 2021a). The review formed part of the Coronial Inquest file and was based around both the search and survivability. The Peer Reviews were mostly undertaken by the State SAR Coordinator & Training Officer as per the Operational Procedures Manual (Queensland Police Service, 2021c). To date, 327 such reviews had been completed, each one requiring advising the families and friends that the likelihood of finding their missing relative is nil (Whitehead, 2021c). The reaction from families had ranged from acceptance that the best searching had been done to disbelief, criticism of police and large sums of money being spent on family driven searches. To date none of these private searches have located the target or any signs of them (Grahame, 2015).

### 1.7.2 Lost or missing?

The dictionary definition of lost is not knowing ones whereabouts or able to find a way out, whereas missing is absent from a place and in an unknown location (Gwynn & Laugesen, 2020). The National SAR Manual referred to targets of the SAR system as missing

(Whitehead, 2021b). This study used the term ‘missing’ to refer to both missing and lost people as the same search strategies were used for both types.

## 1.8 Search Strategies

The five search area determination strategies were the culmination of years of search experience and provided the coordinator with the tools to establish a search area that was able to withstand scrutiny. Each strategy was explained in full in the National Search and Rescue Manual with examples to assist (Whitehead, 2021b). Organised searching for missing people was based on two contingent steps, a reflex search, and if unsuccessful, a formal search (Whitehead, 2021b). The following sections provide a brief overview of each strategy.

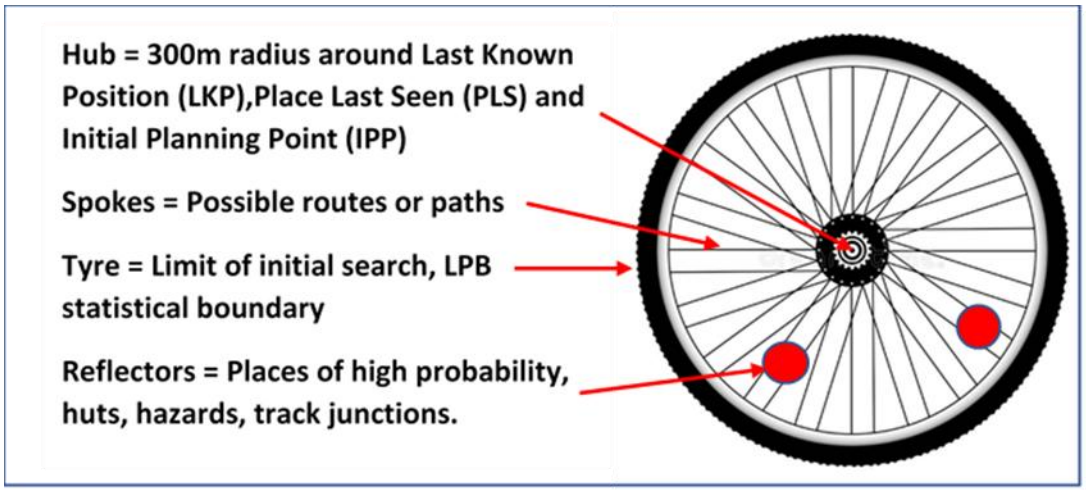
### 1.8.1 Reflex Search

A reflex search provided a rapid response with minimal planning and was based on a bicycle wheel, **Error! Reference source not found.**. The hub represented the last known point of the missing person, or if this was not known or appropriate, the initial planning point. The spokes represented the travel options available to the missing person, in some locations there may have been only be one direction of travel possible, such as Mt Tyson at Tully (Whitehead, 2018b), so the wheel would have a single spoke. Other locations may have many possible routes with an associated number of spokes, such as Green Mountain National Park, Lamington (Ryder, 2016). The tyre was the outer boundary of the search and may be as close as 300 metres in thicker bushland or up to many kilometres in more open areas and was based on Lost Person Behaviour. Any funnel points or places of interest were represented by the wheel reflectors (Whitehead, 2021c).

A reflex search has provided an 81% success rate in locating missing people (Queensland Police Service, 2021d). The remaining 19% of target people not found by the reflex search required a more extensive process of search area determination. This was called the Formal

Search and comprised of four separate but mutually inclusive search strategies that were layered to provide the best possible area in which to put resources (Whitehead, 2021c).

**Figure 1.3** *Reflex or Bicycle Wheel Search*




*Note: Adopted from Koester (2008)*

### 1.8.2 Theoretical Search Strategy

The theoretical search strategy provided the greatest distance a missing person could go in the time and conditions. It was initially derived by the Scot, William Naismith in 1892 (Thompson, 2010). Naismith escorted the wealthy gentry on walks through the Scottish Highlands and developed his rule as a means of working out how long it would be expected to take for each particular walk (Thompson, 2010). Although it has been used since 1892 for walking and hiking activities it appeared in official print for the first time in 1996 but was not named as such (UK Statutory Instruments, 1996). It was first named as Naismith's Rule in Australia in the 2008 National Land Search Operations Manual (Whitehead, 2008). The rule was based on topographic characteristics; open plains and easy-going terrain would be expected to be covered at 5kph; small rocks and easy scrambling about 3kph and snow, soft sand and larger rocks at about 1-1.5kph. It was anticipated that travel time be extended by an hour for each 500m ascended and 1000m descended and a further additional hour every five

for rest or fatigue breaks. From a SAR perspective, this rule was generally used in reverse to provide a potential distance that a lost person could walk over a given period of time. While there were incidents where this strategy would be of little use, such as shoreline incidents and locating flood victims and physically impaired dementia patients, it was one of the four formal strategies. The major drawback with this strategy was its inflexibility. The strategy could not easily be varied to take into account the missing person, experience and weather, often providing a very large diameter circle inside which the missing person would be found. Additionally, this rule also did not take into account a person's fitness, weather, daylight or any other considerations. However, it did provide the largest possible initial search area based solely on a person's ability to walk in a straight line within a calculated time period. The benefit of this strategy was that, all things being equal and the target person had not been removed from the area, it represented the furthest that they could travel in the time they had been missing (Whitehead, 2021c).

### 1.8.3 Statistical Search Strategy

The Statistical search strategy was a Bayesian analysis of previous missing people and was used as a predictive model for missing people. It was initially based on the International Search and Rescue Incident Database (ISRID) (Koester, 2008). The ISRID was a statistical analysis of over 50,000 missing persons mainly from the USA, New Zealand, UK and Canada and where they were found. Thirty-two categories of lost person were identified, with each category being provided with statistical distances of travel, lost person characteristics and suggested search strategies. A similar Australian missing person study was undertaken between 2000 and 2006 (Twardy, 2006) with the results tabled at the 2006 National SAR Council. The current Australian Lost Person Behaviour (LPB) Database had been collecting Australian data since 2010 (Whitehead, 2021b) and formed the basis for Australian LPB as contained within appendix E-5 of the National SAR Manual (section

1.5.3). This model was updated biannually with data from the Australian Missing Person Behaviour Database and was based on the ISRID data (Koester, 2008) but structured for Australia. This database was populated by the SAR coordinators within the Australian police jurisdictions on the completion of each land search incident. Over the past two years sufficient data had been obtained to include two new categories of missing person: prospectors and children with ADD, ADHD, Asperger's and autism with a further category relating to First nation people under development (Whitehead, 2021b). A minimum of fifty incidents in a category had been the trigger point for analysis. Overall, this might be considered a small number of incidents, but it was the start point for the development of new categories. As more incidents were entered the LPB category was continually modified and as such more effective at finding missing people (Whitehead, 2021c).

The distances used in the LPB were calculated from where the missing person was last seen to where they were found, a straight line or Euclidean distance determined by using Google Earth Pro™. The Manhattan distances, used in geographic analysis, is the sum of all the real straight line distances between missing and located locations (Ranjitkar, 2016) and may provide an exact distance travelled (section 3.6). In reality there can be more than one Manhattan distance. It is accepted that many lost people tend to walk considerable distances in their attempt at self recovering, but during post rescue interviews it was found to be difficult for missing people to recall exactly what they did. It is therefore the Euclidean distance that is used in the LPB models.

An example of the Lost Person Behaviour page for Children 1-3 years is shown in **Error! Reference source not found.**. The format for all fourteen categories was the same to aid usage, identifying characteristics, tendencies, strategies and the locations where this category of person were located statistically. The last section shows the statistical distances missing people have been found. The table identifies 25% of missing children have been found

within 0.27km of where they were last seen. Search coordinators work on the 80% distances as beyond it the statistical curve sharply spikes, as could be seen for the distances between 80% and 95% which have more than doubled. These distances were not time based, as small children rarely walk in straight lines but tend to wander. There was not a 100% distance because it could not be guaranteed that all lost children 1-3 were captured by the database.

**Table 1.2** *Lost Person Behaviour Children 1-3*

| **Lost Person Behaviour Children 1-3** | | | | | |
|---|---|---|---|---|---|
| **Characteristics**: 1–3-year-old<br>• Have no concept of being lost.<br>• Navigational skills are non-existent<br>• Will wander aimlessly<br>• Will not often respond to commands or whistles.<br>• Will tend to find shelter, which increases their survivability. | | | | | |
| **Tendencies**:<br>• Will often seek out a place of shelter, such as thick bushes, under tables, old vehicles or appliances, caves etc.<br>• Difficult to detect.<br>• Will rarely self-help or walk out. | | | | | |
| **Strategies**:<br>• Urgent response<br>• Confinement is a low priority.<br>• Passive techniques are not often successful.<br>• Dogs may be helpful if used quickly.<br>• Checks of places of highest probability to be made initially.<br>• Teams to run main tracks and trails.<br>• May require getting down onto hands and knees to identify other less obvious tracks. | | | | | |
| **Where located statistically**:<br>• Habitation 25%<br>• Building/shelter 25%<br>• Open ground 25%<br>• Fence line, hedge, wall 12%<br>• Water, water's edge 12% | | | | | |
| % of category | 25% | 50% | 75% | 80% | 95% |
| Distance from LKP (KM) | 0.27 | 0.6 | 1.79 | 2.10 | 4.45 |

*Note: From the National Search and Rescue Manual, Appendix E-5 (Whitehead 2021)*

### 1.8.4 Subjective and Decision Point Strategy

The subjective and decision point strategy was based on the topography and how it would influence the travel direction of a missing person. This strategy relied on the coordinator's ability to interpret a map, their knowledge of the locality and experience in identifying natural or man-made barriers (Whitehead, 2021b). Identification of those barriers could provide areas that would either limit a missing person's options of travel or that would funnel or force them to move in a particular direction, such as being confined to a steep sided valley system. Man-made barriers include roads, railway lines and fences with the general adage that they were not crossed but followed to find safety, although there were many instances where this guideline had been breached resulting in tragedy, one example was the search for Stephanie and Hermes Spezialli north of Dajarra, Queensland, in 2000 (Whitehead, 2000) and the search for 6yo Jocelyn Lewis after she ran away from her parents at Nerang in 2016 (Whitehead, 2018). Natural barriers include creeks and rivers, ridges, and cliff lines. Coupled with this strategy were decision points, locations in a search area that could cause a person to make directional changes, more often than not without noticing them. Examples of these were creek crossings and track junctions, where it was quite easy to make an incorrect deviation due to fatigue or lack of situational awareness. Many locations, both rural and urban, could be cordoned off through the utilisation of these subjective boundaries, limiting the area required to be searched. Contrary to this, there were also locations in the flatter and vast western country regions, where the lack of physical barriers did not limit travel in any direction at all (Whitehead, 2021c).

### 1.8.5 Deductive Strategy

The final strategy is deductive, which was looking at the actual facts of the situation, and from this, undertaking an appreciation to gain situational awareness and determine potential

routes and actions of the missing person (Stanton et al., 2001). An appreciation, often used in the military, would identify all the courses of action open to the missing person, and from these it was possible to narrow down a direction of travel when used in conjunction with the subjective strategy (Whitehead, 2021c). This was often more akin to making logical assumptions of the missing persons behaviour given the situation and could be valuable when the persons intentions were not known, such as where they were going. The difference between subjective and deductive was that subjective was reliant on the topography of the search area to identify potential routes. Deductive was using the facts of the situation to determine what the missing person may have been attempting, i.e. a walk between A and B, to find a suitable location for photographs or if afflicted with dementia possibly a home lived at in the past.

Using all four strategies together it was possible to determine a maximum distance travelled, the most probable actions based on what had occurred previously, the areas that would limit travel and finally what options were available to the target person. The resulting search area then became the basis for sub-division and tasking to search teams. **Error! Reference source not found.** highlights the benefits and deficiencies of the four strategies.

**Table 1.3** *Benefits and Detriments of formal strategies.*

| Strategy | Benefits | Deficiencies |
|---|---|---|
| **Theoretical** | Relatively simple mathematical calculation. Provides largest search area possible under circumstances. | Does not take into account target ability, weather, daylight/darkness, topography or vegetation. |
| **Statistical** | Based on what most targets in similar situations do. Relatively easy to calculate search radii using tables. | Relies on ongoing accurate data input. |
| **Subjective** | With experience can be done through map interpretation quickly. | Relies on a coordinators map reading and interpretation abilities. |
| **Deductive** | Looks at the situation facts to determine options for target. Can be enhanced through judicious questioning of family, friends etc. | Does require some skill in identifying facts and making rational interpretations. |

## 1.9 Justice System

Prosecution of a homicide case can be difficult at the best of times, with the onus on the prosecution to prove a multitude of elements within the offence to a *'beyond a reasonable doubt'* criminal standard (Findlay et al., 1999). The difficulty becomes almost insurmountable when there is no body to provide proof of death and that the death was as a result of an unlawful action, murder (DiBiase, 2015b). This section provides further background to this thesis and reviews the difficulties faced by the prosecution to secure a conviction in those situations where a homicide has been committed but the victim has unable to be located.

The criminal justice system also has traditionally had no place for the co-victims, in fact, they are often considered as collateral damage in the wider aim for fairness (Englebrecht, 2014). The introduction of victim impact statements, allowing the victims of non-homicide offences or co-victims of homicides to address the court and offender, to explain their feelings, the effects of the crime and the suffering it has caused has been identified as part of this process (Erez, 1997).

The Australian Justice System has been inherited from the United Kingdom, coming over with the First Fleet in 1788 (Findlay et al., 1999). From this common beginning each of the states and territories have gone down slightly diverging paths to the present day where there are both commonality and differences in homicide and how it is investigated (Fairall, 2012). Beck (2019) identifies that the Australian Constitution defines what law-making powers the Commonwealth and individual states/territories have. There are two main sources of Australian law as identified in Table 1.4. Homicide is a state/territory responsibility; hence Queensland has a Criminal Code identifying and defining homicide in clear terms ("Homicide," 1899).

**Table 1.4** *Australian Law Sources*

| Law Source | Rationale |
|---|---|
| **Cases** | The decisions that have been made by judges in their respective courts. |
| **Legislation** | The legal rules that are made by parliament or those who have delegated powers to do so. |

It could be assumed that twelve good and true citizens could not make an error based on the facts presented to them. Of the twenty-eight prosecutions for disposed victim homicides in Australia, one, Patrick Brady, had the judge direct the jury to acquit in 1935 (Roope & Meagher, 2020), and the second, Lindy Chamberlain, was ultimately found not guilty and pardoned for the alleged murder of her daughter in 1980 (Bryson, 2018). This equates to 9.5% of disposed victim prosecutions being unsuccessful in Australia, but the number of cases brought before a court is small in number due to the difficulties placed by the onus of proof. This is very similar to the United States statistics, as at 2015, 399 no-body trials being conducted since 1839, with a failure rate of 12%. Exactly 200 of these trials have been held since 2000, indicating the advances in forensics and investigative techniques able to prove both death and murder without a body (DiBiase, 2015b).

In broad terms it is up to the prosecution to prove that a particular person was murdered or unlawfully killed and then that the accused person was the one that perpetrated the crime (Fairall, 2012). In doing so the ability to produce a body, or evidence thereof, is of vital importance in establishing death, and in most cases the cause of the death. Without a body it becomes so much more difficult to prove death, and then that a suspect actually caused that death.

### 1.9.1 Proving death

The definitive proof of death is a deceased body, and it therefore poses many challenges to prove that a person is deceased without an actual body (DiBiase, 2015b). There are several

possible approaches to proving death in the absence of a body: through physical evidence that they are deceased or through lack of evidence of life (victimology). Physical evidence would include for example blood, bone, stained or damaged clothing. This does not just involve locating a bone or some blood, but bones that a human could not survive without such as a vertebra or skull or a sufficient quantity of body fluids that death could be the only conclusion (DiBiase, 2015b). The search for victim 121 is a good example of this as initially only arm bones were located which did not automatically signal death, this followed when a vertebra was found (Whitehead, 2012). While physical evidence is easier to use to prove death, it is harder to obtain when the location of the crime and deceased are not always known (Brookman, 2005; Walton, 2017).

The second approach is victimology, creating a victim profile providing circumstantial evidence that the death of the victim is a likely scenario (Brookman, 2005). In gathering and presenting this evidence the prosecution will suggest that cessation of life is a possible consequence of prior activities with an offender's continuing life dovetailing in with the victim's cessation of life (DiBiase, 2015b). DiBiase (2015) stresses that this is not a necessarily easy exercise for the prosecution and can often be impossible. A defendant's claim in court that the victim is not deceased will often strengthen the prosecution's case as it forces them to provide a very detailed victimology, which will almost always point back to the defendant (DiBiase, 2015b).

Proving death through victimology entails a wide range of investigations covering all aspects of the victim's life. In today's modern era social media plays a big role in almost everyone's daily activities and that is an avenue of investigation for police. Being able to show a pattern of electronic media usage and then a sudden cessation is a definite indicator of behavioural change and possible death. Searching patterns of usage provides data of proof of life, the changing of which may indicate something suspicious. Investigation into the content may

also provide information on current and past contacts, providing avenues to pursue (Walton, 2017).

Further victimology clues can be provided by mobile telephones as there would be very few people in Australia without a mobile telephone. A Deloitte survey in 2018 showed 89% of Australians own and regularly use a mobile telephone, whether it be for business, communication or entertainment and that there were 1.26 mobile telephones for every member of the population (Corbett & Herman, 2021). Cessation of mobile usage is an indicator that that person is no longer in a position to make calls. Using provider technology, it is possible to identify the location of mobile telephones, particularly when they are being used, to provide data that may assist a search. There is also newer technology that can locate a mobile telephone when it is not being used although there are considerable legal constraints to doing so, particularly with current Telecommunication legislation ("Telecommunications Act," 1997). The 2012 murder investigation in the disappearance of Melbourne Victim 117 was assisted when detectives were able to place her phone in the same location as the suspect's vehicle. His vehicle registration number was recorded on a fixed Automatic Number Plate Recognition site on the Tullamarine Freeway as he was travelling north to dispose of his victim's body, and mobile triangulation provided that same latitude and longitude for her phone at the same time (Tonge, 2018a).

Interviewing is a common technique to collect information, police ask questions all the time, it is one of their tools of trade (Brookman, 2005). In most homicide incidents evidence collected from the victim often identifies the offender, as in only 24.4% of cases nationally was there no identifiable relationship, making them random attacks (Australian Bureau of Statistics, 2020). In Queensland this figure was less, at 9.94%, for all incidents between 2004 and 2020 (Whitehead, 2020a).

DiBase (2015a) indicated that most disposed victim offenders have the belief they have outsmarted the police and are often initially willing to talk on an interview, making the realisation afterwards that they need legal representation and then cease to provide further information. The electronic recording of these interviews is of vital importance, not just for refreshing the investigators memory but also in showing inconsistencies when compared with other information. Interviewing doesn't just happen with a suspect, but also within their circle of influence, as it is not uncommon for an offender to say something to another person that may provide a further avenue for investigation (Walton, 2017). One offender mentioned to a fellow prison inmate that he killed Victim 16 in 1983, and that her body was buried in the same location as the small boy, Victim 19, for which he was serving a sentence for murdering in 1992 (*R v Pfennig [2016] SASC170*, 2016).

Aside from interviewing, police are also adept at searching for forensic evidence. Searching as many locations as possible in the initial stages of an investigation may provide evidence (Walton, 2017). Places of interest include the victim's home, boyfriend/girlfriends' home, workplace and other places they may have frequented. Consensual searches are the first option, with provisions to seize items of interest if necessary. The refusal of a person to submit to a consensual search would be a red flag to police, although there could be many reasons for this including other non-suspicious illegal activities being carried out at the location such as drug usage (Walton, 2017). Search warrants can be obtained, if necessary, after swearing out an affidavit of facts and reasons for the search.

The search of a suspect's residence would be undertaken for physical evidence, clothing or blood, and for electronic evidence, so the seizure of all computers and mobile telephones is paramount as they may have useful information inside. The killer of Victim 147 was found to have photos of her naked and burnt body on his mobile telephone (*R v Stanford, Vincent [2016] NSWSC 1434*, 2016). It has been worthwhile searching the external areas of the house

and yard for signs of disturbance, the burying of a body in a back yard is not uncommon within homicide. The Bodies in the Barrels murderer, John Bunting, had buried three of his victims in the back yard of his Adelaide home (McNeice, 2005d).

Improving the ability of police to find homicide victims will obviate the necessity to prove death. Notwithstanding this, there have been instances where proof of death has been incorrect. In 1998 Natasha Ryan, 14 years old at the time, disappeared from her Rockhampton home. Police enquiries identified that it was more than likely that she was deceased as there was no further communication with her family and no evidence of any other life activity such as attending school, accessing funds and contacting friends. Her boyfriend at the time denied knowing anything about her disappearance. It was initially suspected a friend of hers may have killed her after an argument, until Leonard Fraser became associated with her vanishing. Fraser was charged with Ryan's murder and during the 2003 trial police raided a house in Rockhampton, locating Ryan hiding in a cupboard. Fraser, a convicted serial killer, had confessed to killing Ryan, clearly not the case, but was convicted of four other murders including Victim 118 (Thomson, 2003).

The disappearance of Victim 35 sparked controversy with respect to proof of death and subsequential proof of murder. The finding of blood in the tent where the victim, nine weeks old at the time of her death, was sleeping and then some of her clothing some distance away contributed to proof of death. This was not disputed at any of the trials or inquests. The leap from death to murder was taken on selected suspect evidence, and was ultimately found to be flawed logic with Lindy Chamberlain being eventually found to have had no involvement in the death of her daughter (Morris, 2012). While not considered by any trial or inquest, the locating of the victim's body would have provided irrefutable evidence as to the cause of death and whether murder had been committed.

### 1.9.2 Is a body necessary?

The Criminal Law of Queensland has a number of Latin terms which are often confused with incidents involving bodies and the production thereof. Carter (2019) identifies the first of these terms as *habeas corpus*, produce the body, which is mistakenly referred to as the need for the prosecution to produce a corpse prior to being able to take a case to trial. Habeas corpus actually refers to the lawfulness of a detention and is brought on by an imprisoned person or another to test the legality of their imprisonment (Fairall, 2012).

The second Latin term is *corpus delicti,* which means 'body of evidence' or the main ingredients which go to make up a criminal offence (Carter, 2019). This does not refer to the actual body of the victim in the physical sense but to the entire body of evidence of the case in point, not necessarily a homicide. The difficulty placed on the prosecution is that they have to prove that a person is dead and that their death was unlawful, understandably challenging when a body cannot be located. Appendix 5 provides a list of successful and unsuccessful disposed victim prosecutions in Australia.

In 1951 the conviction of George Horry for the murder of his wife in New Zealand was the first instance in over 3 centuries where a person had been convicted under English Common Law without the victim ever being located (Yska, 2014). In the United Kingdom the necessity to produce a body was effectively overturned in 1954 after the conviction of Michail Onufrejczyk with the murder of fellow Pole, Stanislaw Sykut (Morton, 2006). In Australia there has been no such restriction, with circumstantial evidence being considered sufficient as shown by the successful disposed victim murder convictions (McHugh, 2008). There is also no onus on the prosecution to clearly state the actual cause of death, as this cannot always be determined with any certainty (Fairall, 2012b).

The enactment of the Corrective Services (No body, no parole) Amendment Act 2017 ("No body, no parole," 2017), has been designed to provide some measure of closure to the co-victims by ensuring that killers provide police with the location of their victims prior to being released on parole. This legislation was challenged in early 2018 when Stephen Renwick argued that Victim 192's cremated body would not be able to be located and that he should be released. Renwick took police to a location, and after forensic examination it was concluded that a body was not cremated or otherwise disposed of at that location (Doyle, 2019). There have been several other incidents in Queensland where locations identified by convicted killers have not provided evidence of victims, 36, and 152 in 2009, and 56 in 2000 (Whitehead, 2020b, 2020c, 2020d).

A victim's body is not a necessity to prove murder, although being able to produce evidence of one does make proving the elements of the offence of murder or manslaughter that much easier. The investigation and evidence gathering to prove murder is beyond the scope of this article suffice to say that is generally intrinsically linked to the proof of death.

### 1.9.3 Justice and victims.

It has been identified that the judicial system is also a source of grief and anguish to the families and friends of victims (Doerner, 2017). The court systems within Australia are not designed around the support of the victim, and it is often portrayed through evidence and suggestion that the victim is often to blame for their own homicide. Many homicide offenders have said that some actions of their victims caused them to be killed, using this as a mitigation or excuse for the crime, the murder of Victim 117 and Victim 189 being examples of this (Hunter, 2018). Victim stereotyping has also contributed to this attitude in the popular media (Vessier-Batchen, 2006).

Wolfgang (2016) identifies that there is a concept of victim-precipitated homicides in which the victim started an incident and has subsequently been killed in the ensuing altercation. Most of these incidents have a commonality in that the victim and offender were known to each other as opposed to a random act against an unknown victim. Battered wife syndrome is an example of this manifestation. Polk (1997) argues that this concept is erroneous for many reasons, the most valid being that the victim has no say in the final analysis and that any assessment of the incident can be one sided. He also states that this concept is not a focus in theoretical analysis of homicide data.

### 1.9.4 Proving homicide overview

For the prosecution to prove the basic elements of the offence it is easiest to do so with the production of a deceased victim, or at least photographs and pathological evidence, this then enables the nexus with the offender to be established with some certainty. Almost all homicide incidents commence as a missing person report, the exceptions are where a body is found either by police or a citizen, or as a result of a '000' call because something has happened. Mouzos (2001) also suspects that approximately 50% of reported missing persons that are never found may have been possibly murdered. Where homicide is suspected, and a victim cannot be found the prosecution are faced with the necessity to prove both that the victim is indeed deceased and that they died unlawfully at the hands of a particular suspect. The absence of a body does not make this impossible but does present some major challenges to the prosecution.

Almost all humans are creatures of habit, if not clockwork then with some regularity in their day to day lives (Brookman, 2005). This includes earning a livelihood, making financial transactions, having a social life, honouring commitments to others such as children and partners and being part of their local or broader community. It is these habits that form the

basis of victimology and allows investigators to gather sufficient evidence to prove lack of life (DiBiase, 2015; Brookman, 2005). With the production of a body or evidence thereof it is relatively easy for the prosecution to prove homicide, the intentional killing of the victim. The victim and the circumstances in which they were found, in many instances, provide clues and/or evidence that points to a particular offender/s. Without a victim being located that evidence is lost to investigators and it subsequently falls to the prosecution to initially prove that the victim is deceased and that it was caused by a deliberate act of violence (Brookman, 2005). This poses a unique problem for any jury, the acceptance of death without physical evidence. In a small number of criminal trials this proof has been successfully achieved, with the resultant conviction of the offender, but it is not always so.

Only a small number of disposed victim homicides have been successfully prosecuted within Australia but there are a much larger number that were unsuccessful or never taken to trial and this has stemmed from the difficulty of proving death. The prosecution needs to prove death and murder beyond a reasonable doubt whereas the defence only has to cast doubt on any evidence, to suggest that a person is not deceased. It can therefore follow that the production of a body can alleviate much of the supposition within a trial, remove any doubt that a victim has been murdered and provides a small element of closure to the family and friends of that unfortunate person.

### 1.10 Theoretical Framework

The theoretical framework developed from the research aims should also explore reasonable solutions to problems identified. The framework should also provide prospects for future inputs in this field to expand both the theory and practical application of any contribution. There are two parts to the theoretical framework within this practical problem, identifying

commonalities in the disposal of homicide victims and the development of a Disposed Homicide Victim Matrix.

Further development work was required in the area of victim disposal, identification of patterns, trends and characteristics that may weave a common thread among homicide offenders. There is no standard definition of victim disposal in terms of homicide and this will be discussed further in section 1.10. Victim disposal, highly important within the criminal justice system, has been the subject of limited research within academia.

The focus for previous studies have been subsets within homicide such as sexual serial killers and offender profiling rather than the machinations behind victim disposal (Beauregard, 2008b; Field, 2008a; Pecino-Latorre et al., 2019; Sea & Beauregard, 2021). A small number of studies have endeavoured to provide some insight into the movement of victims, particularly transportation and clustering, but not to the extent of pattern development or statistical analysis of all homicide incidents rather than a small subset (Chai et al., 2021; Ferguson & Pooley, 2019a; Nethery, 2004a).

Most literature on homicide focuses on the actual incident and the subsequent investigation with little emphasis on the rationale of actions immediately after the crime, such as the disposal and/or concealment of the victim and any forensic awareness. Ferguson (2019a), Beauregard (2008) and others have identified the need for further research but also recognise the difficulty therein because of limited access to data and the relatively small numbers of victims involved.

This research looked at the concept of victim disposal based on the biometrics of both offender and victim, the method of homicide, distances and methods of body disposal based on all the homicide incidents in Queensland over the period 2004-2020. The existing literature, scant as it is, provided some of the investigative framework around which this

project was formed. A study on familial victim disposal offered an interesting perspective with respect to offender/victim characteristics and disposal based on the familial hierarchy (Chopin, Caneppele, et al., 2020), while the many studies of sexual serial killers could be adapted to include the entire homicide spectrum (Beauregard, 2008b; Chai et al., 2021).

It has been highlighted that the limited access to information is an impediment for further research. This study had unprecedented access to the Queensland Police Service QPRIME system, and therefore all the data relating to homicides within the chosen date range. This study also sought contributions from those police whose task it was to locate both missing people and homicide victims not found at the scene. Key aspects of victim disposal, such as identification of commonalities in disposal patterns, methods, victim concealment, and transport, contributed to improving understanding of this facet of homicide. This study will be the foundation for future research through attempting to understand the factors behind victim disposal and to construct a predictive model that will assist in defining search areas for disposed victims.

### 1.11 Research Goal and Objectives

Locating disposed victims of homicide is the overarching goal of this study. To achieve this there were three distinct but interrelated objectives: (1) to understand homicide victim disposal patterns and commonalities; (2) develop a Disposed Homicide Victim Matrix; and (3) identify if the current search methods for missing people can be adapted to disposed victims. It was from the analysis of disposed homicide victim data that the Disposed Homicide Victim Matrix was produced, building on the theory of homicide victim disposal and providing a better understanding of what is known in this area.

This research goal has been separated into three (3) research questions (RQ):-

*RQ1: Are there identifiable trends or characteristics in homicide incidents where the victim was moved from the incident scene to a secondary location where they were located?*

*RQ2: Are the current search and rescue strategies used to locate lost/missing people, particularly those who may be deceased, effective and if so, can they be adapted to improve the ability to locate undiscovered homicide victims?*

*RQ3: Can the data from the study of disposed homicide victims provide guidance to police to assist in the location of undiscovered homicide victims?*

These research questions required scoping decisions to provide manageable depth of the research.

## 1.12 Scope and Key Definitions

The scope of any research is the extent of subject material being dealt with. It is critically important for the scope to be identified early in the study to limit creep and tangential research being undertaken that might otherwise weaken or dilute the original intention. There were five key elements identified in the practical problem addressed by this research: search and rescue; homicide; disposed victim homicide; Queensland and victim disposal. Each of these elements will be defined and their importance to this study explained in this section.

### 1.12.1 Search and Rescue

The word *'search'* is defined as the act of finding something or someone by looking for them carefully (Collins English Dictionary, 2019), while the word *'rescue'* is defined as the act of saving someone from a dangerous or unpleasant situation (Collins English Dictionary, 2019).

As defined by the National Search and Rescue Manual (Whitehead, 2021b) search and rescue is:

*'The provision of aid to people who are, or are believed to be, in grave and imminent danger or who need assistance.'*

In Australia it is taken that assistance will be provided in all cases when requested until the incident is either resolved or determined not to require the assistance (Whitehead, 2021b).

Search and rescue relates to the provision of aid to people who will benefit from it and does not include salvage, defined as saving a vessel or vehicle, unless the salvage is indivisible from the saving of life. Deceased people will not benefit from lifesaving assistance and are therefore not targets of a search and rescue response in the traditional sense (Whitehead, 2021a).

Of the three SAR Authorities: Australian Maritime Safety Authority through the Australian Rescue Centre (ARC); Australian Defence Force and State/Territory Police (National SAR Council, 2021), it is only the police who have an interest in deceased persons. Under the Queensland Coroners Act police have a function to assist the Coroner into investigations involving deceased persons, and by extension, those who die before, during or after a SAR operation ("Coroner's Act 2003," 2003), Table 1.5. From a policing viewpoint the term SAR is also applied to evidentiary searching and more recently, the search for homicide victims, becoming an extension of the obligations under the Coroners Act (Whitehead, 2021b).

**Table 1.5** *SAR Obligations (National SAR Manual 2021)*

| | **Search Targets** | |
|---|---|---|
| **SAR Authority** | **Search for targets who are or are believed to be alive** | **Search for targets who are deceased** |
| **ARC** | ✓ | x |
| **ADF** | ✓ | x |
| **Police** | ✓ | ✓ |

*Note: Adapted from Whitehead (2021)*

While the word rescue is not readily applicable in the disposed victim homicide situation, it is understood to also represent the recovery of the target person, including a homicide victim. For the purposes of this research the term search and rescue relates to any searching and body recovery of the victim post incident.

As with any SAR operation for a person in distress, an initial location is necessary before any search asset can be tasked. This location, known as either a Last Known Position (LKP) or Splash Point (SP), is where the SAR planning strategies are applied from (National SAR Council, 2021). The LKP and SP are not always a specific location such as a latitude and longitude, grid coordinate or street address. They may be a track line, a journey with defined start and end points, or an area such as Moreton Bay or Hinchinbrook Island.

LKP's and SP's are not always readily identified in SAR Operations, requiring the gathering of information from which to develop intelligence. A disposed victim homicide is very similar, the LKP or murder scene should be located before any search planning can be undertaken, and often this location is not readily apparent (DiBiase, 2015b).

### 1.12.2 Homicide

The definition of killing in the Queensland Criminal Code ("Criminal Code Act," 1899) is: *'any person who causes the death of another, directly or indirectly, by any means whatever, is deemed to have killed that other person'* ("Definition of Killing," 1899). Killing and murder may seem the same and for all practical purposes they are, but by definition, murder is a distinct subset of killing and relates to humans whereas killing is a more generic term that covers flora and fauna as well as humans (Fairall, 2012a).

Section 300 of the Queensland Criminal Code 1899 states: *'any person who unlawfully kills another is guilty of a crime, which is called murder or manslaughter, according to the circumstances of the case.'* ("Criminal Code Act," 1899). Lawful homicide includes such occasions as execution when capital punishment was a sentencing option, self defence where the perpetrator fears for their own or another's life, euthanasia or during the arrest of an offender for a serious crime ("Criminal Code Act," 1899). Killing in a war like situation is not included within this study. Section 302 defines murder as: *'the intentional causing of*

*death to the person killed or another person'*, while section 310 defines manslaughter as: *'a person who unlawfully kills another under such circumstances as not to constitute murder, that is, it was not intentional but a probable cause of some other action or omission'* ("Criminal Code Act," 1899).

Notwithstanding the definition of homicide and manslaughter as contained in the Queensland Criminal Code the definition of homicide used throughout this project is that used by the Australian Institute of Criminology (Bricknell, 2021), and is: '*all cases where a person has been charged with murder or manslaughter; all murder-suicide incidents classed as homicide by police and all other deaths classed as homicide, including infanticide, by police whether or not an offender has been apprehended'.*

This definition is in line with that of the Queensland Criminal Code, only being constrained by the classification by police. When conducting the search for these offences the key words were homicide and manslaughter. It was not expected that a murder would be classified as another offence. In this study every offence recorded by Queensland police as homicide or manslaughter was included in the data collection.

The charge of murder in Queensland is:

> *'That on the (date) day of (month) (year) at (suburb) in the State of Queensland one (defendant's name) murdered (victim's name)'*.

Each element of this charge needs to be proved by the prosecution before a conviction can be secured, and these elements are:

> **Day, Month, and Year**: In most instances the date of the murder can be determined by the investigating police. However, there are circumstances where this is not possible, such as in abduction murders or where a person is reported missing first. In these instances it is appropriate for the charge to have between dates, that is, an initial date

where the prosecution can show proof of life and an end date where there is no proof of life. The Backpacker murders in NSW provide an example of this, with the various victims being sighted on a particular date, only for their remains to be found several years later.

**Suburb:** This identifies that the murder took place in a suburb in Queensland, where the charge was initiated. The murder of Victim 3 occurred in NSW, and although he was abducted in Queensland and the offenders were apprehended in Queensland the actual offence did not occur in Queensland meaning that the offenders could not be tried in Queensland but were done so in New South Wales.

**Defendant's name**: This is the person charged with the murder. It is not possible to charge an unknown person with an offence.

**Murdered**: While each Australian state/territory has a slightly different definition of murder the one contained in the Queensland Criminal Code is representative of them all. It states: "*Any person who unlawfully kills another is guilty of a crime, which is called murder or manslaughter, according to the circumstances of the case*"(Carter, 2019).

**Victim's name**: This is the name of the victim. Although rare, it is possible for the victim not to be identified and this section of the charge would state 'an unknown victim'.

The elements of a homicide offence need to be proved to a criminal level, that is, beyond a reasonable doubt.

### 1.12.3 Disposed Victim homicide

There is no formal definition of a disposed victim homicide but Dibiase (2015b) identifies it is a homicide where the victim has been hidden or destroyed. Further to this the offender has done so in an attempt to avoid conviction, if not suspicion. For the purposes of this research a disposed victim homicide will conform to the above description, that is, any victim that was not found at the scene and had been deliberately moved. In many instances a disposed victim homicide will commence as a missing person report, with the focus on locating the reported missing person rather than collecting evidence of a crime. This often has the detrimental effect of evidence being lost or unrecoverable by the time the victim has been found.

As identified by DiBiase (2015b), it was not often the random opportunist or cornered killer who disposed of their victims. A burglar caught by surprise by a homeowner, whom he subsequently kills, generally does not dispose of his victim (DiBiase, 2015b). But this does not imply that all deliberate killings result in a disposed victim. In Queensland, between 2004 and 2020 only 17.4% of homicide victims were moved from the crime scene and within that number 2.26% were disposed to the extent that they have never been found. (Queensland Police Service, 2022a)

### 1.12.4 Queensland

Queensland became a self-governing state in 1859 after separating from New South Wales, and is represented at Figure 1.4. At 1.853 million km² it covers 25.6% of Australian land area (National Geographic, 2019) and with 5.188 million occupants in 2022, represents 20.11% of the Australian population (ABS., 2022). Over half of the population reside in Brisbane, the capital, and over 70% reside in the south east corner of the state, despite this Queensland is the second most decentralised state after Tasmania. Less than 16% of the population reside on the western side of the Great Dividing Range (ABS., 2022).

The economy of Queensland is based on three pillars, mining, agriculture and tourism. The number of workers in the mining and tourism sectors had been increasing steadily, although COVID-19 did have a negative impact on tourism (Flew & Kirkwood, 2021). While unemployment was approximately 6% in 2022, the National Welfare system provides support for those unable to work, the ill and elderly. The cost of living, traditionally low, is now comparable with the southern states, with housing having the most impact on earnings (Australian Bureau of Statistics, 2022).

**Figure 1.4** *Map of Queensland*


*Note: Adapted from Department of Mines and Energy 2013*

Queensland accounts for approximately 19.2% of recorded Australian homicides and also 29.3% of recorded land search and rescue incidents over the last five years (Australian Bureau of Statistics, 2020; National SAR Council, 2022). The Queensland Police Service has

been undertaking the SAR coordination role since 1859 when it was first established. While this study was about assisting SAR coordinators to locate undiscovered homicide victims it was also necessary to put the spotlight on Land SAR in Queensland.

### 1.12.5 Victim Disposal

Homicide victim disposal and the subsequent search for them is the lynchpin for this research. There is no agreed Australian or world-wide definition of the term disposal with respect to homicide victims. The Collins English Dictionary (2019) defines the word as: *'the act of getting rid of something, especially by throwing it away'*. DiBiase (2015b) refers to victim disposal many times, in the context that the victim is not at the crime scene and has not been located elsewhere. For the purposes of this research a disposed victim will include all victims that have been moved from where they were killed, regardless of the distance or method.

DiBiase (2015) refers to disposed victim homicide incidents with an emphasis on the investigation and subsequent prosecution of a suspect where the body of the victim cannot be produced for the court. Within the context of this project a disposed homicide victim is one who has been moved but subsequently located, whether through deliberate police searching or a random or accidental find, regardless of the period they had been unlocated. It is the analysis of the location of these disposed victims that will develop into the Disposed Homicide Victim Matrix.

The victim can provide a significant amount of information about the crime, and without it, investigators can often be stymied in their endeavours to identify a suspect and secure a conviction (Brookman, 2005). For this research project victim disposal was taken to be any victim that was not at the scene of the murder, regardless of the distance moved.

There may also be an erroneous consideration by an offender, raised by DiBaise (2015b) and Brookman (2005), that without a body the crime of homicide cannot be brought to court (Section 1.7.3). Within the field of economics the rational choice theory is often used to explain economic behaviours based on choosing from alternative actions one that provides the intended outcome, monetary gain for example (De Jong, 2012; Gul 2009; Cornish & Clarke, 1986). Within the social behaviour area of homicide this correlates with the offender rationally choosing the distance and location of their victim disposal to maximise self-interest, such as not being caught or not being associated with the murder. It has been suggested (Ferguson and Pooley, 2019; Beauregard and Bouchard, 2010; Cornish and Clarke, 1986) that rational choice may be an influential factor for offenders in deciding on the location to dispose of their victims within the limitations of the area concerned. This does not imply premeditation on victim disposal but more a deliberate thought process to hide the victim and reduce the chances of them being located, detection avoidance.

### 1.12.6 QPRIME (Qld Police Records and Information Management Exchange)

QPRIME is the single repository of all intelligence data for the Queensland Police Service and was the primary source of data for this study. QPRIME was developed by Niche in Canada for the Royal Canadian Mounted Police as a means of capturing all crime information and was purchased by the Queensland Police in the early 2000's. As it was not designed specifically for Queensland there were implementation difficulties such as differences in terminology for example Canadian divisions and detachments and Queensland Districts and Stations; and data capturing for example differences in offence categories. After internal modifications to align with Queensland's needs it was introduced at the start of 2004 as the single electronic data entry point for all Queensland Police activities.

QPRIME has multiple entry portals, including offender, victim, offence, address, associates and telephone numbers. Within each of these portals there are further entry portals such as investigating and assisting police, offender and/or victim name, address, personal details, incident details, forensic details, offence charges, statements and outcomes. Each individual portal can then be linked to any number of other portals, allowing for a single search to obtain all relevant details associated with that case file.

Within each data collection portal there are a combination of free text fields and drop down boxes for population by the officers concerned. Free text fields include name and narrative details of the incidents. Drop down boxes include gender, race and physical description. Addresses often presented problems as the background mapping system for QPRIME is MapInfo which provides all current addresses within Queensland. If the address of the incident was one not included in the MapInfo data it was not accepted and had to be manually verified by an administrator. Two examples of this are traffic accidents on country roads which might be described as X km north of a particular road intersection or a marine incident where the only location was a latitude and longitude.

Data collected on QPRIME is checked at numerous stages in the investigation, but this does not mean that variations in biometrics does not occur, particularly with respect to height, weight and hair colour of individuals. Any such discrepancies encountered within this project were validated using the latest entry if there were several or taking the mean of the values, such as weight.

### 1.12.7 Disposed Homicide Victim Matrix (DHVM)

The third, and final, research question focused on whether any or all of the disposed victim data can be used to improve the locating of undiscovered homicide victims. There was no identified literature located that focused on this research question: A behavioural database,

on similar lines to the current Australian Lost Person Behaviour database (Whitehead, 2019), was the aim for addressing this last research question. This required categorising each homicide incident based on demographics, method of murder, disposal and concealment method to develop a matrix of characteristics using the Bayesian Statistical theory.

The Bayesian Theory states that if an event occurs based on a set of conditions, then there is a likelihood of a second or subsequent similar events occurring if the initial conditions are similar. The probability of an event conveys a '*degree of belief*' in that event occurring, and that the belief can be based on previous information, previous experiments or from personal views (Gelman et al., 1995). It is the Bayesian Theory that underpins the Lost Person Behaviour model used by SAR coordinators. It aids in determining probably actions of a missing person based on the actions of similar missing people in the past (Whitehead, 2021). It is proposed that an analysis of previous homicide victim disposal actions will provide a reasonable probability of those actions being repeated by another offender. It is recognised that homicides are generally single occurrences that have no direct relationship with any other homicide; in the same context that one missing person has no connection to a second missing person. Identified trends and commonalities, in line with the Bayesian Theory may form the basis of the Disposed Homicide Victim Matrix (DHVM).

## 1.13 Thesis Organisation

Chapter 1 has provided an outline of the thesis identifying the overarching aims of the research, the practical issues, the importance of the research and proposed format of this study. Chapter 2 discusses the applicable literature identified as necessary to conduct the project and identifies the gaps in current research which is used to frame research questions for the study. Chapter 3 provides the overarching research philosophy, defines the design

process and identifies the planned research methodology. This chapter discusses the mixed methodological approach used to answer the research questions.

Chapter 4 discusses the search and rescue system and search strategies used in Queensland and their adaption for locating disposed homicide victims. Chapter 5 analyses the Queensland homicide data and identifies the trends, characteristics and similarities in victim disposal. It also offers a Disposed Homicide Victim Matrix to aid in the search for undiscovered victims. Chapter 6 analyses non-Queensland homicide incidents with a view to validating the Disposed Homicide Victim Matrix. Finally, Chapter 7 contains a discussion and conclusion of the thesis by triangulation of analysis results, provides the limitations and future research opportunities.

## 1.14 Chapter Conclusion

This chapter has set out the goal of this thesis, to gain a better understanding of the disposal of homicide victims in order to develop a tool for police tasked with coordinating the searches. This thesis was focused on Queensland homicide victims that have been moved from their murder location. The circumstances surrounding the murder, relationship and any disparity between offender and victim, murder method and transportation used as well as concealment were analysed to identify characteristics and trends.

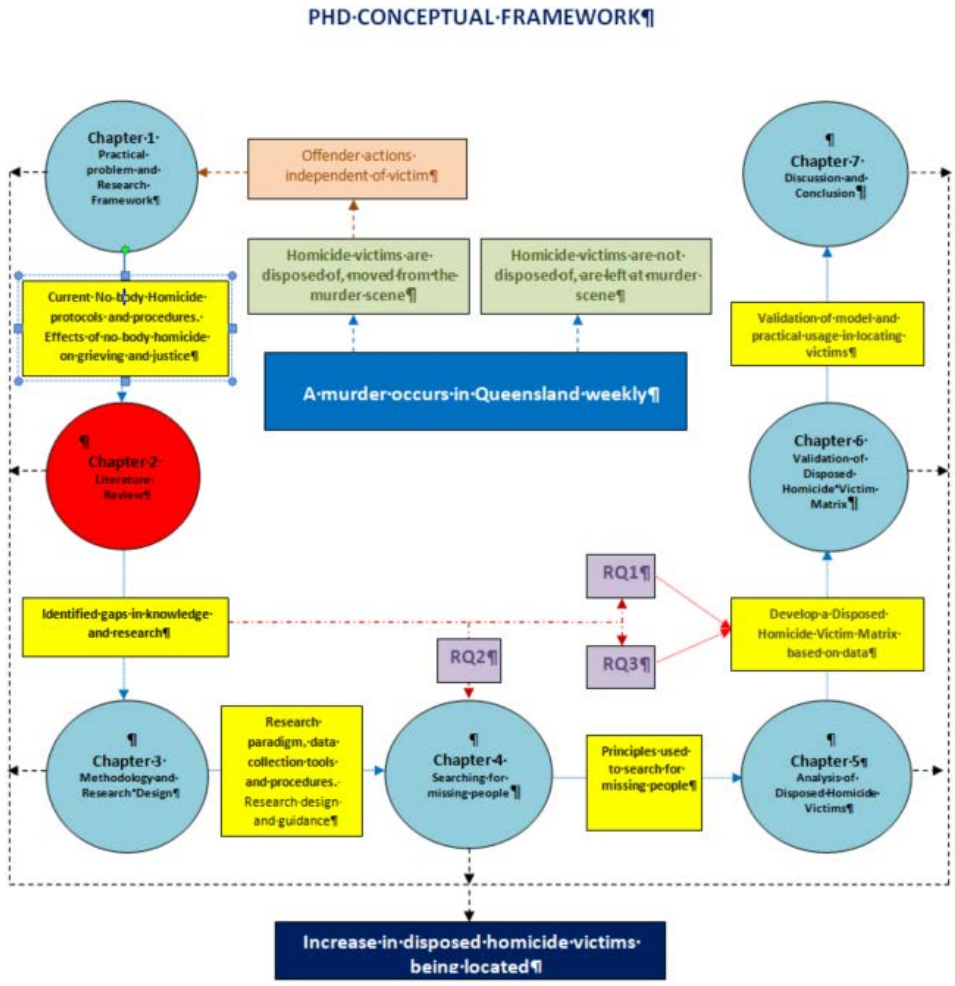
Thesis organisational details and a visual map to follow the research pathway are contained in section 1.1. Chapter 2 will analytically review literature on disposed victim homicide, the search for unlocated victims relevant to the research. Any shortcomings in the literature relevant to this research were identified. Those gaps articulate the research questions and aided in resolving the practical problem addressed in this study.

# 2 Literature Review

## 2.1 Introduction

This chapter contains a review of the literature selected to conduct the study, Figure 2.1. The discussion includes identifying the conceptual lens for this review (Section 2.2) and the systematic process undertaken for this review (Section 2.3). The relevant literature for homicide, disposed victim homicide and search and rescue were identified (Section 2.4, 2.5 and 2.6 respectively). A discussion of the literature and the associated gaps in knowledge led to the questions for exploration in this research (Section 2.7).

**Figure 2.1** *Thesis Outline (Chapter 2)*



## 2.2 Conceptual Perspective

Lost Person Behaviour (LPB) is the conceptual perspective for this research. LPB is based on the concept that most people will do the same things under the same stressors such as terrain (O'Dell, 2014), weather (Robertson, 1975), experience (Robertson, 1975), food and/or water or lack thereof (Piantadosi, 2003) (Robertson, 1975), fear (Gray, 1987), and injury (*Survival : remote area first aid*, 1991).

The LPB or statistical search strategy was based on the International Search and Rescue Identification Database (ISRID) (Koester, 2008) and the Australian Lost Person Behaviour database (Whitehead, 2019) and exploits the consistencies in human behaviour when missing. The premise behind LPB and what a SAR Coordinator uses to determine search areas is the similarities among individuals within the categories of missing people. This process is explored in greater detail in chapter 4. It was theorised that a similar study based on the disposal of homicide victims will form the basis of a Homicide Disposed Victim Matrix that can aid in the prediction of disposal sites in situations where a murder victim is not located at the incident scene.

## 2.3 Process for literature review

The Preferred Reporting Items for Systematic reviews and Meta-Analysis, PRISMA, (Liberati et al., 2009) provides the guidelines for this literature review. The PRISMA system is a standardised method of literature review allowing for decision stages in the identification, screening, eligibility, and inclusion criteria for choosing applicable literature. Alterations to the PRISMA process cater for social science research.

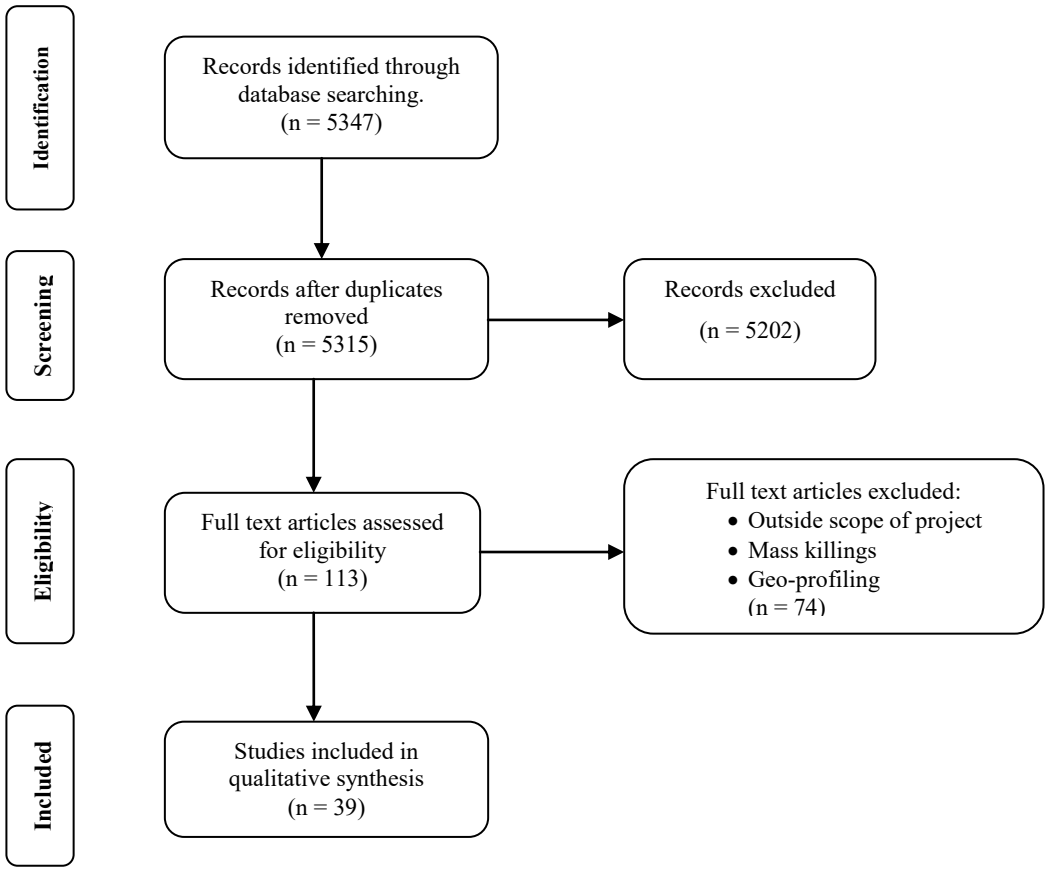
Keyword search terms and combinations of keyword search terms were used to locate online literature. For example, for online disposed victim homicide literature, keyword search terms

included ‘disposed victim’, ‘disposed victim homicide’ ‘homicide search’ and ‘missing person’. Other terms used were ‘homicide co-victims’, ‘body disposal’, ‘homicide victim disposal’, ‘homicide co-victim’ and ‘victim search’.

Commencing with the Onesearch database, searching was then repeated in the databases of ProQuest, PubMed, JSTOR, Informit, Medline and Ovid Journals. Further keyword searches were then repeated using Google Scholar and SCOPUS. Due to the limited information available, the initial searches were not restrained to any time period, but an attempt was made to capture the most recent research. Many of the older studies were considered still applicable to this research and were included. These database searches provided a collection of potentially relevant information. Other sources of information were located via open internet searches, including coronial inquests and media reports, Figure 2.2.

The material collection was then screened against the inclusion and exclusion criteria using both the title and abstract. It was also decided to include relevant material if it contained the key search terms. The remaining collection was then sorted into themes e.g. searching for disposed victims of homicide, victim disposal analysis, victim profiling, co-victims and justice. The exclusion criteria were applied to remove unrelated materials from deliberation, e.g. any material that was not available in the author’s native English language, any duplicated materials, and any that had been identified as being clearly outside the scope of this research such as offender profiling and war time/terror killings. Finally, a search of material citations identified material not found in the original database searches, Figure 2.2.

**Figure 2.2** *PRISMA flow chart for literature associated with this project*




*Note: Adapted from Liberati et al (2009)*

After reviewing the resultant material, data was identified that could be referenced to the framing questions of this literature review. Endnote™ software was utilised to manage the reference materials in the summary data. The literature review remained iterative during the course of the research following the PRISMA process for online engagement and technology acceptance and use literature. A summary of the literature review for disposed victim homicides, disposal of homicide victims, searching for victims and co-victims follows.

Quantitative methods of research (Creswell & Plano Clark, 2011) were used to develop the conceptual model of homicide victim disposal within the framework of the research questions. This approach, used through exploratory design, will best meet the research outcomes (Creswell & Plano Clark, 2011), Table 2.1.

**Table 2.1** *Article approach methods*

| Research methods | Number of articles | Country of origin | Homicide type |
|---|---|---|---|
| Qualitative approach | 4 | USA<br>Canada | Non specific homicides<br>Sexual serial homicides<br>Serial killers |
| Quantitative approach | 31 | Australia<br>Canada<br>UK<br>USA<br>Germany<br>Finland<br>South Korea<br>France<br>Greece | Non-familial child abduction homicides<br>Child abduction homicides<br>Serial homicides<br>Sexual homicides<br>Solved and unsolved homicides<br>Victims moved across state borders<br>Offender profiling from victim location<br>Strangulation homicides |
| Mixed methods approach | 4 | USA<br>Canada | Non specific homicides<br>Sexual serial homicides<br>Serial killers |

## 2.4 Homicide Demographics

Demographics is a term that is often mentioned in research relating to killers and killings, particularly with respect to offender profiling (Beauregard, 2008b). Offender profiling is a pseudo-science where certain aspects of a homicide such as location, method and victim choice, are examined in reference to other murders to provide a description of the offender (Beauregard, 2008b). Homicide demographics, such as offender/victim gender, age and height/weight disparity, are relevant as part of the theoretical framework for this research, as they form the basis of victim disposal comparison.

During the initial scoping for this research, it was identified that publicly available data on the offender and victim demographics was limited. In combination with what was publicly available through Government sources such as the Australian Bureau of Statistics (ABS) and National Homicide Monitoring Program (NHMP) the Queensland Police Recording and Intelligence Management Exchange (QPRIME) provided the necessary data to begin inquiries into RQ1:

*RQ1: What are the identifying characteristics of the homicide offender and victim in instances where the victim was moved from the incident scene to a secondary location where they were subsequently found?*

The following discussion outlines the definition of demographics and the selection of demographics in this research.

### 2.4.1 Explaining Homicide demographics

Demographics refers to the overarching characteristics that can be used to describe a population or sub-group within that population ("Encyclopedia of research design; 3v," 2010), and within this project that relates to homicide offenders and victims, and more specifically in those incidents where the victim was disposed. There is no uniform definition for demographics within homicide, however there are a number of articles that describe what it means within the context of their study, such as serial killers and sexual serial killers (Bateman & Salfati, 2007; Pakhomou, 2004). On that basis the most generic definition has been applied to this study, being that of the statistical relationships of particular population groups within the wider population. Bateman et al (2007) also identify that most literature in this field is not supported by experiential research but more on hypothetical and experience based ideologies. Demographics for this project refer to the offender and victim characteristics within homicide where the victim has been moved from the incident site. While this study is on single homicide incidents involving once-only killers most of the research on body disposal has been done around familial and sexual serial killers (Beauregard, 2008c; Chai et al., 2021; Nethery, 2004b).

Homicides present a wide range of demographics, more than could be adequately captured during a single survey. These demographics were grouped into four main topic areas: (1) those of the homicide offender, (2) those of the victim, (3) those that relate to the method of homicide, and (4) the method of transportation and concealment of the victim. The data was

initially based on that used by Nethery (2004), Beauregard et al (2008) and Chai et al (2021) but was expanded to include relationships, height/weight disparity and distances the victims were moved off roads and tracks as this information was obtainable from the police reports. The availability of the homicide demographic data used in this study varied within each source, as shown in Table 2.2.

**Table 2.2** *Demographic data from literature*

| Data Grouping | Data Variable locate | Police data QPRIME | ABS/AIC | Academic Literature | Other |
|---|---|---|---|---|---|
| **Offender** | Age | ✓ | ✓ | Limited | ✓ |
| | Gender | ✓ | ✓ | Limited | ✓ |
| | Relationship | ✓ | Limited | Limited | Limited |
| | Height/weight | ✓ | Nil | Nil | Limited |
| **Victim** | Age | ✓ | ✓ | Limited | Limited |
| | Gender | ✓ | ✓ | Limited | ✓ |
| | Relationship | ✓ | Limited | Limited | Limited |
| | Height/weight | ✓ | Nil | Nil | Limited |
| **Method of homicide** | Firearm | ✓ | ✓ | ✓ | ✓ |
| | Blade weapon | ✓ | ✓ | ✓ | ✓ |
| | Blunt force weapon | ✓ | ✓ | ✓ | ✓ |
| | Physical force | ✓ | ✓ | ✓ | ✓ |
| | Mechanical force | ✓ | ✓ | ✓ | ✓ |
| | Strangulation | ✓ | ✓ | ✓ | ✓ |
| | Chemical | ✓ | ✓ | ✓ | ✓ |
| **Transportation and concealment** | Method of transport | ✓ | Limited | Limited | Limited |
| | Method of concealment | ✓ | Limited | Limited | Limited |

The term ‘limited’ in Table 2.2 refers to information that is very generic in its nature and not able to be assigned to a single homicide incident. The offender is the first demographic category, and this research relates to the offender’s age, gender, relationship with the victim and their height and weight. All five variables were selected to determine if they had any effect on the victim disposal by the offender (Bateman & Salfati, 2007). Bracketed age

groups and gender were also characteristics that were easy to determine from a number of sources, including official reports, ABS homicide analysis and media reports. Age has been identified as a factor in sexual serial killing body disposal (Beauregard & Field, 2008), but has been limited to those with sufficient maturity and strength, such as between the ages of 25-50 (Sea & Beauregard, 2018).

Most of the literature located for this study focused on the offender (Balemba & Beauregard, 2013; Bateman & Salfati, 2007; Beauregard & Field, 2008; Field & Beauregard, 2008; Lundrigan & Canter, 2001). There were few references victims, apart from the selection process and post murder actions that could assist in the offender profiling, such as location of the initial murder and transport methods available (Field & Beauregard, 2008; Häkkänen et al., 2007; Pakhomou, 2004). While the offender profiling aspect was not relevant to this project the methodology outlined in these papers provided guidance in gathering suitable homicide demographics, such as the relationships between offender and victim, transport and disposal methods.

A similar study based on the offender's gender indicated that males are more likely to commit murder than females, and also to move the victim (Bricknell, 2020). This does not automatically mean that female killers do not move bodies, on the contrary in Queensland 11.1% of female killers moved their victim, compared to males at 20.5% (Queensland Police Service, 2022a).

A further aspect of the literature was the relatively small size of the studies and almost all authors identified that obtaining suitable data was difficult for a variety of reasons including lack of access to data bases and limited reporting of incidents in the main stream media (DiBiase, 2015b; Ferguson & Pooley, 2019a). Beauregard et al (2008) used 85 volunteers from a possible 100 sexual serial killers serving sentences in Quebec Canada, and in a further

study of forensic awareness by offenders a sample of 350 sexual based homicides in Canada from 1948-2010 was used (Beauregard & Martineau, 2014). Ferguson (2019) utilised a sample of 22 homicides over the period 1984-2014 that involved current or previous police officers. Nethery (2004b) was only able to use a sample size of eight incidents, and suggested that a larger sample may provide clearer findings.

The strength of the articles are that they show murderers do have some commonalities, both within the homicide itself and the subsequent actions post murder such as transporting the victim within a range of distances and concealing them in similar ways. This has been used as a means of offender profile with a degree of success, although there are suggestions of exaggerated success reporting (Yaksic, 2020) through practices such as reverse engineering the profile to match the offender after they have been caught. It also identifies that the reverse situation, as per this project, that of victim disposal analysis can benefit from these ingrained homicide responses through linking suspect offenders with relationships, transport opportunities and ranges and concealment methods to narrow down victim search areas.

The victim was the second demographic category, with the same variables being identified as with offenders. This is included in the scoping because the victim must have an impact on their disposal through relationship and physical size. Again, there is information around sexual serial killings, mostly undertaken by males, and their disposal patterns. In this subgroup of homicide, offender profiling is very prevalent, with emphasis being devoted to commonalities in disposal patterns such as specific locations and arrangement of the victim post murder (Beauregard & Field, 2008). There is limited information about victims (Armour, 2002b), apart from gender and sometimes the relationship with the offender (Beauregard, 2008b), but almost nothing in relation to sexual disparity (Kruger & Fitzgerald, 2012) or other aspects that may impact victim choice and any subsequent disposal (Beauregard, 2008b). Detailed information on victims is difficult to get on open source

databases, particularly personal particulars such as height and weight (DiBiase, 2014; DiBiase, 2015b; Ferguson & Pooley, 2019b). There were no articles located that specifically investigated the victim from a disposal and concealment viewpoint.

The third demographic category was the method of homicide. This focuses on which method of killing was used by the offender and the effects that this may have on the transport of the victim from the incident scene, the method of disposal and any subsequent forensic awareness or detection avoidance.

Following the 1996 Port Arthur massacre in Tasmania and subsequent tightening of national firearms legislation a reduction in firearm homicide was seen (Dudley et al., 2016). The strict laws relating to firearm ownership in Australia has resulted in murder by firearm accounting for less than 10% of Queensland unlawful killings (Queensland Police Service, 2022b).

A study of victim transportation in both Finland and South Korea found that those who were moved from the scene were more likely to have been strangled (Hakkanen, 2005; Lee & Park, 2019), perhaps because strangulation produces less body fluid leakage when compared to firearm, blunt trauma or blade weapon methods. Chopin et al (2020), Ferguson (2019) and Beauregard et al (2010) argue that some offenders may be forensically aware and therefore undertake actions to limit evidence that can be found, which could include murder via non-penetrative methods making a crime scene and transportation vehicle easier to clean. There was no research located suggesting the offender/victim relationship has an impact on forensic awareness.

The final demographic category was the method of transport and method of subsequent concealment. Lee et al (2019) identifies that research on victim transport after homicide is scarce. Their study of South Korean homicide victims found that it was more likely a victim who had not been killed by a penetration weapon such as a knife would be moved from the

murder scene, and that the transportation was done by motor vehicle more than any other method. The first part is at odds with the finding of De Matteis et al (2021), indicating that head injuries were the most prevalent form of murder where the victim was disposed. Hakkanen et al (2007) discussed the frequency of motor vehicle usage in victim disposal and the difficulties faced by the offender in the second movement of the victim from a vehicle to a final resting place, including the need to do so without detection and the difficulty in moving a deceased person due to weight.

### 2.4.2 Summary of Demographics

In summation, the range of data that is publicly available with respect to individual homicide offenders and their victims is limited. Publicly available data relating to homicide in general and the transportation of victims is similarly limited to nothing more than generalisations. Government databases, academic literature and third-party reports such as news footage formed the remainder of literature searches.

Several authors had commented on the scarcity of research into the transportation and concealment of homicide victims (Beauregard, 2008b; Ferguson & Pooley, 2019b; Nethery, 2004b). The existing literature was useful in that it initiated an approach to creating homicide demographics across four distinct categories; offender, victim, homicide method, and method of transport and concealment. The full list of literature used for this research can be found at Table 2.3.

## 2.5 Disposed Homicide Victim Literature

Ferguson (2019) identified that research into victim disposal had been undertaken within the European forensic medicine field for over a century, particularly instances of unsuccessful disposal attempts. Ferguson further suggests that there may be links to unsuccessful victim

disposals and those cases where the victim has never been found, but with limited literature this has not been possible to date.

Homicide victim disposal is a small subset of the larger homicide theme and literature, mainly concentrating on sexual serial killers in the northern hemisphere, particularly the Unites States of America and Canada. While there is no universal definition for a disposed victim homicide, it is generally accepted by investigators that it refers to any homicide incident where the victim has been moved from the crime scene and placed somewhere else, in an attempt by the offender to avoid detection (DiBiase, 2015b). Bateman et al (2007) identified that most of the literature in the field of disposed victim homicide is not supported by any experimental research but has been theorised through hypothetical and experienced based ideologies.

While this study is based on a single jurisdiction, Queensland, and on single homicide incidents involving once-only killers, previous research on disposed victim murders is a combination of sexual serial killers and once only killers, mainly from the northern hemisphere. There were five articles pertaining to Australia (Ferguson, 2019; Ferguson & McKinley, 2020; Ferguson & Pooley, 2019a; Ferguson & Pooley, 2019b; Ferguson & Gaub, 2021) focusing on the difficulties in prosecuting a disposed victim homicide where the victim had not been found, forensic awareness and detection avoidance.

Literature on disposed victim homicides can be broken down into five themes, sexual serial killers, serial killers, once-only killers, offender forensic awareness and disposal patterns. Again, literature in this area is limited, with only five articles related to Australia.

One Australian based article is at the focus of this research, Ferguson et al (2019b) who explored disposed victim homicide convictions and found that any homicide investigation is stymied without the main source of evidence, the victim. While a conviction for a disposed

victim homicide is not impossible the article does emphasise that there is a higher chance of the incident not being brought to a successful justice resolution because the victim had not been located. This conclusion was also reached by Dibiase (2015b) who similarly explored disposed victim homicide convictions in the USA. Ferguson et al (2019b) also identify that there is often more available information on homicides that have been solved when compared to those that have not, with particular emphasis on the disposed victim incidents. Neither article attempts to suggest methods of victim location.

Four articles aimed at disposal patterns and the linkages to offender profiling within sexual serial killings in the USA and Canada were located (Beauregard & Field, 2008; Lee & Park, 2019; Sea & Beauregard, 2018; Snook et al., 2005). These were based on the finding of a victim, and subsequent analysis of the crime scene to identify possible offenders. The articles did not reference distances travelled, methods of disposal and concealment except in the broadest terms. In all instances the victim was located, but they did provide evidence of commonality with respect to victim disposal, but no suggestion as to whether the method of homicide had a bearing or influence on victim disposal.

Those articles based on once-only murders generally focused on the factors that may have influenced the decision to dispose of the victim, and the subsequent disposal methods, Table 2.3. The research by Sea and Beauregard (2018) is the closest to this project, although it is South Korean based. A total of 57 homicide incidents were examined, resulting in a comparison of disposal sites, distances and relationships with the act of the homicide. The strength of this paper is the conclusion that there are similarities in disposal choices and distances travelled to the disposal site, and the major limitation is the small sample size compared to the overall homicide numbers in South Korea. The authors also identify that disposal methods appear to be underpinned by a level of forensic awareness by the offender.

Several articles focused on forensic awareness, often referred to as the *CSI Factor* (Chopin, Beauregard, et al., 2020; Ferguson, 2019; Trojan & Salfati, 2011), and whether this awareness had a bearing on the choice of location, transportation and subsequent disposal of a victim. It was identified that there was a small amount of active forensic awareness generally, with some offenders going to great lengths to ensure no scene contamination through activities such as wearing disposable coveralls.

**Table 2.3** *Articles focusing on once-only murders*

| Author | Year | Location | Timeframe | Key points |
|---|---|---|---|---|
| Francis, B., Barry, J., Bowater, R., Miller, N., Soothill, K., Ackerley, A. | 2004 | United Kingdom | 1995-2000 | Explored homicide characteristics to improve clear-up rates. Used police datasets, and offender criminal history. |
| Nethery, K. | 2004 | Canada | 1988-1995 | Child abduction murders, relationship between offender and victim, disposal methods and sites. |
| Häkkänen, H., Hurme, K., Liukkonen, M. | 2007 | Finland | 1994-2005 | Offender characteristics, disposal distance patterns, disposal site choices, rural homicide |
| Trojan, C., Salfati, C. | 2011 | Cincinnati, USA | 1997-2006 | Can single and serial killers be conceptualised within criminal behaviour. Does previous criminal history have an impact on behaviour. |
| Rossmo, K., Rombouts, S. | 2016 | USA | Late 1800's-2010 | Using geo-profiling of victim location to determine potential offender locations. |
| Sea, J., Beauregard, E. | 2018 | South Korea | 2006-2012 | Factors influencing body disposal, mental disorders and relationships between offender and victim. Geographic knowledge of disposal area. |
| Lee, S., Park, J. | 2019 | South Korea | 1985-2008 | Comparing homicide with disposed victims and those that were not. Homicide methods for disposed victims and offender characteristics. |

A number of articles looked at disposal patterns with respect to victims (Beauregard & Field, 2008; Chai et al., 2021; Francis, 2004b; Häkkänen et al., 2007; Lundrigan & Canter, 2001; Martineau & Beauregard, 2016; Sea & Beauregard, 2018; Slama, 1999). These articles focused on many aspects of homicide including what relationship existed between offender

and victim, distances victim was taken and the time frames surrounding the murder and subsequent victim disposal. Most were devoted to sexual killing and sexual serial killings in particular, rather than a broad community application to homicide offenders and provided a broad overview of disposal methods with offender profiling being the main aim. There were no articles that provided analysis of all homicide incidents of a single jurisdiction, or that delved deeper into the relationships between the offender and victim beyond intimate, acquaintance or stranger. Table 2.4 identifies the current disposed victim homicide literature.

**Table 2.4** *Current Disposed Victim Homicide Literature*

| Author/s | Year | Concepts |
|---|---|---|
| Mott | 1999 | • USA, serial homicide only, 399 solved and 75 unsolved murders<br>• Based on offender profiling from victim location. |
| Slama | 1999 | • Utah, Idaho, Wyoming and Nevada USA.<br>• Focuses on homicide in general, no victim numbers<br>• A study into the disposal of victims across county and state lines to avoid detection and the need for increased inter-agency cooperation.<br>• Identifies the difficulties for police working across borders and the lack of information sharing enabling crimes to go undetected. |
| Rossmo | 2000 | • Canada, USA and UK<br>• Homicide and other major crime, 13 homicide case studies<br>• Geo-profiling of offenders from the location of victims or crime scenes |
| Lundrigan & Canter | 2001 | • USA & UK, Serial homicides only, 126 USA murders, 26 UK murders<br>• Statistical distances for victim disposal based on criminal experience and psychological patterns.<br>• No correlation between homicide demographics and movement or disposal. |
| Snook, Canter, Bennell. | 2002 | • USA, 10 Serial killers<br>• Geo-profiling based on distance-decay and circle hypothesis to identify offender location. |
| Francis, B., Barry, J., Bowater, R., Miler, N.,Soothill, K. & Ackerley, A. | 2004 | • UK<br>• Child abduction/homicide<br>• 2,145 victims<br>• Relationship between average distances from the initial scene, body disposal distances and methods of travel are provided. |
| Nethery | 2004 | • Canada and Washington State USA<br>• 50 Non familial child abduction/homicides only<br>• Focused on disposal sites, distances from abduction to disposal site.<br>• Discussion on distances to disposal sites from abduction sites. |
| Snook, Cullen, Mokros & Harbort | 2005 | • Germany, 53 serial homicides only<br>• Identified that distance between offender home and crime scene was related to offender IQ rather than age or other factors. This could also be a factor of denser population and ease of transport. |
| Hakkanen | 2005 | • Finland, 19 Strangulation murders<br>• Identified that a small percentage of these murders resulted in transportation and disposal of the victim. Movement suggested only with non-penetrating injuries, such as strangulation. |

| Author/s | Year | Concepts |
|---|---|---|
| Hakkanen, Hurme & Liukkonen | 2007 | • Finland, 46 rural homicides<br>• Relationship between victim disposal sites with offender characteristics.<br>• Discusses the disposal of victims and commonalities between offenders. |
| Bateman and Salfati | 2007 | • USA, 450 homicide cases, 90 Offenders<br>• 35 offender behaviours<br>• Identified that offenders are not consistently performing the same crime scene behaviours across homicide locations.<br>• This study suggests that there may be no correlation between offender/victim factors and crime scene or disposal site characteristics. Suggests further study be undertaken. |
| Beauregard and Field | 2008 | • Canada, 85 serial sexual homicides<br>• Uses offender profiling to find commonalities in victim disposal. |
| Field and Beauregard | 2008 | • Canada, 85 serial sexual homicides<br>• Similarities between victim disposal patterns within sexual serial offenders connected only through their homicide activities. |
| Trojan and Salfati | 2011 | • USA primarily, 17 serial killers and 137 single killers<br>• Study into behaviour of single homicide offenders compared to serial killers.<br>• Identifies that relationship linkages are significant to homicide and any subsequent actions with the victim. |
| Congram | 2014 | • Mass murder and genocide incidents since World War Two<br>• Identified that the majority of victim disposal sites have been close to roadways or other transport corridors.<br>• Movement and concealment during mass murder incidents mirrors solo homicides. |
| Balembaa, Beauregard and Martineau | 2014 | • Canada<br>• 350 homicides<br>• Forensic awareness has a limited impact on victim disposal. |
| Martineau and Beauregard | 2016 | • Canada, 214 sexual homicides<br>• Offender mobility is a factor in victim disposal, and any secondary disposal to avoid detection. |
| Sea and Beauregard | 2018 | • South Korea, 54 homicides 2006-2012<br>• Analysis of factors that could contribute to victim disposal sites, including relationship, timeframes, mental issues, solo or in company, transport. Identified 'Expressive' and 'Instrumental' incidents and the effects of distances of disposal.<br>• No in-depth analysis, nor individual data gathered pertaining to height/weight. |
| Lee, S. J., & Park, J | 2019 | • Identified that disposal was often limited to those with maturity and strength.<br>• South Korea.<br>• Identified that victim disposal was more likely after killing by strangulation.<br>• Also identified that research on victim transport is scarce. |
| Ferguson, C and Pooley, K. | 2019 | • Australia, 55 cases<br>• This is a comparison of solved and unsolved no-body homicides in Australia and the factors relating to those that were solved.<br>• Identified that forensic awareness had an impact on no-body homicide in Australia. |
| Ferguson, C | 2019 | •<br>• Examined 22 police trained murderers and the effects of their forensic knowledge had on concealment of the crime.<br>• Identified that forensic awareness plays a part in detection avoidance.<br>• Relationships between offender and victim are also a factor in victim disposal and alibi creation. |
| Chopin, Beauregard and Bitzer | 2020 | •<br>• France and Canada, 772 sample size from SHIelD<br>• Identifies the limited impact of the CSI effect among homicide offenders. Most will use at least one FA strategy to avoid detection. |

| Author/s | Year | Concepts |
|---|---|---|
| Bricknell, S. | 2020 | • Australia<br>• Broad statistical analysis of homicide for the AIC.<br>• Does not cover all homicide demographics. Identified that males are more likely to kill and transport victims. |
| Comerford | 2021 | • 43 Sources<br>• Literature review of studies into distances offenders will travel to commit homicides.<br>• Four topologies identified. |
| Chai, Beauregard and Chopin | 2021 | • Canada, 250 solved and 100 unsolved sexual homicides.<br>• Study into whether there are any differences between solved and unsolved crimes. Discussed pre and post crime considerations and the effects on victim disposal. |
| De Matteis, M., Giorgetti, A., Viel, G., Giraudo, C., Terranova, C., Lupi, A., Montisci, M. | 2021 | • Greece<br>• 158 case studies<br>• Body concealment studies are rare.<br>• Limit amount of investigation and medical information available to investigators.<br>• Difficulty in making a pathology analysis. |

## 2.6 Search and Rescue Literature

Applying the same search methodology and sources as used to find homicide and disposed victim literature, identified that it is very scant with respect to search and rescue, and more so when connected to searching for homicide victims. The review focused on the techniques and strategies behind search and rescue and their application to the search for deceased persons, in particular, victims of homicide.

Search and rescue strategies were found to be limited to the primary Search and Rescue Manuals, particularly the Australian National SAR Manual, which is the only one that also references searching for deceased people. The Australian National Search and Rescue Manual is unique world-wide in that it comprises a single source of all search and rescue procedures for an entire country and has been unanimously adopted as the sole source of reference by all SAR Authorities (National SAR Council, 2021). This has been reaffirmed in the Intergovernmental Agreement on the National Search and Rescue Arrangements which was signed by representatives from each State/Territory, Federal Government and the Australian Defence Force (National SAR Council, 2017).

The manual currently comprises two volumes encompassing all three disciplines of SAR, those of land, marine and aviation. It is the only literature item that identifies and explains the strategies used in land search for Australia. While not specifically aimed at the search for deceased persons, as that is a police province, it does provide strategies and guidelines for searches where the target is suspected of being deceased by way of expired survival time. It also covers other aspects of land search, in particular evidence searching and how it is best done.

Search terms used to source literature included ‘search’, ‘rescue’, ‘search and rescue’, ‘body search’, missing person’ and ‘lost person’. With the small number of SAR related articles a PRISMA flow chart was not used in this case. Table 2.5 provides a full list of search and rescue literature used for this research, showing that most of the literature located was either previous iterations of the Australian National SAR Manual or locally developed guidebooks focusing on a small subset of search and rescue.

**Table 2.5** *Overview of search and rescue literature.*

| Reference | Year | Concept |
|---|---|---|
| **National SAR Manual (Whitehead)** | 2021 | • Single source of land search strategies and techniques.<br>• Used by all SAR Authorities in Australia.<br>• Land SAR strategies and techniques explained.<br>• Contains information on deceased persons and forensic evidence search.<br>• Provides single point of reference for all SAR activity within Australia |
| **LAND Search and Rescue Addendum** | 2012 | • USA<br>• Written by the US National SAR Committee for federal search and rescue authorities.<br>• Does not contain evidentiary or homicide searching<br>• US centric. |
| **The Handbook for Managing Land Search Operations (Stoffel)** | 2001 | • USA<br>• Handbook for Land Search Coordinators<br>• Written by Emergency Response International Inc.<br>• US Centric<br>• Contains land search strategies<br>• Does not contain evidentiary or homicide searching. |
| **National Land Search Operations Manual (Whitehead)** | 2008 | • Australia (Discontinued)<br>• Contained all land search information.<br>• Merged with National SAR Manual in 2016.<br>• Land SAR strategies and techniques explained.<br>• |

| Reference | Year | Concept |
|---|---|---|
| **Urban Search (Young & Wehbring)** | 2007 | • USA<br>• Urban environment searching<br>• A single paragraph on evidentiary searching |
| **Land Search Operations Manual (Whitehead)** | 1997 | • Australia (Discontinued).<br>• This was applicable to all Australia. Limited explanation of land SAR techniques. Did not define SAR. Provided broad guidelines for land SAR. Never formally adopted. Discontinued in 2008. |
| **Australian Search and Rescue Manual** | 1992 | • Australia (Discontinued).<br>• First National SAR Manual.<br>• No land SAR.<br>• Defines SAR as per the IAMSAR Manual.<br>• Rewritten in 2009 after 'Malu Sara' incident. |

There are, however, gaps in the literature devoted to the search for undiscovered homicide victims. This project has identified the importance of this, the recovery of victims to assist with justice and co-victim grieving.

### 2.6.1 Australian National SAR Manual

The National SAR Manual was referenced throughout this project and its current iteration was the result of three parallel manual developments: land; marine and aviation. The manual was promulgated by the National SAR Council operating under direction from relevant Commonwealth, State and Territory Ministers (Whitehead, 2021a). The Manual was the standard reference document for all search and rescue authorities and organisations that provide search and rescue services in Australia. It was open-source and represents the collective SAR knowledge of Australia. The manual was continually being updated through incident debriefs and coronial inquest findings, an example being the Inquest into the death of Darrell Simon and the necessity to electronically record all search efforts (Lock, 2018). The manual provides the methods, options, working papers and data for SAR coordinators and has been deemed the single point of reference for all SAR activities, as well as being recognised as the National SAR Plan for Australia. The marine and aviation components of the manual have a convoluted past and was outside the scope of this study, but it was beneficial to have an understanding of the land component.

Strategies and guidelines for missing people searching in a land environment were very ad-hoc until the early 1950's when the first attempt was made to unify and provide a single document to aid those tasked with coordinating a search. The original Land Search Operations (LSO) guide, written in 1953, was produced by the Civil Defence Force and was eventually included in the Australian Emergency Manual Series (Emergency Management Australia, 1997). This small guide provided information on search patterns, resourcing and record keeping but did not provide any advice on how to determine a valid search area.

In 2008 the National Land Search Operations Manual (NLSOM) replaced the outdated LSO. The NLSOM became the national reference for all land search operations after being endorsed by the National SAR Council that same year (Whitehead, 2008). All aspects of land search were covered, from simple missing people through to those whose time frame for survival had expired and were presumed deceased. The contents of this manual were sourced from all SAR authorities and volunteers, representing the national collective knowledge. In this single volume were the means for coordinators to determine viable search areas for all categories of missing people.

In 2009 the Malu Sara Inquest findings resulted in an overhaul of the National Marine and Aviation SAR Manual, removing contradictions and clarifying each SAR Authority's responsibilities (Barnes, 2009). In 2016 both the NLSOM and National SAR Manual were merged into a single National SAR Manual. The merge resulted in the removal of duplication and the alignment of all three SAR disciplines, using common language and methods (Whitehead, 2016).

Australia is the only country that has a single National SAR Manual, included in the National Library of Australia's standard reference system, recognising its status as the primary SAR reference (Whitehead, 2021a). Canada had a National SAR Manual, but it had not been

adopted as their standard reference source and the USA had a SAR Manual for use by the military and Coast Guard (Joint Chiefs of Staff, 1991) but not by law enforcement jurisdictions.

## 2.7 Literature Discussion

Many of the articles located discussed victim location as part of broader offender profiling or as part of homicide classification and psychological studies (Beauregard, 2008b; Field & Beauregard, 2008; Pecino-Latorre et al., 2019; Snook et al., 2005). In addition, most of the articles located had serial killers as the subject base, and in countries such as the USA the FBI estimate that there may be between 130 and 200 serial killers active at any one time (DiBiase, 2015b). In the recorded history of Australia there have only been 36 known serial offenders, making these offenders a very small sub set of all homicide incidents in this country (Kidd, 2011).

Mott (1999) explored 399 solved and 75 unsolved serial murders from the mid 1800's to 1980 in the USA against five variables in an attempt to find patterns that could identify offenders. Two aspects of body disposal were targeted, the modus operandi and personality signs. The former is the individual victim disposal methods, such as wrapping them in carpet or weighing them down prior to placing them in water. The latter are things that the offender does to the body after the crime such as re-dressing them or arranging the body in a particular way. The location of the victim was general in nature, a riverbank, pond, shallow grave and no attempt was made to extract measurements, directions or methods of transport of the victims.

Rossmo (2000) has identified that serial killers often exhibit similar characteristics in their disposal of victims. His study into geo-profiling was aimed at determining the location of an

offender through their victim's location and disposal. It is largely based on the theory that serial killers generally work within an awareness zone or well-known area around their place of residence.

Walton (2017) provides details on geographic profiling in cold case investigations and details how to narrow the search for a suspect down from the location of one or more of their victims. The proliferation of serial killers in the USA has given credence to this method as most murderers operate in areas familiar to themselves and therefore the majority, if not all, of their victims have been disposed within a certain radius.

An analysis of disposal site location for serial killers was undertaken by Lundrigan and Canter (2001) examining 126 US and 29 UK multiple murders. They drew on the idea that there are three types of serial killers: travellers; locals and place specific (Hickey, 2015). This was taken further by classifying Hickey's three categories into either commuters or marauders (Canter & Larkin, 1993). Commuters travel to a specific location for body disposal based on familiarity while marauders tended to dispose of their victims between their residence and the incident scene. This would agree with Brantingham and Brantingham (1981) who suggested that most non-murderer criminals are often familiar with the area in which they commit offences. Bennett and Wright (1984) identified two mind sets among serial killers; routine activity and rational choice. Those who murdered as part of a routine activity were often home-centric; their residence would be a hub for their activity with little consideration for disposal locations or possible discovery. The rational choice killer often gave thought to the disposal location as a means of avoiding detection and that the qualities of such a location would aid in this. This echoes the rational choice theory although it was not specifically identified as such (De Jong, 2012; Gul 2009)(Section 1.10.5 and. 7.3.2) This study found that most serial killers operated within limited areas and by utilising the data obtained it may be possible to define the location of a serial offender during the investigation.

Further to this, research has shown that serial homicide offenders often dispose of their victims in predictable ways such as utilising the same disposal site and arranging the deceased victim in various staged positions (Goodwin & Canter, 1997). These studies do not show if personal characteristics have an effect on this or if it is a purely spatial reflex. The routine activities theory suggests that offences, including homicide, will be committed in the offender's awareness space, the locales they are most familiar with. Lundrigan and Canter (2001) further suggest that victim disposal distances increase as the offender becomes more familiar with the area. Experienced homicide offenders may travel considerable distances to detach themselves from any found victim, attempting to limit the chances of apprehension. This may represent a combination of routine activity and rational choice theory as a result of learning through mistakes. Therefore, a potential suspect or offender's previous criminal history may provide clues to their victim disposal.

The Centralised Analytical Team Collating Homicide Expertise and Management (CATCHEM) is a UK database containing details of murders of women and girls under 21 years and boys less than 17 years to assist investigators and profilers (Francis, 2004a). The findings of this study, while relating to that special area in homicide of female and child abduction and murder, provide statistical data on the distances from last known locations of a variety of abduction/murder scenarios. The CATCHEM data (Francis, 2004a) provides useful information in relation to abduction murders for a small subset of overall homicide incidents and the distances that victims have been disposed from their last known location. While this study does not provide any more information than statistical or average distances from the last known or incident location it does give a search coordinator a starting point for search area determination.

The contents of the CATCHEM data are not open access for obvious reasons but it does provide police with a starting point for searching subsequent to a homicide or abduction. The

sample size of this study is relatively low compared to the overall homicide numbers in the UK, and the total UK homicide numbers are low compared to other countries (Clark, 2022). There is no similar study of Australian based incidents, and any such study would be limited by the small sample size that would be available. There have been no known follow up studies to compare subsequent child abduction/murder against the original data as a means of validation and to identify the needs for modification or updating data.

One similar missing person strategy located in the literature review was a United Kingdom project by members of the Lancaster University, '*Using homicide data to assist murder investigations. The project',* (Francis et al 2004). This study was conducted with English homicide data from 2001-2002. The aim of the project was to explore the idea that predictions could be made about a suspect and incident characteristics through the study of all 858 homicide incidents during the above period, 20% (168) of which had no suspect. The latter incidents often had a very high media profile and required proportionately more police resources than a solved homicide (Walton, 2017). The team gathered data from the Home Office Homicide Index, the Queensland equivalent of which is QPRIME. It was identified that this index was vastly underutilised by investigating police, as it had the capacity to bring together homicide data from many incidents to provide investigators with trends and predictions.

The UK team used two differing approaches, a simple frequency analysis, and a more complicated statistical modeling analysis. The frequency approach relied on studying the data to identify similar victim/offender characteristics and then examining offenders with some or all of these characteristics, whereas the statistical method entailed identifing which victim and offender characteristics were most important and sorting the data into these groups. Four groups of information were found to be the most significant, (1) offender/victim age, (2) offender/victim gender, (3) crime circumstances and (4) method of

killing. The statistical data provided results in a percentage form indicating the likelihood of a person being an offender based on a combination of victim/offender characteristics. While not exact in outcomes, both approaches did produce similar results between offenders and victims. This Queensland disposed homicide victim study has taken the above concept further, using eighteen offender/victim demographics to produce a Disposed Homicide Victim Matrix.

Nethery (2004) produced an in-depth look at non-familial child abduction/homicide incidents in Canada and the US state of Washington. The findings of that study resulted in graphs and charts outlining distances from the last known location of abduction victims, location types, transport, time and hour of the day and much more. The author recognised that there had been little in the way of study into this area of homicide and more specifically abduction/murder. The author, in conclusion, also recognised that the small size of the data set used, 50 from an original 74 incidents, would limit the usefulness of the data until it could be verified by further studies using a larger data set.

Snook et al. (2005) undertook a study into 53 German serial killers to initially look at their spatial decision making with respect to crime scene locations. They determined that an offender's intelligence and transport options were more relevant than other factors such as age, motive or marital status. They concluded that majority of murderers studied (63%) resided within 10km of the crime scene. There was no mention if the crime scene was the actual victim disposal site or whether some of the offenders had removed their victims to a secondary location.

A Finish study into the location of 46 rural homicide victims looked at the offender characteristics, distance patterns and the nature of the disposal sites over the period 1994-2005 (Hakkanen, 2007). Obtaining their data from the Psychopathy Check List completed by

the investigating officers combined with information about the offender's familiarity with the disposal area allowed some similarities to be recognized. There was a higher frequency of rural homicides involving multiple offenders of much younger age than the national average, with victims found in woods and water, 73% and 27% respectively. The study also found that offenders were often familiar with the disposal site and those with lengthier criminal histories tended to dispose of their victims at further distances. Offender's age, intelligence and their psychopathology were found to have no direct bearing on the victim disposal distances. The author's suggested that these results could be used when searching for undiscovered homicide victims or for suspect narrowing in rural homicides. This is the closest known study into the location of undiscovered victims of homicide, but the study has limited application in Australia due to the dissimilar geography, climate and national profile, as well as the limited sample size.

As an extension of offender profiling Beauregard and Field (2008b) conducted a study on sexual homicide offenders to determine whether there is a correlation between offender characteristics, situational factors and deceased disposal patterns from 85 sexual homicides in Quebec Province, Canada. The study showed that sexual offenders with organised psychological characteristics and who were in a relationship will more often dispose of a deceased victim in a location other than the homicide site, whereas those offenders who had conflict with the victim or when the victim was an older person tended to leave them *in situ*. The authors do caution that due to the small sample size these results may be limited and will require further study. This study also validates, within the parameters of an 85 subject investigation, the FBI typology theory, the consistency/homology assumptions of Alison et al (2002) and the social and psychological writings of Edgar (1980a), Daly and Wilson (1988) and Wilson (2003).

Field and Beauregard (2008a) takes the above study further when looking at the body disposal patterns of sexual homicides. Using the same 85 subject sample group as their original study they have further examined the factors relating to offender characteristics, situation, victimology, and modus operandi, in an effort to predict those sexual murderers who move the body after the crime. The study found some links between the ages of the victim and offender, personality characteristics and relationship conflict and the disposal of their victims. This study would need to be conducted over a much larger sample group to confirm their findings, although they did also find that no factors relating to the modus operandi impacted on the disposal of victims. Sexual homicides in Australia are not uncommon but it could be argued that the small number of serial killers and our relatively low homicide rate would render studies of this nature of limited value.

Offender profiling has been used as a means of narrowing down potential suspects for over two decades now, although Beauregard and Field (2008b) argue that there is relatively little in the way of empirical evidence to support its effectiveness due to the small number of studies undertaken and the limited sample sizes used. Keppel and Birnes (2003) took this further by identifying a number of serial homicide cases in the USA where offender profiling has been incorrect, diverting limited investigating resources as a result of many false leads provided by the general public acting on profiled descriptions provided to the media by the police. They also argued that public and official pressure to use profiling often interfered with an active investigation. While this study may also be a consideration in the development of statistics on the location of victims from homicide incidents they would need to be used in conjunction with other intelligence, not as a stand-alone search system.

The following quote illustrates what is in the mind of a killer with respect to body disposal, and an attempt to avoid capture. The 1995 happy face killer, Keith Jesperson, provided the following advice to potential killers: '*Meet a victim one place, dump her someplace else – in*

*another town, another county, another state – somewhere no one is looking for the missing person. But you don't have to take it 20 miles away to dump it. You can put a body in the dumpster next door if you feel comfortable that no one can pin it on you. That's why it's best to take strangers, victims who can't be linked to you.'* (Kamb, 2003)

A clustering effect has been found in some Australian serial killers, Milat in the Belanglo State Forest (Whittaker & Kennedy, 2015), Worrell and Miller at Truro (Plunkett, 2022), Bunting and Wagner at Snowtown (Marshall, 2006), the Birnies at Gleneagles National Park (Kidd, 2011) and the Wanda Beach killer (Whiticker, 2021). There has been no evidence that any of these killers had used the disposal location as a means of reminiscing over the events that occurred during the murder but there is some evidence that suggests clustering is a commonality within the serial killer subset of homicide (Kidd, 2011).

There have been studies, Godwin and Canter (1997), Slama (1999), Lundrigan and Canter (2001), Nethery (2004b), Field and Beauregard (2006) , Hakkenen et al. (2007), Beauregard and Field (2008b), Field and Beauregard (2008a) and DiBaise (2015b), on the locales where offenders, mostly serial killers, dispose of their victims. Most of these articles are attempting to identify offenders from the location and distribution of their victims rather than provide search coordinators with information to reverse this and locate victims when a suspect/offender has been determined. Most agree that the final victim disposal locations have many similarities in vegetation, topology and distance, even if they are in differing areas.

Edgar (1980a) identified that humans are creatures of habit in two ways, we often undertake activities within a limit home range and behaviour can be predicted under certain stimuli. This is the basis behind the Australian Lost Person Behaviour project included in the National SAR Manual and makes it accurate as a search tool (Queensland Police Service, 2021d).

Further to this Carter (2002) argues that humans are almost pre-programmed to act subconsciously when faced with an unfamiliar problem such as disposing of a deceased person.

Bateman and Salfati (2007) studied behavioural consistencies to link possible serial killings to either a single or multiple offenders. The study identified that behavioural consistencies morphed over the duration of a serial killer's activeness, and the use of a single behaviour as a linkage is somewhat flawed. This was particularly related to the victim disposal site, and changes in patterns were perhaps based on availability, opportunity and the necessity to actively avoid detection and/or capture.

A further study into behaviour linkages compared single homicide offenders with serial killers (Trojan & Salfati, 2011). It identified that relationship linkages between the offender and victim were significant with respect to any crime scene activity, as was any prior criminal history of the offender. The distinction between hostile and instrumental homicide types also contributed to the post incident behaviour (Salfati & Bateman, 2005). The hostile offender, once the victim had been killed, generally did little with the crime scene, whereas the instrumental offender may move the body or otherwise undertake some ritual with it.

A Canadian study (Balemba et al., 2014) of 350 solved and unsolved sexual homicides attempted to identify whether actions at the crime scene are aimed at detection avoidance. Throughout the study, the sexual killers were classified in three types, sloppy/reckless, violent/sadistic and forensically aware. Within the unsolved cases were a further two overarching factors, non-forensically aware and forensically aware. It was shown that those with some forensic awareness were more likely to move or dispose of their victims, and within the unsolved murders, disposed victims has a detrimental effect on the police‘s ability to identify an offender.

Sea and Beauregard (2018) undertook research into 54 South Korean homicide incidents with a view to identifying commonalities that may contribute to the choice of victim disposal sites. Factors, such as the relationship between offender and victim; the timeframes around the murder; mental issues on the part of the offender; whether they acted individually or in company and the availability of transport, all influenced where the victim was disposed. They also contend that a relationship exists between crime scene behaviours and offender characteristics, supporting the homology of offender profiling espoused by other such as Alison et al (2002). Further to this, the study found that those victims who were disposed were done so within hours of the killing, more than likely in the midnight hours. It was also emphasised that due to the low subject numbers compared to the overall homicide incidents in South Korea this study might not be reflective of the overall situation. The dense population of the country may have also contributed to the limited number of disposed victims.

Few Australian studies into disposed victim homicide have been conducted. Ferguson and Pooley (2019a; 2019b) in two articles compare solved and unsolved disposed victim homicide incidents and commonalities within solved homicides. This research argues that whether a disposed victim incident is solved begins with the initial police investigations and how they are categorised. Many of these cases are originally reported as missing persons, with very little in the way of physical evidence from which to proceed. The inducement of rewards, linkages to other offences and coronial findings can often elicit avenues of inquiries, but in most cases lack of evidence means they are relegated to the cold case section. It was also identified that limited information on these incidences is available publicly and that there is potential for many more victims among the reported and unreported missing persons as suggested by Mouzos (2001).

The extent to which police trained killers use their forensic awareness was examined in 22 homicide incidents by Ferguson (2019). The findings indicate that a forensically aware offender has the ability to hinder an investigation through crime scene elimination, victim disposal and the creation of alibis and convincing back stories to the victim. These can result in failure to develop a case for prosecution right through to missing a homicide and treating the victim as a missing person. A similar study in France and Canada using a sample of 772 sexual homicides from the Sexual Homicide International Database (SHIelD) attempted to identify if the CSI Effect exists among offenders (Chopin et al., 2020). It was found that most sexual homicide offenders used at least one forensic awareness strategy, with many using more, including the disposal of the victim. These awareness strategies may include wearing protective clothing including gloves to limit fingerprints and transfer of evidence, cleaning the crime scene afterwards and disabling electronic location services. It was also found that those offenders with a criminal history are more likely to show forensic awareness when compared to those who have never been in the justice system. Police are managing to stay ahead of the forensically aware killer, solving the majority of sexual homicides, however it was emphasised that it was often the actions, or lack thereof, by the offender that contributed to cases being unsolved (Chopin et al., 2020).

The final article involved another Canadian study of 250 solved and 100 unsolved sexual homicides and the moving of the victim (Chai et al., 2021). The authors identified that a measure of forensic awareness was exhibited by those offenders who moved their victims. It was suggested that moving the victim exposes the offender to a greater chance of being detected, particularly if the murder was via a penetrating injury. Moving the body creates a larger crime scene, the potential to increase witnesses, the difficulty of undertaking a scene and vehicle clean-up and a greater chance the victim will be located, all leading to the incident being solved. Counter to this the authors also postulate that concealment of the

victim, as opposed to moving, has the opposite effect in the increased chance of non-solving, difficulty of locating the victim and subsequent forensic opportunities, and lack of initial crime scene. The decision whether to move the victim or not is determined by a range of circumstances, including the relationship between offender and victim. There is a greater chance of victim disposal the further removed the two are emotionally, an intimate relationship between the two results in a higher chance of the victim not being moved or disposed, whereas if the victim was a prostitute for example, it is more likely they will be moved and/or concealed (Chai et al., 2021).

There has been no research on the disposal of homicide victims based on the demographics collected by the investigators and being inclusive of all homicide categories, the closest of which was the study undertaken by Sea and Beauregard (2018) in South Korea. Those articles that have focused on victim disposal have done so from the offender viewpoint. That is, a victim has been located and from the forensic and physical evidence found at the scene what can be deduced about the offender. This study is the reverse, it is believed that a person has been murdered, and from the offender-victim demographics what can be deduced about the possible disposal site of the victim.

Further to this is the difficulty in determining the exact number of disposed victim homicides within Australia, it being possible that many of the reported missing persons are victims and that some victims may be people that have not yet been identified as being murdered (Mouzos, 2002). The homicide data openly available is used by sociologists, criminologists, police, government, advocate groups and researchers when developing theories, articles, books and discussions, almost everything except where to look for an undiscovered victim of homicide.

All of the above research, data collection and studies have provided a foundation from which to further develop this project. Some of the data and statistics from the UK, USA, Finland or Germany may be applicable in Australia but until it is gathered and examined no definite conclusions can be drawn. Sociologists such as Edgar (1980b) and criminologists such as Keppel (1999), Bennell (2013) and Salfati (2005) contend that it is possible to link behaviour patterns in killers, although it is also acknowledged that there has been no empirical evidence as proof.

The Lost Person Behaviour models that are currently used in Australia provide the basis for the development of sound search areas for missing persons, as evidenced by the high rate of success (Queensland Police Service, 2021d). The studies contained in this review do identify that the similarities in offender behaviour may allow for the development of a Disposed Homicide Victim Matrix as a means of assisting in locating those victims that are yet to be found.

Most of the above studies have used serial or sexual serial murders as the basis for developing behaviour characteristics and in most instances, it is for the intent to create a method of offender profiling through victim location. A basic flaw behind this tenant is that victims may not be located for days, months or never, and without a victim, offender profiling is difficult to accomplish.

The studies by the identified authors form the framework around which this project can be based. Although these studies have been on a small subset of homicide offenders the methodology for this project will be very similar but based on all homicide incidents in a single state of Australia, Queensland, since the introduction of electronic data recording in 2004.

Australia is in a unique position in that there are no land borders with any other country, therefore negating the difficulties with international law and jurisdictional procedures. The eight States and Territories within Australia, while having some dissimilarity in legislation and procedure, generally cooperate to a high level in matters concerning homicide. This is true of Queensland and the adjacent states of New South Wales and South Australia and the Northern Territory. The diverse ethnicity of Queensland may impact on this study, as has been shown in different studies above; however, a single state study into the disposal of homicide victims will provide the first stepping stone to locating those lost but not forgotten victims. This review may provide a search coordinator with the tools to locate a deceased victim of a homicide and therefore increase the success of an investigation and provide closure for family and friends.

## 2.8 Chapter Conclusion

The literature review identified that there were research gaps in respect to a detailed homicide victim disposal study that could be used to improve finding these people. Identifying whether there are connections between offender/victim relationships and the distance and methods of victim disposal after murder, can the current search and rescue system be adapted to search for homicide victims and if a Disposed Homicide Victim Matrix can be developed, all contributing to locating these victims. The research goals, the identified gaps in current knowledge and tools within the literature review will coalesce to guide the research to address the practical problem.

There has been much research into homicide in general, most of which has been around the actual incident and the offender. There has been little research into the victim, and less into their disposal after death. Homicide incidents generate a level of public interest far exceeding their actual numbers when compared to other personal crimes and as such there is

a considerable public expectation that the police solve these crimes. This is not always possible, particularly when the victim of the homicide cannot be located to provide evidence of the crime and proof of death.

The effects of a disposed victim homicide on the co-victims has not been explored to any extent currently and while it is possible to draw parallels from other grieving areas the particular situation of not having a victim located makes this area a gap in our knowledge within the disposed homicide victim situation.

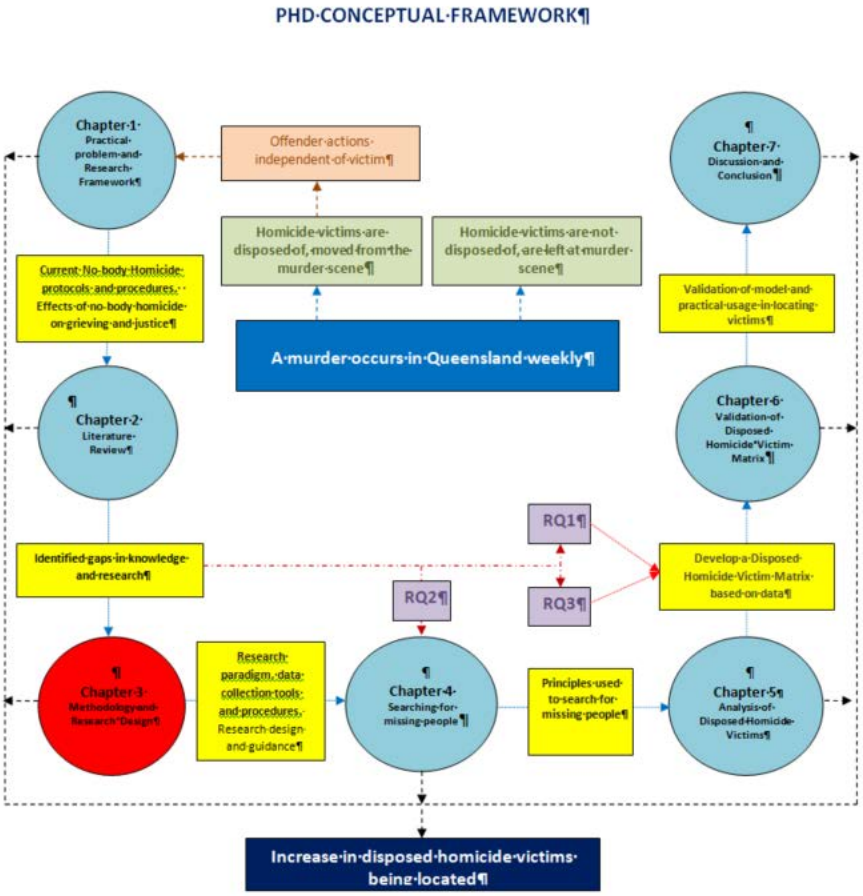
Chapter three will outline matters concerning the research philosophy, design and execution chosen for the thesis to best meet the overarching research goals, answer the research questions and test the research hypothesis. The chapter also addresses limitations and ethical considerations of this research.

# 3 Methodology

## 3.1 Introduction

This chapter explores the methodology utilised during this research, Figure 3.1. It commences with paradigm identification or philosophy (section 3.2), leading to the research design and guidance (section 3.3). An exploration of the data sources, collection tools and procedures used (section 3.4) is followed by an explanation of potential errors and bias within the questionnaires (section 3.5). The limitations identified in this study are discussed (section 3.6), as are the delimitations designed for this project (section 3.7). The ethical considerations arising from this study are explored (section 3.9) with the chapter concluded with a summary (section 3.10).

**Figure 3.1** *Thesis outline (Chapter three)*



## 3.2 Research Paradigms

The research paradigm for this study was post-positivism. The Collins English Dictionary (2019) defines paradigm as '*a model of something, or a very clear and typical example of something'*. Creswell (2018) outlines that a paradigm is synonymous with a worldview. It is through paradigms that a researcher can convey their views and ideas, such as framing the research problems and explaining the reasoning behind the research design and execution. Researchers have relied on a variety of differing paradigm models to explain world-views such as Postpositivist, Constructivist, Participatory and Pragmatist (Creswell, 2018). By using these different worldviews, a researcher can gain insight into their own beliefs, assumptions and biases, and also their potential impact on their research process. By understanding paradigms a researcher can increase clarity in their study design quality through appropriate selection of methods and analysis techniques to conduct the study (Ryan, 2006).

The researcher spent thirty-four years of his police service involved in search and rescue, coordinating and managing over 15,000 searches for lost and missing people throughout Australia. His experiences, success and failures, over 22,000 people recovered alive, 570 people recovered deceased and 327 never located, resulted in the National SAR Manual and the current SAR plan for Australia (Whitehead, 2021). It could be argued that any theories, hypotheses, background knowledge and values inherent in this experience would be influential on what data was observed and collected (Robson, (2002). This experience did provide a unique perspective on search and rescue, and ultimately, the search for disposed victims of homicide.

This study identified commonalities in the disposal of homicide victims to assist in locating those who are not found at the murder site. Combining this aim and knowledge produced through the Disposed Homicide Victim Matrix, the paradigm with the best fit was Post positivism, Table 3.1.

**Table 3.1** *Basic characteristics of four paradigms or worldviews from Creswell and Clarke p40.*

| Postpositivist worldview | Constructivist worldview | Participatory worldview | Pragmatist worldview |
|---|---|---|---|
| Resolve or purpose | Comprehension of component parts | Opinionated views | Effected by micro and macroscopic events |
| Reducing complexity to fundamentals | Consequence of various contributors | Basic beliefs aligned with subject | Problem orientated |
| Experimental study and analysis | Knowledge shaped by history and culture | Inclusive of others | Relates to two or more principles coexisting. |
| Substantiation of premise | Creation of idea or hypothesis | Open to change and variance | Uses real-world experiences |

*Note: taken from Creswell and Plano Clark (2018)*

Knowledge of paradigms is necessary to ensure that there is justification and understanding of the research question. The four worldview paradigms have some commonalities in their elements but take varying views on these. The four elements of paradigms are ontology, epistemology, axiology and methodology. A fifth has been included, reflecting the research language being used. These varying views have an impact on how researchers operate and inform on their research (Creswell & Plano Clark, 2018), Table 3.2.

### 3.2.1 Ontology

That the victim was moved from where they were killed was the ontology, or the nature of reality within the context of disposed homicide victims. Other homicide cases where the victim was not moved or where the victim was taken to a remote location and subsequently murdered do not fit within this study. This was an expansion on the Post-positivism paradigm and the individual elements within it which set the framework for this study. To understand the ontology, the murder was the causal factor while the construct was the victim

disposal, and while neither were always consistent, they were real (Pritchard et al., 2018). Further to this was the reality of the circumstances behind the disposal, such as transport methods, concealment, distances moved, relationships between victim and offender and murder method. This project was not concerned with the whys of the individual components happening; only that they did occur, and that those circumstances could be recorded and analysed. It was this occurrence data that could either prove or disprove any hypothesis formed. The final results were therefore reliable, valid and objective. Collecting quantitative data fitted well within this paradigm as explained in section 3.3 on Research Design.

### 3.2.2 Epistemology

Epistemology or knowledge, in the context of this study and post-positivism, was that the data has been categorised as either a homicide or manslaughter on QPRIME and was therefore recognised as the truth. It was immaterial whether a successful court proceeding resulted from the investigation. Epistemology was defined as: *'the section of philosophy that is about the study of knowledge'* ("Cambridge English Dictionary," 2021). Knowledge is not simply knowing something, it is understanding the circumstances or conditions that make that knowing consistent. A single piece of knowledge can be both true and false under differing conditions, with a researcher using counterexamples to validate the truthfulness or reality of their data. Kvanvig (2003) argued that proper knowledge requires one to effectively understand how their beliefs in the relevant proposals conform with other proposals that one believes in.

Within the context of this research it was also identifying where the true data could be found and how it could be collected. Two sources of data for this study were identified, SAR coordinators for data relating to search strategies, and QPRIME for the homicide data. Both sources represented the knowledge and truth within their respective areas.

### 3.2.3 Axiology

The axiology, in the context of this study, was the data on homicide victim disposal and search strategy usage taken in its rawest format, unbiased and direct, in order for meaningful analysis to be undertaken. Axiology was the study of value, the nature of value and how things are valued ("Cambridge English Dictionary," 2021). The value of anything is totally dependent on the context in which it was being used; to different people the same object may have differing values as a result of its usefulness, intrinsic value or need. The contextual dependency also applies to knowledge and information (Hsieh & Andersson, 2021). In the data collection phase all data within the same subset was treated equally. Bias (section 3.5) was identified and mitigated against where possible to provide an accurate picture of victim disposal and search theory. Having a single data collector ensured that the same value and search methods were used to locate and record the data.

### 3.2.4 Methodology

This study was a quantitative analysis of SAR and victim disposal based on a thematic style categorisation of individual datasets within SAR and homicide. Methodology was the fourth of the elements and was defined as: *'a system of methods used in a particular area of study or activity, usually driven by the researchers beliefs, views and values'* ("Cambridge English Dictionary," 2021). Methodology was once either qualitative or quantitative but recently mixed methods has become increasingly prevalent, utilising the best of both methods (Creswell & Clark, 2018). This study identified that a quantitative methods was best fit, allowing for analysis of the data to address the research questions. In post positivism it was common for the research to be a 'top' down style, starting with a theory and working with data to prove or disprove a hypothesis, as was the case in this study.

### 3.2.5 Rhetoric

Where possible the language used throughout this study has been that of the police, both those involved in homicide and in search and rescue. In most instances the meaning of any terms are consistent with general English language usage, such as victim being the person killed as a result of a homicide. Where terms may be considered ambiguous or not common an explanation has been provided. An example of this is nobody homicide or disposed victim, meaning a murder where the victim has not been located.

Through consideration of Creswell & Clark (2008) in Table 3.2, this project is positioned within the philosophical paradigm of Postpositivism, and the research design choices will be made in alignment with that philosophy.

**Table 3.2** *Elements of worldviews and implications for practice taken from Creswell and Clarke p42.*

| Element | Postpositivism | Constructivism | Participatory | Pragmatism |
|---|---|---|---|---|
| **Ontology (What is the nature of reality)** | Single reality (reject or fail to reject hypotheses) | Multiple realities (provide quotes to illustrate different perspectives) | Political reality (Findings are negotiated with participants) | Singular and multiple realities (test hypotheses and provide multiple perspectives) |
| **Epistemology (Relationship between the researcher and subject)** | Distance and impartiality (objectively collect data on instruments) | Closeness (visit participants at their sites to collect data) | Collaboration (actively involve participants as collaborators) | Practicality (collect data by 'what works' to address research question) |
| **Axiology (What is the role of values)** | Unbiased (use checks to eliminate bias) | Biased (actively talk about their biases and interpretations) | Negotiated (negotiate their biases with participants) | Multiple stances (include biased and unbiased perspectives) |
| **Methodology (What is the process of research)** | Deductive (test on a priori theory) | Inductive (start with partaker views and build patterns, theories and generalisations) | Participatory (involve partaker in the research and engage in cyclical reviews) | Combining (collect both quantitative and qualitative data and mix them) |
| **Rhetoric (What is the language of research)** | Formal style (use agreed-on definitions of variables) | Informal style (write in a literary, informal style) | Advocacy and change (use language to bring about change and advocate for participants) | Formal or informal (use both formal and informal styles of writing) |

*Note: From Creswell & Plano Clark (2018)*

## 3.3 Research Design

Three research questions were developed to address the search for disposed homicide victims (section 1.9). These research questions were:

> *RQ1: Are there identifiable trends or characteristics in homicide incidents where the victim was moved from the incident scene to a secondary location where they were located?*
>
> *RQ2: Are the current search and rescue strategies used to locate lost/missing people, particularly those who may be deceased, effective and if so, can they be adapted to improve the ability to locate undiscovered homicide victims?*
>
> *RQ3: Can the data from the study of disposed homicide victims provide guidance to police to assist in the location of undiscovered homicide victims?*

This section discusses the development and validation of the research design and progression towards a response to the research questions. The design process utilised the research questions, any potential sources of data and how that data could be collected in order to provide, if possible, credible answers to the research questions (Abbott 2013). Thematic or topical analysis had been identified as one of the few skills shared across the quantitative analysis field, and was the basic building block for successful analysis (Holloway & Todres, 2003) in that it put emphasis on the identification, analysis and interpretation of patterns within the data. Within this study it was the relationship between the offender and victim that was the primary theme and it was the outcome of those relationships that was the nexus to research questions 1 and 3. Each homicide relationship was composed of numerous permutations of demographics, and it was theorised that analysis of those would provide patterns in victim disposal behaviour.

This study is multi-phased in that two separate sets of data were being used, homicide and SAR, both of which contributed to the Disposed Homicide Victim Matrix. Using a thematic approach, as identified by Braun and Clarke (2006), it was possible to categorise and group the differing demographic aspects of the data. A theme or set in this context linked the data

to the research question and required a measure of flexibility and experience to determine how much data was sufficient. Table 3.3 identifies the steps or phases of thematic grouping as used in this study.

**Table 3.3** *Phases of thematic analysis*

| Phase | Description of process |
|---|---|
| **1. Familiarisation of the data** | Collecting and recording data in preferred format. Re-visiting the data continuously to refine and clarify ideas. |
| **2. Generating initial codes:** | Identifying the main data features or points of interest and assigning them a code. Methodically collecting and recording subsequent data against the codes. |
| **3. Searching for themes:** | Identifying themes within the codes, and collating relevant data against each theme. |
| **4. Reviewing themes:** | Create a thematic map, an arrangement of like themes, that can guide analysis of the collected data. Where possible, it should encompass the entire data set and those themes that fall outside will be reconsidered for inclusion. |
| **5. Defining and naming themes:** | In the context of the overall narrative, each theme should be refined so as to interlink with other themes within the narrative. Each theme will be named and clearly defined. |
| **6. Producing the report:** | Using the themes and colourful examples within them, the concluding analysis should relate back to the research question(s) and identified literature. The ultimate aim of this process is to produce an academic report that supports or otherwise a hypothesis. |

Note: Adapted from Braun and Clarke (2006)

This study examined characteristics between murderers and their victims with respect to the disposal of the victim's body. Within this research both the offender and victim were units of analysis, that is, the things we examined to enable us to generate précis descriptions and to clarify any differences that may be identified (Babbie, 2020). Familiarisation was the first step in the analysis procedure (Braun & Clarke, 2006), and in this project a measure of familiarity existed with the concepts and outcomes through previous experience in searching for homicide victims, but not with the data sets that were collected.

### 3.3.1 Homicide data source

The first source of homicide data was the Queensland Police Service Annual Report, published in October/November for the previous financial year. The homicide data contained

in the report was broad in nature and did not provide the detail required for this study (Queensland Police Service 2021c).

The National Homicide Monitoring Program, through the Australian Institute of Criminology, is described as *"Australia's only national system with the capacity to monitor homicide rates, facilitate detailed analysis of homicide types and trends and communicate this to key stakeholders"*(Mouzos, 2005). The NHMP provided homicide statistics collected from state/territory police reports and coronial files. A total of 77 variables were collected by the program (Mouzos, 2002).

The Australian Bureau of Statistics also provided broad homicide statistics through 12 variables, publishing them in a format similar to the Police Annual Statistical Reviews, although using nationwide figures (Australian Bureau of Statistics, 2018).

The eight individual police jurisdictions in Australia provide both the NHMP and the ABS with a wide range of policing statistics, including those relating to homicide. Each jurisdiction has an obligation to provide this information in a standard format and there was often a response time of up to 22 months for the data to be collated and forwarded to both organisations. In Queensland this data was drawn from QPRIME. The information available from each of these sources is shown in Table 3.4 (Mouzos, 2005).

This study found that QPIME was the only data source that provided sufficient detail within each homicide incident to make meaningful analysis into victim disposal possible.

**Table 3.4** *Homicide data by source*

| Data provided | Police Annual Statistical Reviews | Australian Bureau of Statistics | National Homicide Monitoring Program | QPRIME |
|---|---|---|---|---|
| **Number of homicide incidents** | For individual reporting states | Nationally and by State | Nationally and by State | √ |
| **Number of offenders** | √ | √ | √ | √ |
| **Multiple offenders** | **X** | **X** | √ | √ |
| **Number of victims** | √ | √ | √ | √ |
| **Multiple victims** | **X** | **X** | √ | √ |
| **Location of the incidents** | Generally, only to a Region or District level | Residential, community, other, unspecified | Residential Street, open area, Other: | √ |
| **Offender sex** | √ | √ | √ | √ |
| **Victim sex** | √ | √ | √ | √ |
| **Offender age** | √ | √ | √ | √ |
| **Victim age** | √ | √ | √ | √ |
| **Relationships** | √ | √ | √ | √ |
| **Weapon used** | **X** | √ | X | √ |
| **Cause of death** | **X** | **X** | √ | √ |
| **Apparent motive** | **X** | **X** | √ | √ |
| **Temporal patterns** | **X** | **X** | Time, day and month | √ |
| **Situational factors** | **X** | **X** | √ | √ |
| **Indigenous status** | **X** | **X** | √ | √ |
| **Victim employment status** | **X** | **X** | √ | √ |
| **Offender prior criminal history** | **X** | **X** | √ | √ |
| **Offender employment status** | **X** | **X** | √ | √ |

In this study, the offender and victim relationship in those instances where the victim was disposed identified 23 different relationship permutations. As an aid for analysis they have been classified into Acquaintances, Familial and No known relationship. Table 3.5 provides a breakdown of these three categories.

**Table 3.5** *Relationship description*

| Category | Description |
|---|---|
| **Acquaintance** | Acquaintance, Co-worker, Employee/Employer, Employer/Employee, Friend, Neighbour, |
| **Familial** | Boyfriend/Girlfriend, Daughter/Father, Daughter/Mother, De-facto, Engaged, Father/Daughter, Father/Son, Mother/Daughter, Mother/Son, Other relative, Same sex relationship, Sibling, Son/Father, Son/Mother, Spousal (Estranged), Spousal (Married) |
| **No known relationship** | No known relationship |

### 3.3.2 Homicide dataset required

The homicide information from the ABS, NHMP and Police Annual Reports was limited in its application to this project, being generally too broad and non-specific. The aim of this study was to identify trends and commonalities in the disposal of homicide victims and therefore a minimum dataset was required to provide sufficient information from which to analyse. Working backward from the aim, seventeen demographics were identified as necessary to enable any trends and similarities in victim disposal to be identified. Information on the relationship, height and weight disparity, weapons used, transport options and time and day would also contribute to victim disposal and decomposition as well as search techniques and were included, Table 3.6.

**Table 3.6** *Homicide dataset required*

| Data required | Rationale for dataset |
|---|---|
| **QPRIME incident number** | To avoid duplication, removed prior to analysis to prevent identification of parties involved. |
| **Offender age** | Comparison with victim may have bearing on disposal |
| **Offender gender** | Comparison with victim may have bearing on disposal |
| **Offender height** | Comparison with victim may have bearing on disposal |
| **Offender weight** | Comparison with victim may have bearing on disposal |
| **Victim age** | Comparison with offender may have bearing on disposal |
| **Victim gender** | Comparison with offender may have bearing on disposal |
| **Victim height** | Comparison with offender may have bearing on disposal |
| **Victim weight** | Comparison with offender may have bearing on disposal |
| **Offender/victim relationship** | The relationship may have a bearing on disposal and concealment actions |
| **Time and place of incident** | Establishes start point and time of offence |
| **Day of incident** | Establishes prime days for homicide |
| **Time and place of victim location** | Establishes distance and direction patterns for located victims |
| **Method of homicide** | The method has a bearing on decomposition, and search techniques |
| **Method of transportation** | This has a bearing on the distance and direction the victim was taken for disposal |
| **Method of concealment** | Method of concealment is tied closely to search techniques and time to locating victim |
| **How victim was located** | This will contribute to knowledge on search techniques |

### 3.3.3 Homicide dataset overview

As previously identified, a victim will provide evidence, the amount of which was almost always dependent on how long they went before being located (Brookman, 2005; DiBiase, 2015b). A timely search will provide the maximum evidentiary value for investigators and prosecutors and will also provide a less traumatic scene for searchers and be more cost effective in the use of resources (Whitehead, 2021a).

Previous studies into victim location had been done using serial killers and involve sex related crimes, mostly rape/murder (Ferguson & Pooley, 2019a; Sea & Beauregard, 2018;

Beauregard & Field, 2008; Häkkänen et al., 2007; Nethery, 2004). This may have the effect of biasing any results as the percentage of sexual homicides and serial rape/murders in Australia was less than 1% of overall homicide incidents according to the Australian Institute of Criminology (Bricknell, 2020a). Bricknell (2020a) also identified that 25% of incidents were recorded as having no identified motive.

Locating data in relation to disposed victim homicides was difficult in Australia as there is no central database that collects that information. The information about reported missing people on the National Missing Persons Coordination Centre web-site alludes to many of those people having been murdered without either their body being located or the identity of any potential suspects (Australian Federal Police, 2020b). This had also been recognised as an issue overseas, particularly in the UK and USA (DiBiase, 2015b). Mouzos (2002) identified that not all homicides are initially reported as such, creating challenges about which type of investigative technique is to be used.

Beauregard and Field (2008c) used previous research to demonstrate that victim disposal may reflect a conscious spatial decision on the part of the offender. They also argued that the distance relationship between the incident location and body location may not be as relevant as first thought, in part because not all offenders move their victims. To temper this, it must be remembered that Beauregard and Field studied serial sexual killers, which may have the effect of skewing the general homicide population with respect to victim disposal. In the recorded criminal history of Australia there had only been 36 known and apprehended serial killers (Kidd, 2011). The study of incident and victim location in this project provided an indication of the types of homicides where there was a greater chance of the victim being moved to another location under conditions prevalent in Australia.

While all homicide scenes are traumatic for searchers and crime scene examiners, locating a victim quickly while they are in a relatively un-decomposed state will offer the most in terms of evidence, but will still be confronting in terms of physical unpleasantness (Whitehead, 2021a). Conversely, locating a body after several months or years does reduce the physical and mental unpleasantness of the scene but also reduces the amount of evidence available due to predation and exposure to the weather in most instances (Bemelmans et al., 2022).

The victim disposal information identified in the literature review was mostly collected from sexual serial killers that had been convicted and were serving sentences, from media articles of the incidents and from the police involved (Beauregard & Field, 2008; Salfati & Bateman, 2005 and Nethery, 2004). In most instances there was not a solitary computer system or site that stored the homicide data, with many differing police jurisdictions being involved. Mouzos (2002) correctly identified that the data for this study was contained in the individual police reports but not necessarily in the Coroner's files or in the data obtained by the ABS or NHMP. The use of QPRIME allowed for unprecedented access to all homicide data that was inputted for the dual purpose of accurately recording the investigative process and to assist in identifying and prosecuting an offender.

There were similarities between disposed homicide victim data and that continuously collected on lost persons through the Australian Lost Person Database. The Lost Person Behaviour as contained in the National Search and Rescue Manual (Whitehead, 2021b), had been found to accurately represent what the majority of missing persons in each category were expected to do. The analysis of disposed homicide victims produced similar information that could form a search strategy and increase the probability of finding those victims currently undiscovered.

### 3.3.4 Search and Rescue (SAR) Questionnaire design

A single study of Canadian Police trained in SAR identified the need to continuously practice for emergent situations but did not look at the techniques used in SAR or their effectiveness (Ferguson et al., 2021). It was identified that the best source of search data and its application in real life situations would be the people who undertook the coordination role in land SAR incidents. It was these police who were using the SAR strategies and coordinating searches on a daily basis.

The Intergovernmental Agreement on the National Search and Rescue Arrangements and Responsibilities, Appendix B of the National SAR Manual, identified that only members of the Queensland Police Service could be SAR coordinators in Queensland (Whitehead, 2021b). All SAR coordinators in Queensland were recorded on the Master SAR list, updated twice annually. These coordinators were all linked via an internal QPS email group which was used to send SAR information out on a regular basis.

Data on search and rescue strategies used in Queensland to locate responsive (alive) and unresponsive (deceased) missing people was required to address research question 2. Information relating to individual SAR incidents was found in QPRIME but not the techniques and strategies involved such as theoretical, statistical, subjective and deductive. Therefore, the SAR questionnaire sought to identify the underlying strategies, their usage, success and whether search techniques could be adapted to the search for disposed homicide victims.

The research design therefore sought to obtain the primary data for analysis through an on-line questionnaire of the SAR coordinators within the Queensland Police Service, as the SAR Authority for the state of Queensland (Whitehead, 2023). As there was no known similar type of study of SAR Coordinators this survey could not be compared with any previous

results but does provide a benchmark for any future work in this area and for the replication of findings.

A questionnaire with fourteen questions was developed. This covered aspects of SAR pertaining to coordinator experience, search area determination, the search for deceased persons and use of the National SAR Manual. A propriety questionnaire in SurveyMonkey™ was set up to collect the data from the 310 SAR coordinators active at the time this study was conducted (Whitehead, 2023) (chapter 4). Pre-testing of the questionnaire on the thirteen Regional SAR Coordinators did not identify any further questions or a need to reduce the questions already included.

The use of the closed ended questions, such as "*Have you used the Reflex search strategy?"* provided the 'what' in relation to search planning but did not delve into the 'how' and 'why'. Further studies and conversations with participants could elicit this information in the future. The shortage of literature on SAR Coordination identified that it was not possible to identify barriers to the use of SAR strategies.

With each question in the SAR Questionnaire seeking a response on a specific aspect of search and rescue, coding was not undertaken. While coding was not required there was grouping of coordinator demographics and search strategies to provide an overall comparison within the findings (Whitehead, 2023). This response to each question was subject to analysis and individual findings (chapter 4).

The questionnaire was distributed twice to allow for those on leave or deployment. The questionnaire sought to answer questions such as SAR role, experience, use of the five SAR strategies, success rate of the strategies and use of the National SAR Manual. Examination of the final data included univariate and chi squared analysis using IBM SPSS ™ v27.

To augment the SAR Questionnaire the Queensland Police Annual SAR report was also used but did not require coding of data. This report was based on the data within the QPRIME system, that is, all the information on missing people searches entered by the coordinating police person. In its rawest form it provided the number and type of missing people, the number located alive, the number located deceased, and the number not located. From this, the effectiveness of the current search strategies for land search was able to be calculated.

The free text data was cleansed through data grouping of like subjects and removing syntax differences for words such as No, NO and no. There was also coding and data grouping of the five questions relating to search strategy usage to enable improved analysis. This involved grouping the terms '*All of the time, Most of the time and Some of the time'* into a single 'yes' grouping for the strategy usage analysis.

### 3.3.5 Disposed Homicide Victim guidance

There is no existing guidance for SAR coordinators to formulate search areas for disposed homicide victims (National SAR Council 2022). An exploration of the data collected for all Queensland homicides, particularly where the victim had been moved, was used to identify commonalities and trends (section 3.3.1). The purpose of the SAR questionnaire was to explore if the current methods of determining where to search for missing people could be adapted for disposed homicide victims (section 3.3.2). This section focuses on the homicide data analysis to determine if a Disposed Homicide Victim Matrix could be developed from the data.

### 3.3.6 Coding and merging of categories

Once the data was collected from QPRIME and entered onto the SurveyMonkey™ data portal it was transferred onto an Excel™ spreadsheet. The data was cleansed of identifying details such as incident number and location and saved as the Master Homicide List. This list

was filtered for those incidents where the victim has been disposed of, 147 in total from 749 homicides. Each incident then had the murder location and disposal location plotted onto Google Earth Pro™ where the straight line distance and bearing was identified and entered into the appropriate columns on the Master Homicide List. Using IBM SSPS™ v.27 the data contained on the master list was analysed. Coding of the homicide data was required at that stage and the codes used can be found in Table 3.7.

The coding categorised like data together when there were a range of differences within a small data set. An example of this occurred in strangulation as a murder method, which had belts, rope, wire, ties and stockings used as the actual tool involved. This type of coding was required as many of the data sub sets had small numbers involved.

**Table 3.7** *Homicide data coding*

| Demographic | Code | |
|---|---|---|
| Offender/victim sex | F = Female<br>M = Male | U = Unknown |
| Offender/victim relationship | A = Acquaintance<br>BG = Boyfriend/Girlfriend<br>C = Co-worker<br>DE = De-facto<br>DF = Daughter/Father<br>DM = Daughter/Mother<br>EE = Employee/Employer<br>ER = Employer/Employee<br>EN = Engaged<br>FD = Father/Daughter<br>FS = Father/Son | F = Friend<br>MD = Mother/Daughter<br>MS = Mother/Son<br>NE = Neighbour<br>NO = No known relationship<br>O = Other relative<br>S = Sibling<br>SF = Son/Father<br>SM = Son/Mother<br>SPE = Spousal (Estranged)<br>SPM = Spousal (Married)<br>SS = Same sex relationship |
| How was the victim located? | M = Medical response<br>N = Never located<br>O = Organised search<br>OF = Offender identified location | P = Police response<br>R = Randomly found (Bushwalker, farmer etc)<br>W = Witness |
| What was the method of homicide? | B = Blade weapon (Knife, machete, axe etc)<br>BL = Blunt trauma weapon (Hammer, metal pipe etc)<br>C = Chemical (Poison, acid, medication, intravenous substance etc)<br>D = Drowning<br>E = Electrical<br>EX = Explosives<br>F = Fail to provide necessities of life (Starvation, dehydration, deprivation of liberty etc) | FA = Fall (Pushed off cliff, building, bridge, aircraft etc)<br>FI = Firearm (Hand gun, rifle, shot gun etc)<br>FO = Firearm other (Hand-made gun, single use gun)<br>I = Immolation<br>M = Motor vehicle<br>P = Physical assault (Beating, one punch etc)<br>ST = Strangulation (Rope, belt, wire etc)<br>SU = Suffocation (Pillow, plastic bag, gag etc)<br>U = Unknown |

| Demographic | Code | |
|---|---|---|
| How was the victim disposed? | C = Concealed in-situ (Not moved and covered by objects at incident location, carpet, plastic sheet, furniture)<br>CG = Concealed on ground (Moved from scene and covered in leaf litter, soil, branches, wood, tin, debris etc)<br>CO = Concealed other (Moved from scene and placed in wheelie bin, industrial bin etc)<br>CR = Cremation<br>D = Dismemberment | I = Interment (Burial at depth, purpose dug grave)<br>N = Never located<br>NI = No concealment in-situ (Not moved and left uncovered at incident location)<br>NM = No concealment (Moved from scene and left on open ground, paddock, roadside etc)<br>S = Shallow grave<br>WS = Waterside (Beach, river/creek bank, dam wall etc)<br>WW = Waterways (In ocean/sea, river, creek, pond, dam, drain etc) |
| Method of victim transport? | N = Not moved<br>C = Carried/dragged<br>M = Motor vehicle (Off/victim) | O = Other motor vehicle<br>U = Unknown<br>V = Vessel |

With some relationship categories having small sample sizes further coding was undertaken of the offender/victim relationship grouping into three larger groups: Acquaintance; Familial and No known relationship. The individual relationship, as shown in Table 3.5 was coded as per Table 3.8.

**Table 3.8** *Final offender/victim relationship categories*

| Code | Sub-group | |
|---|---|---|
| Acquaintance | A = Acquaintance<br>C = Co-worker<br>EE = Employee/Employer | ER = Employer/Employee<br>F = Friend<br>NE = Neighbour |
| Familial | BG = Boyfriend/Girlfriend<br>DE = De-facto<br>DF = Daughter/Father<br>DM = Daughter/Mother<br>EN = Engaged<br>FD = Father/Daughter<br>FS = Father/Son<br>MD = Mother/Daughter | MS = Mother/Son<br>O = Other relative<br>S = Sibling<br>SF = Son/Father<br>SM = Son/Mother<br>SPE = Spousal (Estranged)<br>SPM = Spousal (Married)<br>SS = Same sex relationship |
| No known relationship | NO = No known relationship | |

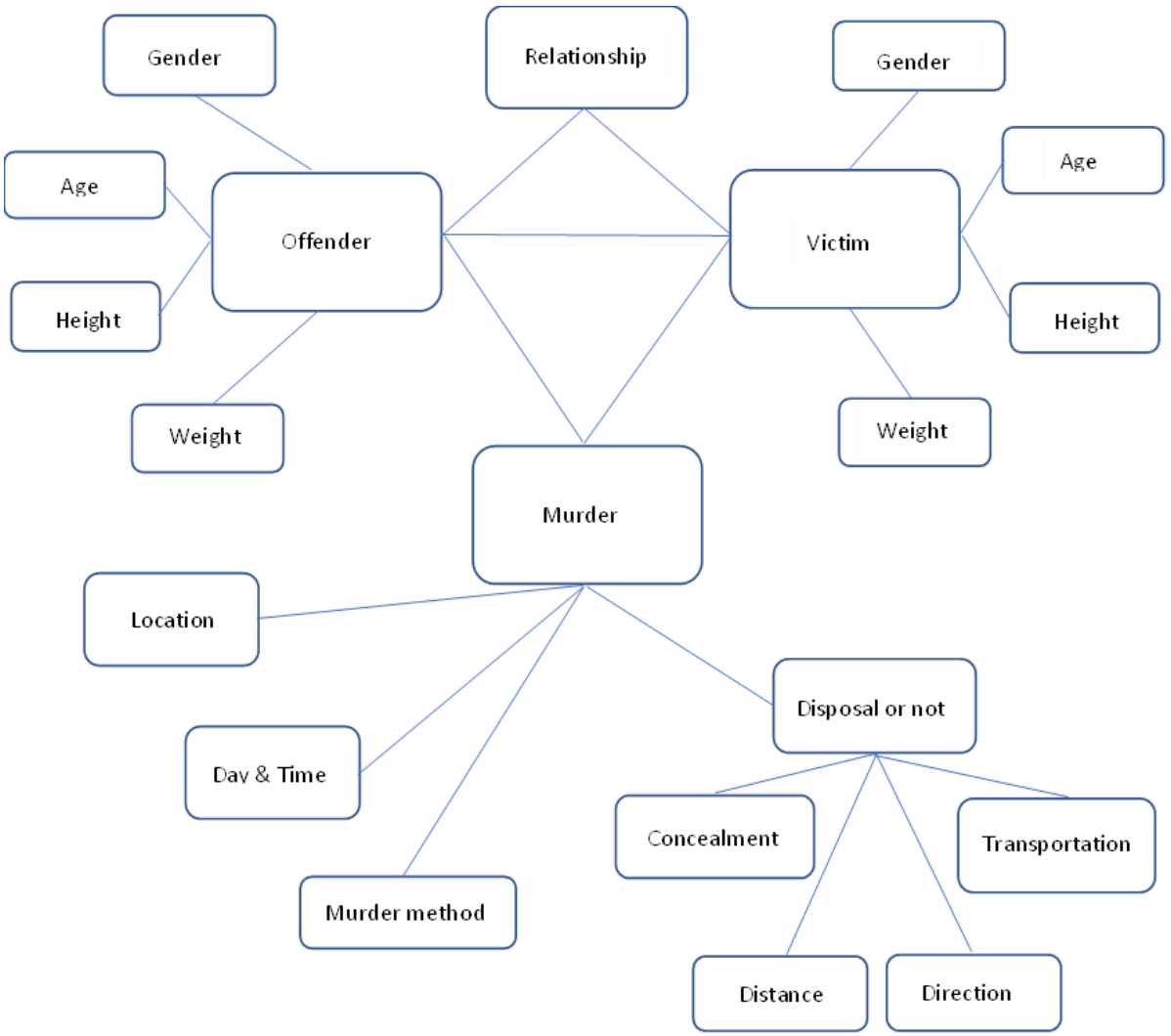
The data transfer from SurveyMonkey™ to Excel™ and subsequent coding was not expected to introduce bias. Findings and the discussion on the SAR and homicide data are contained in chapters 4 and 5 respectively.

### 3.3.7 Homicide Data Categorisation

Braun and Clarke (2006) identified that searching for themes or categories is looking at the broader aspects of the data and how codes may possibly be grouped. Within the homicide data there were three distinct sub-sets identified with their attending sub-categories, Figure 3.2. These sub-sets represent the offender, the victim and the actual homicide incident, all of which were interrelated with threads of commonality.

Reviewing the data was a two-part process, the first of which was to revisit the coded or uncoded data and determine if they produced a logical pattern (Braun & Clarke, 2006). It was sometimes necessary to move data to other sub-sets or to create a new sub-set which better suited the data. Patton (1990) identified that when reviewing patterns they should be considered against the internal homogeneity and external heterogeneity of the research. In other words, there should be both internal similarities within set and some external conglomeration between sets, both of which are evident in Figure 3.2.

**Figure 3.2** *Sub-sets within the Homicide Data*




The second part of the process was to reflect on how the individual ideas related back to the entire data set and whether they provided an accurate picture of the data as a whole. In some cases, this meant reworking the sets or capturing data that may have been missed or not easily categorised into an existing set. The homicide data fitted within three sets and a review identified that while there were three main sets, each contained a number of valid subsets that were based around particular data demographics. This contributed to a clearer visual of the overall research aim and towards a possible solution to the research questions.

A review of the homicide data sets and their relationships as initially pictured in Figure 3.2 resulted in some rearrangement of the sub-sets and a realignment of the structure. Placing the

demographic sub-sets at the center of the offender and victim relationship identified that this was where the victim disposal commonalities lay,

Figure 3.3.

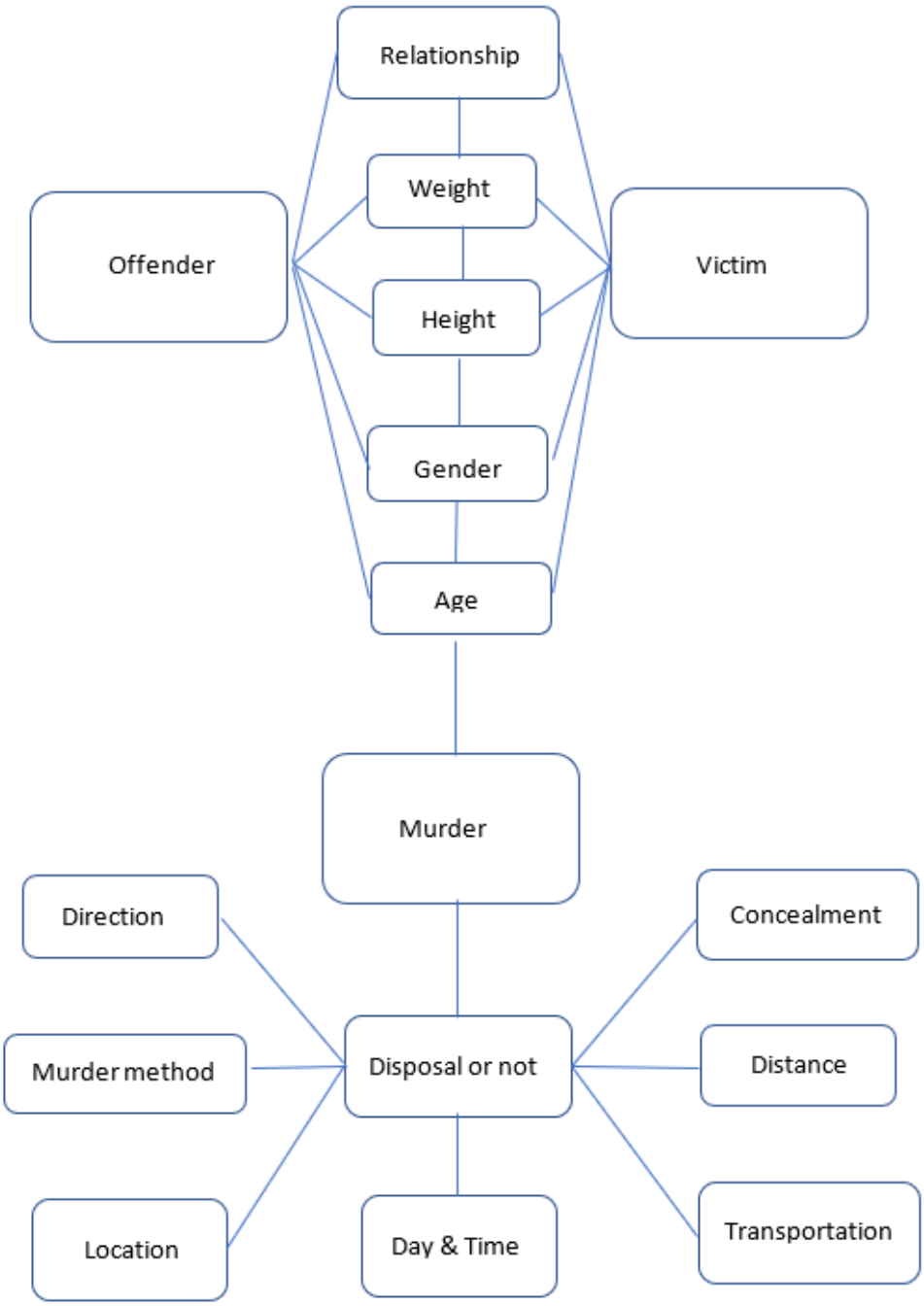
Once the map of the data had been developed it was necessary to define and name the sets according to their content (Braun & Clarke, 2006). This was basically identifying the crux of each set and therefore the data that it described. One of the major considerations was to not expect a set to be all encompassing, but rather that it should be similar in data composition and simple in nature. Defining a set was to tell its narrative, ensuring there was little or no duplicated effort with other themes, and how that related to the research questions. Braun and Clarke (2006) also offered a validation of the definition of each set, that is, whether it could be concisely described in one or two sentences, and if not perhaps further fine-tuning was necessary in the review and definition phase. Braun and Wilkinson (2003) also suggested that many sets may also have sub-sets and that it was fitting for this to occur as some data may not be suitable or in sufficient quantity for a set of their own. This was evident in

Figure 3.3 as each data set has been described in one or two words.

The production of the story or thesis was the final of Braun and Clarke's (2006) phases, around which all of the findings were presented. It is this story that identified the value and soundness of the data analysis and could link the data sets into a cohesive, succinct and stimulating tale. Within this journey there must be a compelling argument or arguments that

relate back to the research questions, not just through repetitive retelling of the data, but via a persuasive and logical description using powerful examples from the data that illustrated a solution of the identified problem. In this instance it was the identification of distinct patterns within the disposal of homicide victims that might aid in locating disposed homicide victims.

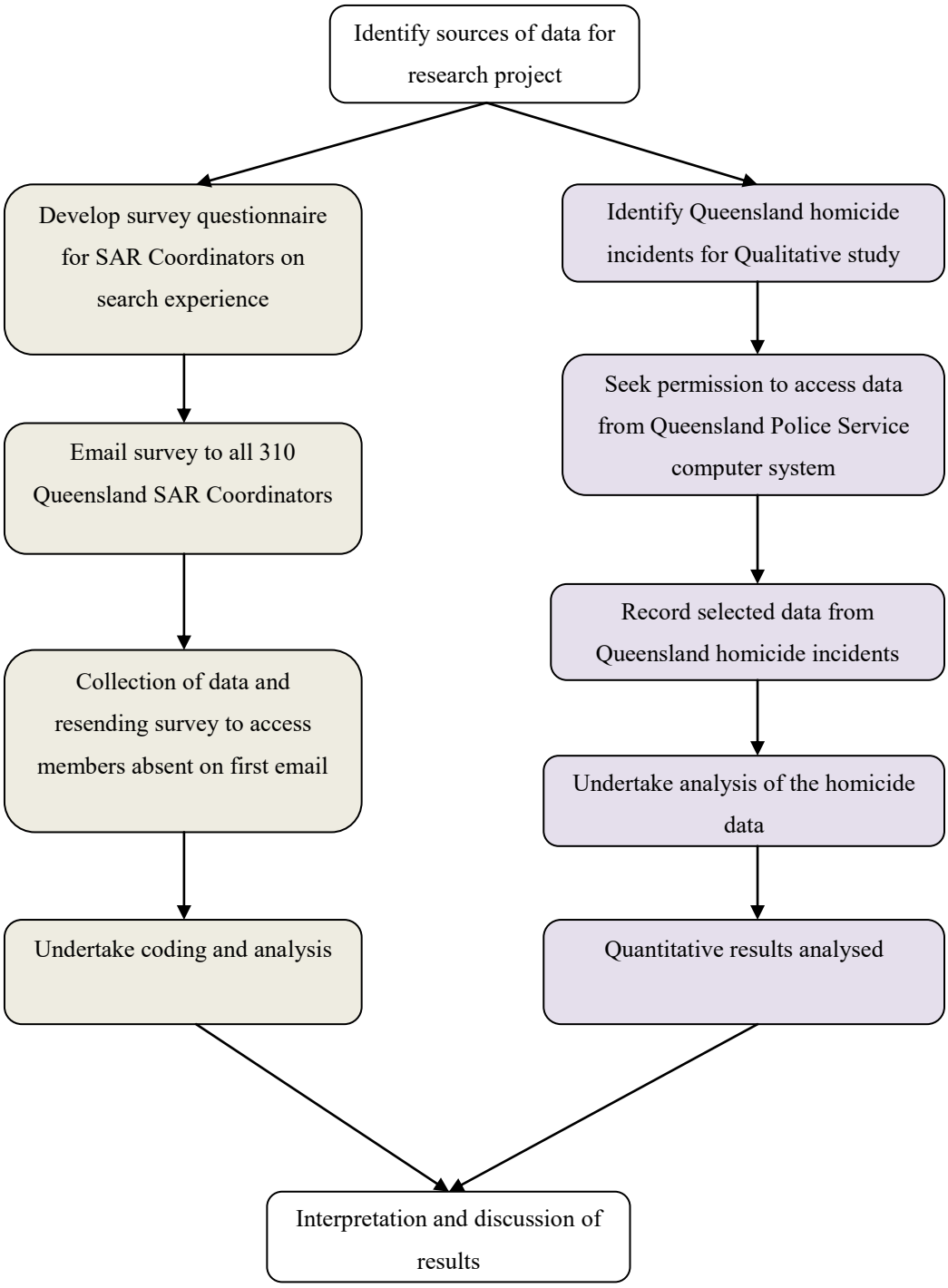
**Figure 3.3** *Refined sets and sub-sets within the Homicide Data*




**Matrix development**

Both the homicide and SAR data were analysed in parallel, with the ultimate aim of developing the Disposed Homicide Victim Matrix (DHVM). The proposed design flow is provided in Figure 3.4.

**Figure 3.4** *Flow chart for development of the matrix.*




The commonalities in factors that determine the disposal site of homicide victims has been the subject of limited research. While there were studies relating to sexual serial killers and victim disposal and some limited studies in Australian Korea, Finland and Germany the

literature did not reveal any previous research or recorded data that covered all homicide incidents within an entire state or policing jurisdiction (section 2.5). It was therefore identified within this research design the need for primary data, that is, data obtained directly from those involved in homicides. This data, information on the offender, the victim, and the subsequent actions involving the deceased victim, was only to be found within the QPRIME computer system of the Queensland Police Service (Queensland Police Service, 2022a).

### 3.3.8 Questionnaire Pretesting

Conducting a pilot study, or pre-testing the data collection methods, was a way of refining the process before moving ahead with any study (Krosnick, 2018). A pilot study should not be confused with a feasibility study as the latter is used to identify whether a study can be undertaken and what the major components may be, whereas the pilot is a miniature of the proposed study (Krosnick, 2018). A pilot test will often identify deficiencies in question structure, ambiguity, bias and any difficulty in understanding the wording, often saving time through not having to redo research and may give the researcher an air of competence from the respondents (Morin, 2013).

Pretesting of both sets of data through pilot studies were undertaken during this research. The SAR questionnaire was initially sent to the thirteen Regional SAR coordinators for their feedback and comments. As no suggestions were forthcoming the questionnaire was then adopted and forward to all SAR coordinators. The homicide data collection tool was used on five homicide incidents initially. A review was conducted and it was identified that two further variables relating to offender/victim height and weight should be included. The questionnaire was modified with data collection then proceeding.

With respect to the SAR coordinator questionnaire the use of the SurveyMonkey™ method of questioning was familiar among the QPS as universities often seek information from

police. It had also been used prior to this study for SAR purposes during the rewrite of the National SAR Manual to seek input into the new format (Whitehead, 2016).

### 3.4 Research Execution

Using the ontological and epistemology of post-positivism the quantitative data collection was via a logical systematic process (Abbott, 2013). The literature review and research design identified the collection of data through a single source of truth (Zhao, 2012) for each of the SAR strategies and homicide, SAR coordinators and QPRIME respectively. This data extraction was undertaken prior to any analysis and testing of theories (Bryman et al., 2008). The research questions provide sequential structure for the survey as outlined in Table 3.9.

**Table 3.9** *Homicide victim project qualitative and quantitative focus*

| Research **Question** | Data collection **method** | **Content Focus** | **Respondent Group** |
|---|---|---|---|
| **RQ1** | Quantitative | Homicide demographics / biometrics from QPRIME entries | All homicide incidents in Queensland from 2004-2020 |
| **RQ2** | Quantitative | Assessment of current search and rescue techniques | SAR Coordinators within the QPS |
| **RQ3** | Quantitative | Matrix of disposed victims of homicide | All homicide incidents in Queensland from 2004-2020 |

#### 3.4.1 Search and Rescue Questionnaire Execution

Information gathered directly from search coordinators would provide a SAR system overview, which strategies were more effective and whether new improvements could be explored. It was theorised that the SAR questionnaire would identify the viability of adapting current methods of search to the search for disposed homicide victims. A SurveyMonkey™ questionnaire was developed using the questions outlined in Appendix 3.

Both open-ended questions, allowing for a free text response, and close-ended questions, where there were yes/no response options, were considered for the questionnaire (Reja, 2003). As quantitative data on search strategy usage was being sought, close-ended questions were chosen with the exception of a single open-ended question seeking ideas or opinions to improve searching. Bias may result from closed-ended questions due to the limited response options (Reja, 2003). The questionnaire was designed to inform on the usage rates of the strategies that determine search areas, and therefore the success of SAR operations. The questionnaire was internally emailed twice to every SAR Coordinator in Queensland. It was sent twice to capture those who may have been on leave or deployments on the first sending.

Being empirical in nature, the data gathered from the SAR coordinator questionnaire did not require coding except for a single question. The exception being the single free text field which was coded into five separate response topics: a negative response; combined SAR practices; improved local knowledge; increased use of SAR technology and social media. The researcher was familiar with data content and the outcomes resulting from searching. The SAR questionnaire was in alignment with the positivist philosophy in that coordinators were the single point of truth for this data.

It was recognised that bias may be inherent within the SAR coordinator entries, although this was balanced by seeking a response from the entire SAR coordinator cohort (Delgado-Rodriguez & Llorca, 2004). The SAR data collected for this study was limited to specific question driven responses that required a yes or no response, lessening the chance of bias. There was a possibility that the data was transcribed incorrectly but this could be limited through cross-checking against QPRIME SAR records. Further information on the questionnaire can be found in chapter 4.

### 3.4.2 QPRIME Data Collection Execution

The primary source of homicide data for this study was QPRIME. Each QPRIME homicide case consisted of up to a thousand entries covering all aspect of the investigation by police. From this storage of information, seventeen factors were identified as being relevant to this project and can be found in Appendix 6.

The QPS has strict procedures surrounding the use of QPRIME, aimed at preventing unauthorised access to information that a police officer has no legal need for (Queensland Police Service, 2021a). In order to access homicide incidents for this study, approval was sought from both the QPS Research Committee and supervising Assistant Commissioner (McCarthy, 2018). Written approval was provided and QPRIME entries were entered into the data collection tool over a two-year period. All data was collected from the State Search and Rescue Coordinator's office computer as there was no external access to QPRIME once away from the office environment.

All data entry was undertaken over a two-year period, either before or after a rostered shift, by a single researcher, contributing to consistency in data collection. The approval to access the homicide data, although given for this project, only named the single researcher. Any deviance from the approval criteria would abrogate the agreement and potentially leave the researcher open to criticism through access to data that was outside the scope of this study and potential penalties in accessing unauthorised data under the Police Service Administration Act 1990.

The collection of data from QPRIME is the basis for a documentary analysis, measuring the variables associated with disposed victim homicides. This is a descriptive analysis, seeking averages and frequencies with no tests of statistical significance which fits with the number

of incidents assessed and is breaking new ground within this field. This falls within the grounded theory definition, collecting data continually to develop a comprehension of the current situation (Makri, 2021). There is no response rate for the data collected from QPRIME as there were no participants, but complete population of homicides from 2004-2020 was examined rather than a sample of that population. In other words, there were no homicide cases excluded from this study. Within each homicide entry were links to the offender, victim, location and all the other reports, statements and scientific information used by investigating police. All the information identified in Appendix 6 was located within each case, with biometrical data being the easiest to find. Other information, such as location of the victim and cause of death required reading many narratives and cross checking with post-mortem results and media articles. The entry of data directly into the electronic collection tool precluded the need to print case files. Variable items such as ages and days of the week were collected in either five year brackets or as variable options. In those instances where multiple offenders were involved, the biometrics of the identified lead killer was taken for the analysis.

### 3.4.3 Non-Queensland Disposed Victim Data Collection

To conduct a comparison of Queensland and non-Queensland homicide victim disposal, incidents from all other states and territories were sought. As assistance from the other Australian police jurisdictions was not available those homicide incidents were located through the National Missing Persons Database and The Red Heart Campaign. Once potential victims were identified further searches were conducted through court documents, inquest findings and media reports. The difficulty encountered with the search for suitable data was that there was no single source of homicide incidents within Australia. While both the Australian Bureau of Statistics and the National Homicide Monitoring Program kept a

large database on homicide incidents it was impossible to identify any single incident to obtain demographic information.

Using the Queensland percentage of homicides where the victim was disposed, 19.6%, as the base, there were approximately 730 homicides nationally involved the movement of the victim since 2004 (ABS, 2020). With 147 already accounted for in Queensland this would leave approximately 583 that would fit within this study. Based on Queensland statistics there would also be approximately 70 of these victims that have never been located.

The site that provided the majority of information was The Red Heart Campaign, an internet site dedicated to the memory of homicide victims (Moody, 2022). The National Missing Persons Database was the primary source for victims believed to have been murdered. Initially, a large number of homicide incidents were located and the basic information was entered onto an Excel Spreadsheet. As the investigation continued it became clear that while there were many homicides incidents, the majority had very little confirmable demographic data related to them. In some incidents there were only one or two newspaper articles relating to the death, and these did not contain sufficient data to progress further.

### 3.4.4 Questionnaire administration

The administration of both data sets for this study was done with an internet link to SurveyMonkey™. SurveyMonkey™ was chosen because of its familiarity, other systems such as Qualtrics would also have been suitable. The provision of an internet link allowed the SAR questionnaires to be sent to individual SAR coordinators via the internal QPS email system. A single access internet link was used for the homicide data collection.

SurveyMonkey™ was password protected for security and had the functionality to meet the requirements of the research design. The quantitative data was entered for storage between 2018 and 2020, making this system apt for the administration of this project. Once the data

entry was completed all responses were imported into separate Excel™ spreadsheets where the data underwent an initial cleansing. At the completion of the cleansing process the data was forwarded to a colleague for error checking prior analysis commencing.

The analytic software program, Statistical Package for Social Sciences™ (SPSS v27), was used to check the data for errors such as duplicate entries, missing data, extreme or odd values and inconsistent data. The necessity of cleansing is to remove the 'dirty' data, data that by definition is incomplete because of errors, inaccuracy or inconsistency (Ridzuan & Zainon, 2019). In the SAR Coordinator survey 72 entries were removed as those coordinators had not yet coordinated a SAR incident and could not, therefore, complete the remainder of the questionnaire. No homicide cases were removed from the 749 cases obtained from QPRIME. After cleansing, the data was ready for analysis, the results of which are contained in chapters four and five.

### 3.5 Survey Errors and Biases

Questionnaire errors and bias could arise at every stage of the research, Pannucci (2010) identified pre-design, during design and after design as the areas of most concern. To avoid a flawed questionnaire and associated outcomes it was imperative that consideration be given to the alignment of the questions with respect to the aims of the research questions, and to adopt the correct questionnaire techniques. A further consideration was the targeted respondents, and while it was not always possible to survey 100% of a population the respondents should ideally be a representative sample of the community (Taherdoost, 2017).

The number surveyed is a direct relationship with the information to be gathered, the size of the population and what would constitute a reasonable sample, and the need to focus resources to achieve an optimal result. Errors can creep in when the there is a differing

composition between the population and the sample, and researchers must be cognisant of the need to ensure an even spread where possible.

In both data sets there were a defined number of potential respondents, the cohort of 310 SAR coordinators and 749 homicide incidents. It was anticipated that a 100% response rate among SAR coordinators was not likely to happen, but a representative sample was possible. With respect to the homicide incidents, the entire dataset of reported murders was able to be included, providing a 100% response rate.

Acquiescence bias is where participants provide responses that tend to agree with the research statements and is sometimes also known as agreement bias. It was not considered relevant to the SAR coordinator questionnaire as it was seeking information on experience rather than opinions or thoughts. Nonetheless, to mitigate against the potential to impact on the questionnaire it was subsequently designed without any leading or guiding statements that could lead to any agreement by the respondents (Sarniak, 2015). It was not considered that the homicide data would be subject to acquiescence bias as it was based on factual evidence.

### 3.5.1 Search and Rescue questionnaire error and bias

Coverage error was considered a possibility in the initial planning stages of the research, and it was identified that all coordinators were contactable via internal police email. As almost all police are issued with personal work iPad's, email was deemed the most efficient and appropriate method of survey contact. The number of SAR coordinators was a discrete set within the police and the entire cohort was able to be accessed.

Details of all SAR coordinators were contained on the Master SAR list, which was also linked to a group email list for ease of transferring information with the SAR trained personnel. All coordinators were provided with the opportunity to voluntarily participate in the questionnaire. Surveying only SAR coordinators and the careful design of the questions

was done in response to the total survey error paradigm as argued by Biemer (2017), and was achieved through the identification of potential sources of error and mitigating them as far as possible and ensuring each coordinator only responded once.

Post questionnaire effects can include citation bias and confounding. Citation bias is the tendency of the researcher to lean towards those articles and/or questionnaire responses that are in agreement with any expressed outcomes rather than those that are neutral or negative. Confounding is the influence of a third or other variable which can distort the outcome of research (Pannucci & Wilkins, 2010). There was no known previous survey of SAR coordinators to which a comparison could be made; this study was original benchmarking research. While considered, these biases were not thought relevant to this research.

### 3.5.2 Homicide data error and bias

QPRIME commenced in 2004, making this year a logical start point. From that time forward all homicide incidents were captured in a single location that was accessible through a QPS computer. Prior to 2004, individual homicide incidents were managed from the district in which they occurred, presenting a problem in gathering data and ensuring that all incidents were captured. The data collection end was December 2020, as incidents after this time were often still under investigation or sub-judice due to court proceedings.

While every endeavour was undertaken to ensure that all recorded homicide incidents were captured within the study there was a chance, albeit unlikely, that an incident was missed. The two homicide codes of 0111 and 0114 were used throughout the data gathering process. QPRIME has a rigorous overviewing and checking system to prevent errors in recording data and this comprises an initial check of all entries by the relevant shift supervisor. Once checked and verified it is forward to the Officer in Charge of that station/section for perusal and verification, and then on forwarded to the Regional Crime Manager for final

confirmation. A mistake in classification is unlikely to have been missed in the checking process.

Mouzos (2005) identified that there may be instances of homicide that are not recognised as such, including reported missing people, deaths in hospital and aged care facilities and gang or criminal activities. After investigation or through other means such as a chance finding of a victim these incidents may be recorded as homicides, otherwise they will be miscategorised. Unfortunately there is no way to determine which incidents these are until evidence is located, and as such they cannot be included within this project.

There was a possibility of data entry bias by individual officers involved in each case. Background, history and training of officers may have introduced bias towards particular offender and/or victims which may affect the quality of data entered into QPRIME. This has been balanced by the large numbers of officers who contribute data to any one incident and the vetting and checking of data quality by supervisors and superiors.

Acquiescence bias was considered relevant to the homicide analysis as it was a direct input of data collected from previous homicide incidents. Nonetheless, to mitigate against this it was designed without any leading or guiding statements and the data was collected by a single researcher (Sarniak, 2015). There were no after-survey effects identified to mitigate against. There is no known previous survey of homicide incidents with respect to victim disposal to provide a comparison; again, this study was original benchmarking research.

### 3.5.3 Replication of findings

QPRIME became the single source of homicide data used for this research. The data in QPRIME was better in quality, depth and detail, with most demographic information contained within each homicide entry. The Australian Bureau of Statistics and the National Homicide Monitoring Program within the Australian Institute of Criminology were initially

used as sources for demographic information, but it became clear that the data available was too generic in nature and could not provide adequate responses to the data required.

Within research it was accepted that any finding should be able to be replicated, through a repeat of the original study with the arrival at the same conclusion (Raloff, 2015). Doing so contributes to the strength of the original research and reduces the possibility it was a chance event. It was further identified by Raloff (2015) that despite efforts it is not always possible to reproduce the same result as the original study. A study by Fang (2012) found that misconduct and fraud occurred in many published papers, requiring retractions by the authors. The study of over two thousand retracted papers from Pubmed identified that just over one fifth were from errors, whereas fraud, duplication and plagiarism accounted for over 65% the remainder (Fang, 2012).

While there is no suggestion of errors or fraudulent intent it has been identified that replication of the original research data for this study would be difficult. Police officers have privileged access to QPRIME, and only to individual entries where there is an official need for access (Queensland Police Service, 2021a). Unless future researchers were serving police officers there would be little opportunity to gather this data again. The sole means would be to apply to the QPS through the Research Committee for this information to be supplied. Due to the labour intensity of locating this data within QPRIME, approximately 430 hours for this study, an application of this nature may not be supported. Although court case files and media articles such as newspaper stories and clips from the news services were used to validate or verify some of the information contained within QPRIME it was clear that the only complete source of detail was the police QPRIME. Notwithstanding the above, it would be possible to replicate of the findings of this study using the data collected from QPRIME.

### 3.5.4 Known data set limitations

At the commencement of this project, it was envisaged that all homicide incidents Australia-wide would be included. To this end a presentation was made to the 2014 National Search and Rescue Council seeking their support and requesting that the chair of the Council write to each Police Commissioner advising of the research (Lloyd, 2015). The net effect of this letter was inquiries from the Australian Federal Police, Western Australian Police and the New South Wales Police Force as to what data was required.

Each jurisdiction was provided with the homicide demographics required, and over a period of two years all jurisdictions informed that the collection of this data was not easily done and they declined to participate in the research. The research was then centred on Queensland and approval was gained from the QPS to collect the required data from QPRIME. This had the effect of reducing the data set from approximately 3,500 homicide incidents to the 749 that occurred in Queensland. There is an opportunity for further research by utilising all Australian homicide incidents.

In a number of instances some of the data was unavailable, the most common being an unknown offender and those instances where the victim was never located but nonetheless a murder was able to be proved in court. These particular entries were left blank and are further discussed in chapter five.

## 3.6 Limitations

There are a number of possible limitations identified as part of the methodological approach taken. Firstly, the small number of homicides in Queensland and the number of these where the victim had been disposed; secondly, the possible response rate to the surveys; thirdly, Queensland may not be representative of Australia as a whole; and lastly the measured distances of victim disposal.

Queensland has approximately 19% of Australian reported homicides, an average of 54 annually during the period of this study (ABS, 2022). It could be argued that the small number of homicides would be insufficient for a quantitative analysis. Queiros et al (2017) suggested that there is no ideal sample size, it is more related to the methods of data collection and the response rate.

Hendra et al (2019) suggested that editors considered a 60% or less response rate as marginal and not always acceptable. The high response rates were aimed at limiting non-response bias within data. Due to QPRIME limitations in searching homicide incidents by victim disposal, all recorded Queensland homicide incidents during the 2004-2020 period were searched to establish victim disposal. This represented a 100% data collection response rate for this study. A 70.1% response rate was achieved for the SAR coordinator questionnaire, sufficient for meaningful data to be obtained (Hendra & Hill, 2019).

It could be argued that any Queensland findings and conclusions would not be applicable across the whole country. This is countered by the homogeneous nature of the Australian population and the relative uniformity of populated areas throughout. As identified by Hendra et al (2019) a comparison of the survey respondent sample and full sample would produce a zero difference as the full sample was initially conducted, representing a nil impact bias.

The calculated distances used in the study were Euclidean, in line with those used in the Lost Person Behaviour (LPB) models, that is, a straight line between the murder site and the victim location site. The Manhattan distances, used in geographic analysis, is the sum of all the real straight line distances between both sites (Ranjitkar, 2016). In reality there can be more than one Manhattan distance. The Euclidean distance was used as the route was not

always recorded in the homicide case record. Further studies could focus on the Manhattan distances to enhance the matrix.

Where possible, mitigation strategies were implemented to limit any effects on the analysis and results, Table 3.10. Survey errors and biases with respect to the quantitative study were considered within the limitations (Smyth et al., 2010).

**Table 3.10** *Survey limitations and mitigation*

| Effect | Limitation | Mitigation strategy |
|---|---|---|
| Duplication of homicide data | Data collected more than once | Recording of case file number to ensure no duplication of data |
| Missing homicide data | Not collecting all available data or missing cases. | Collecting data in a systematic process, year by year, and checking with case numbers. |
| Recording of homicide data | Mistakes in transferring information to spreadsheet | Proof reading data on transcription prior to moving to next incident. |
| Coding of data | Incorrect coding of data | Checking of coding on each entry prior to moving to next entry |
| Type of questionnaire used | Not appropriate for data required<br>Lack of response | Simple on-line questionnaire<br>Limited questions |
| Survey population size | Lack of representation of whole population<br>Unknown distribution | Entire demographic group surveyed.<br>Individual membership directory used. |
| Over representation | Response bias<br>Unknown motives | Entire demographic group surveyed.<br>Individual membership directory used. |
| Use of email for questionnaire | Deleted without reading<br>Incorrect email address<br>No access to email | Subject highlighter<br>Individual membership directory used.<br>Use of internal email system |
| Sampling email users | No 'telephone' book of email addresses | Use of internal contact lists<br>Use of master SAR list |
| Mailing questionnaires | Cost<br>Regular movement of responders<br>No guarantee of receipt | Email is the preferred individual communication method in the QPS<br>Comprehensive email system. |
| Questionnaire structure | Does not seek appropriate data<br>Allows for too much interpretation<br>Incorrect or limited response options | Pre-testing where possible<br>Identify expected outcomes to design questions. |

## 3.7 Delimitations

Delimitations are the boundaries set by the researcher to establish the scope of the project in deciding what to or not include (Simon, 2013). There are three (3) delimitations in this

research forming the contextual boundaries. They are the exclusion of mass murders, serial killers and all homicide incidents where the victim was not moved.

There is no formal Australian definition for mass murder, but the FBI defines mass murder as: *'murdering four or more persons during an event with no "cooling-off period" between the murders'* (Hickey, 2003). The reason for excluding this category is that historically the victims are not moved from the incident site and no attempt is made to conceal them. This does not apply to war or terror related actions as there are many examples of mass murder and mass graves as a means of concealment (Rees, 2017). There were three mass murders during the period of this study although the victims were not moved.

Serial killing has no formal definition in Australia. The FBI defines serial killing as: *'the unlawful killing of two or more victims by the same offender in separate events'* (Reid, 2017). The reason for excluding this category is two-fold; serial killers have tended to dispose of their victims in similar manners, if not the same location, and serial killers have a high propensity of associated sex activity as part of the killing ritual (Beauregard, 2008a). This may have the effect of distorting any final analysis. Much of the literature relating to victim disposal is through studies of sexual serial killers (Beauregard, 2008b; Chai et al., 2021; Field, 2008a). During the time of this study there were no identified serial killers operating in Queensland.

The third category of excluded incidents was those where the victim was not moved from the location where they were killed. For this study this meant beyond the house, apartment or locale of the murder. There were a number of instances where the victim had been moved within a house or apartment, such as from a lounge room to a bedroom, which were also not included as all victims were located during the initial inquiries. This study was based around

similarities in victim disposal; those that were not moved did not provide any additional information to this research.

### 3.8 Data Testing

The testing was initially undertaken with new cases as they were reported, comparing the location of located disposed homicide victims against the findings within the Disposed Homicide Victim Matrix (DHVM). Field testing resulted when the author was contacted by investigating detectives in eight disposed homicide victims cases involving nine victims. Information relating to the suspect and victim, including relationship, height, weight, method of homicide, incident location and transport options, was provided by these detectives and a comparison was made against the DHVM, with suggestions being made as to the disposal of the victims and potential areas to search. It was explained that this theory was in its early days of development and further work may be required for validation. Subsequent searches of various periods of time were conducted.

The matrix did not work on a single occasion and was partly correct on a further occasion, the victim being located beyond the distances predicted but within the direction, distance from a road and concealment method. Seven victims were located as predicted. This is further explained in chapter 7.

Prior to field testing a comparison of Queensland data against homicide data from the other states and territories was identified as a means of validation. Without access to interstate police computer systems, homicide information was collected from the National Missing Persons Database and The Red Heart Campaign. The same inclusion and exclusion criteria were applied and a total of 147 disposed victim homicides with sufficient data were eventually located.

A comparison of the results of the data analysis may indicate that the Queensland data was representative of the national data, and therefore the Disposed Homicide Victim Matrix would be applicable nation-wide, as the field testing has shown.

### 3.9 Ethics

James Cook University adheres to the Australian Code for the Responsible Conduct of Research and has approved Ethics Application, H7197, to conduct this research. During this research there were no clinical or experimental trials on humans or animals, nor were there any face to face interviews or interactions with any survey respondents.

#### 3.9.1 Ethical Practice

The National Statement on Ethical Conduct in Human Research identified ethics as:

> *'All human interaction, including the interaction involved in human research, has ethical dimensions. However, "ethical conduct" is more than simply doing the right thing. It involves acting in the right spirit, out of an abiding respect and concern for one's fellow creatures.'* (National Health and Medical Research Council, 2018).

Under this Statement human research is defined as '*research that is conducted with or about people, their data or tissue'*. It may also involve some access by researchers to oral histories, personal documents or other materials, and to access to their information (identifiable, re-identifiable or non-identifiable form) as part of an existing published or unpublished source or database (National Health and Medical Research Council, 2018).

Ethical approval was gained after establishing the background and the benefits to the community of this research. This included a detailed description of homicide and SAR information required; a clear statement reflecting the volunteerism for the questionnaires and

the anonymity thereof. It was identified that there was no requirement for face-to-face interviews and that there were no clinical trials with any participant. The ethical issues identified for this research are summarised in Table 3.11.

**Table 3.11** *Ethical practices for research*

| Ethical issue | ACRCR / JCU Guidelines | Action by Researcher |
|---|---|---|
| **Storage and security of collected data** | ACRCR Management of data and information in research, section 3.1 & 3.2; JCU Code of Responsible Conduct of Research; JCU HDR Code of Practice | Security measures implemented. Data stored both electronically and in hard copy |
| **Researcher knowledge of computer software** | ACRCR Management of data and information in research, section 2.1 Provision of training for researchers; JCU Code of Responsible Conduct of Research, Part 2 Section 4 Responsibility to provide ongoing training; JCU HDR Code of Practice, section 2.2.3 Development of transferable skills | Attended face-to-face instruction and on-line courses in SPSS, Endnote. |
| **Anonymity protection of participants** | ACRCR Management of data and information in research, section 3.2 Managing confidential and other information; JCU Code of Responsible Conduct of Research, Part 2 Section 4 Responsibility to provide ongoing training; JCU HDR Code of Practice, section 2.2.3 Development of transferable skills | The survey was cleansed, and the identity of participants was removed prior to usage. The QPRIME data is unidentifiable as no names or personal details where collected. |
| **Informed consent** | ACRCR Management of data and information in research, section 3 Responsibilities of researchers. JCU Code of Responsible Conduct of Research, Part 3 Section 22 Responsibility to retain clear and accurate records; JCU HDR Code of Practice, section 2.2.7 Conduct research in an ethical manner | Low/Negligible risk research project, JCU Ethics application H7197. First question of the SAR survey sought consent from each participant. |
| **Reputational risk** | ACRCR Management of data and information in research, section 2.4 Safety, security and confidentiality; JCU Code of Responsible Conduct of Research, Part 2 Section 17 Responsibility to comply with relevant ethics guidelines; JCU HDR Code of Practice, section 2.2.7 Conduct research in an ethical manner | Personalised emails were sent to SAR coordinators. Data stored securely and not available to third persons. |
| **Permissions sought to access data where needed.** | ACRCR Management of data and information in research, section 2.4 Researchers are informed of relevant confidentiality agreements and restrictions; JCU Code of Responsible Conduct of Research, Part 2 Section 17 Ensure appropriate approvals are obtained; JCU HDR Code of Practice, section 2.2.5 Obtain permits where necessary. | Approval was obtained from both the QPS Research Committee and Assistant Commissioner to access QPRIME data. |

Buchanan et al (2009) identified issues relating to the collection and storage of data electronically, with particular emphasis on the security of that data. Prior to the internet and electronic surveying this was not of great concern but with most recent research being based partly or entirely on information gathered over these new mediums, the familiarity and

knowledge of software, electronic technology and protocols surround access and informed consent by the researcher is paramount. An adjunct to this is the potential for reputational risk to both the researcher and university when there is a lack of understanding of regulation compliance for online data usage (Buchanan & Hvizdak, 2009). This research conforms to the Australian Code for the Responsible Conduct of Research and the James Cook University Ethical Guidelines.

### 3.9.2 Ethic Sections

There were three sections within the ethics of this project: (1) The survey of SAR Coordinators and the analysis of the results; (2) the documentary analysis of the QPRIME data, and (3) the documentary analysis of the non-Queensland data.

The former section, SAR Coordinator survey, differed from the latter two in that it was the only section to involve a survey questionnaire of actual people. The latter two sections required collecting data that had already been entered into various computer systems.

### 3.9.3 Ethical Considerations

The three basic ethical approaches; virtue; consequentialist and deontological were considered as part of this project (Chonko, 2012). The first consideration was the virtue of undertaking this study and the subsequent publishing of data and findings. The development of a matrix that could assist police in locating disposed homicide victims was the project output, with the flow on effects of closure for the co-victims and aiding in achieving justice for the wider community (Chonko, 2012).

The second consideration, the consequences of this study, identified that it would be possible for a homicide offender to inform themselves of the matrix. This could result in the disposal of any victims in contrary directions and beyond what had been identified as the predominant

distances and concealment methods. Studies have been conducted on forensic awareness of killers, (Ferguson and Pooley, 2019; Beauregard and Bouchard, 2010) with conclusions that offenders are inconsistent in their use of avoidance tactics. To counter this, serial killers were excluded from this study as they would be more likely to be aware of police tactics in homicide investigations. This study focused on once only killers and there was no indication within the homicide data that suggested victims were disposed according to any avoidance strategy.

The third consideration, deontological, was identified as the duty or moral benefit of publishing the findings of this study. To advance theory, Paquette et al (2015) identifies that it is necessary to have clear dialogue that can be expanded upon and tested. It was deemed that the locating of a single disposed victim was for the common good of society, outweighing the tenuous possibility of a killer researching victim disposal methods prior to committing a murder.

### 3.9.4 Anonymity for victims.

Throughout this study many victims were identified and referenced in relation to their disposal after their murder. In an attempt to lessen the impact of this research on any co-victim, to protect those at the heart of this study and to maintain impartiality with respect to findings and discussion any subsequent reference to any particular victim was in the form of Victim X where 'X' is the alphabetical listing number of that victim. The homicide victim names have been listed alphabetically on a separate spread sheet which is held by the researcher. It is acknowledged that most victims could be identified through open source documentation by a diligent reader. Ethical approval did not require anonymity of the victims; this has been done with respect to them. An alphabetical list of victims is contained in Appendix 10.

## 3.10 Chapter Conclusion

In chapter 3 it has been identified that the post-positivism philosophy, understanding the truth through our own experiences, is the guiding paradigm behind this research (section 3.2). Post-positivism also provided the reasoning for the research design, using the quantitative method approach through questionnaires and data collection in the SAR system and homicide respectively (section 3.3). The data collection of homicide demographics from QPRIME were transposed onto a spread sheet before being cleansed for subsequent analysis and comparison. In this phase of the data collection there were no exclusions or missed incidents. Collection of SAR data consisted of an on-line questionnaire of all SAR coordinators in Queensland, seeking their experience and use of the search strategies for missing people. The cleansed responses were captured on a spread sheet for analysis and cleansed of identifying specifics.

Survey and data collection errors and biases were discussed, and guided the research design to minimise any risk (section 3.5). Several potential issues were identified in the quantitative data collection, such as error in transcribing the data, accidental duplication, non-completion of each data set and bias on the input of data. Cross checking of each data set was able to minimise any error associated variances.

The strength of this study was the single jurisdiction access to all reported homicide incidents from which to develop a Disposed Homicide Victim Matrix rather than the previous research which concentrated on particular aspects of homicide such as serial sexual killers for small demographic area. Further to this was the SAR questionnaire, made available to all SAR coordinators, will provide a detailed overview of the SAR system used to locate missing people and ultimately homicide victims.

The limitations of this study were discussed; such as the type of methods used to collect data, questionnaire population size, pre-testing and questionnaire structure (section 3.6). It was also discussed that Queensland represents approximately one fifth of Australia in homicide numbers, population and size, and whether the findings would be a representation of the whole country with respect to any matrix developed. The three delimitations within the study were identified; mass murders, serial killings and those homicides where the victim was not moved (section 3.7). The first two delimitations where excluded due to the possibility of biasing results because of clustering. The Data testing and the collecting of non-Queensland data for a comparison of disposed victim actions was discussed as a means of validating the Queensland data (section 3.8).

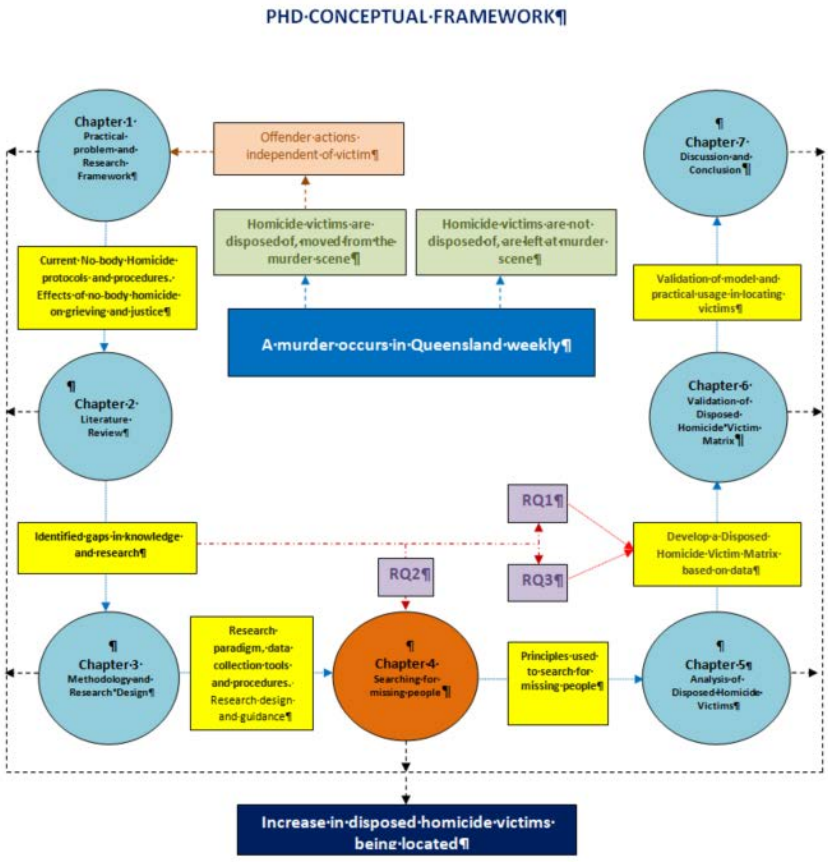
Chapter 4 explores the SAR strategies and their application to missing people. Chapter 5 is a detailed analysis of disposed homicide victims in Queensland, while chapter 6 provides a validation based on interstate disposed victim homicides.

# 4 Results: Searching for missing people

## 4.1 Introduction

This chapter looks at the current search and rescue system in Queensland to determine how the five search strategies are used by SAR coordinators (section 4.2) and to what extent they have been successful (section 7.2.2). An article developed from this chapter was published in the Journal of Search and Rescue in 2023 and can be found at Appendix 8.11 (Whitehead, 2023). This chapter explores the data and findings within SAR, with the discussion being included in the discussion chapter (section 7.2). Figure 4.1 identifies where this chapter fits into the overall thesis.

**Figure 4.1** *Thesis outline (Chapter 4)*



## 4.2 Search survey results

This section of chapter 4 details findings of the SAR coordinator questionnaire. Each of the questions are looked at separately to provide an in-depth picture of the Queensland SAR system as a prelude to identifying if it can aid in the locating of disposed homicide victims.

The initial response rate for the SAR questionnaire, at 77%, was acceptable according to the sample size calculator explained by Taherdoost (2017) with a confidence level of 95% and a margin of error of 5%. Of the respondents, 30.4% noted that they had not coordinated a search and rescue incident and could not respond to the remaining questions, leaving 167 responses. Each of the respondents finished the entire questionnaire with no question receiving less than a 100% completion rate. The survey response rate was high for FSC's and Senior SARO's, 95% and 97% respectively, Table 4.1. It is unknown why the SARO response rate is lower, although the overall response rate is acceptable according to Hendra (2019).

### 4.2.1 SAR Coordinators

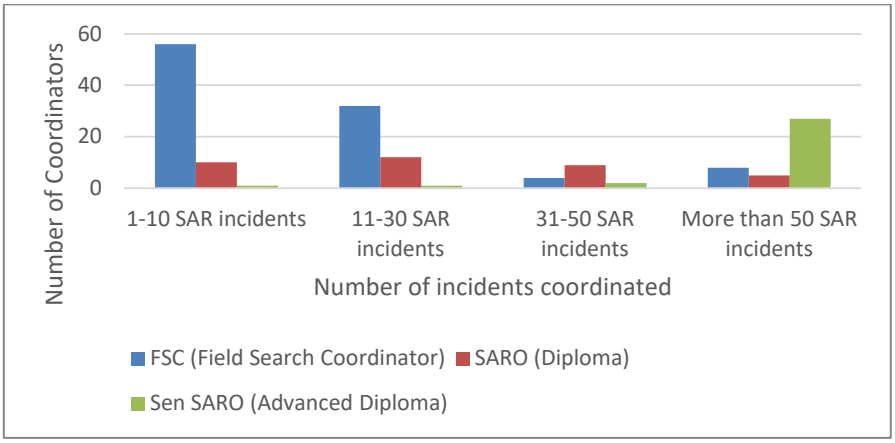
Of the 167 SAR Coordinators who had coordinated at least one incident, 21.6% have a SARO diploma, and 18.6% have an advanced diploma, Table 4.1.

**Table 4.1** *SAR Coordinator Composition and education levels.*

| | Current SAR level | | | |
|---|---|---|---|---|
| | **FSC** | **SARO** | **Sen SARO** | **Total** |
| **Number of SAR People** | 165 | 113 | 32 | **310** |
| **Number of responses (+1 SAR incidents)** | 100 | 36 | 31 | **167** |
| **Number of responses (Nil SAR incidents)** | 56 | 17 | 0 | **73** |
| **% of Responses** | **95%** | **47%** | **97%** | **77%** |

Sen SARO's are more likely to have undertaken 'more than 50 SAR incidents'. Diametrically, FSC's have the highest number of those with 1-10 incidents, again aligning with their relative junior level within SAR. Several anomalies are evident, two Sen SARO's with less than 30 incidents and 8 FSC's with over 50 incidents to their credit, Figure 4.2.

**Figure 4.2** *SAR incidents coordinated.*




There are three disciplines within search and rescue; marine, land and aviation. Predominately, 61%, of Sen SARO's had undertaken searches in all three disciplines. There were no SAR members who had only coordinated marine and aviation SAR incidents. Among all levels of training, 67% of respondents had only coordinated land SAR incidents, including air crashes, Table 4.2. FSC's are more likely to undertake land searches.

**Table 4.2** *SAR incidents coordinated.*

| | | Current SAR level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| **What type of SAR incidents have you coordinated?** | **Land** | 94 | 13 | 5 | **112 (67%)** |
| | **Land and aviation** | 6 | 1 | 1 | **8 (5%)** |
| | **Land and marine** | 0 | 19 | 6 | **25 (15%)** |
| | **Land, marine and aviation** | 0 | 3 | 19 | **22 (13%)** |
| **Total** | | **100** | **36** | **31** | **167** |

### 4.2.2 SAR Strategies

All search strategies were used in the majority, 91-98%, of searches, with very few instances where they had not been used, 2-9%. The Reflex search was the first option, utilising the initial search teams and provides a rapid response to the situation, and historically, this has been successful 81% of the time (Queensland Police Service 2021) ($X^2 = 2.4316$; $p < .05$). Table 4.3 shows that FSC's were less likely to use all four strategies ($X^2 = 8.326$; $p < .05$). The average of 94.5% usage rate for all strategies combined is significant to the success of SAR in Queensland.

**Table 4.3** *Comparison of Search Strategies used by SAR skill level*

| | | SAR level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| **Have you used the Reflex/Initial Search Strategy?** | **Yes** | 91 | 35 | 31 | **157 (94%)** |
| | **No** | 9 | 1 | 0 | **10 (6%)** |
| **Total** | | **100** | **36** | **31** | **167** |
| **Have you used the Theoretical Search Strategy?** | **Yes** | 96 | 33 | 30 | **159 (95%)** |
| | **No** | 4 | 3 | 1 | **8 (5%)** |
| **Total** | | **100** | **36** | **31** | **167** |
| **Have you used the Statistical Search Strategy?** | **Yes** | 94 | 36 | 31 | **163 (98%)** |
| | **No** | 6 | 0 | 0 | **6 (2%)** |
| **Total** | | **100** | **36** | **31** | **167** |
| **Have you used the Subjective / Decision Point Search Strategy?** | **Yes** | 92 | 35 | 31 | **158 (95%)** |
| | **No** | 8 | 1 | 0 | **9 (5%)** |
| **Total** | | **100** | **36** | **31** | **167** |
| **Have you used the Deductive Search Strategy?** | **Yes** | 87 | 35 | 30 | **152 (91%)** |
| | **No** | 13 | 1 | 1 | **15 (9%)** |
| **Total** | | **100** | **36** | **31** | **167** |

Most lost people were found within the areas of the respective search strategies ($X^2 = 41.79$; $p < .05$), Table 4.4. There were several identified anomalies within the responses, particularly with the theoretical and statistical strategies, which will be discussed later (see

section 7.2.3). Coordinators with the most experience, SARO's and Sen SARO's, developed search areas that were more appropriate as shown by the small number of lost people found outside the individual strategies.

**Table 4.4** *Validation of the five search strategies.*

| | | Current SAR Level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| **Was the target found within the Reflex Search Strategy area?** | **Yes** | 67 | 25 | 25 | 117 (70%) |
| | **No** | 33 | 11 | 6 | 50 (30%) |
| **Total** | | **100** | **36** | **31** | **167** |
| **Was the target found within the Theoretical Search Strategy area?** | **Yes** | 73 | 33 | 29 | 135 (81%) |
| | **No** | 27 | 3 | 2 | 32 (19%) |
| **Total** | | **100** | **36** | **31** | **167** |
| **Was the target found within the Statistical Search Strategy area?** | **Yes** | 94 | 36 | 31 | 161 (96%) |
| | **No** | 6 | 0 | 0 | 6 (4%) |
| **Total** | | **100** | **36** | **31** | **167** |
| **Was the target found within the Subjective / Decision Point Search area?** | **Yes** | 81 | 36 | 31 | 148 (89%) |
| | **No** | 19 | 0 | 0 | 19 (11%) |
| **Total** | | **100** | **36** | **31** | **167** |
| **Was the target found within the Deductive Search area?** | **Yes** | 71 | 33 | 31 | 135 (81%) |
| | **No** | 29 | 3 | 0 | 32 (19%) |
| **Total** | | **100** | **36** | **31** | **167** |

### 4.2.3 Additional search methods

Table 4.5 shows the additional methods that had been suggested by a small percentage, 16%, of the respondents. The majority, 84%, identified that they could offer no further suggestions for search tactics. The suggestions where coded into four methods: combined SAR practices; improved local knowledge; increased use of SAR technology and social media.

**Table 4.5** *Additional SAR methods identified.*

| | | Current SAR Level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| **Have you identified additional methods of determining a land search area?** | **No** | 81 | 36 | 23 | **140** |
| | **Combined SAR practices** | 6 | 0 | 3 | **9** |
| | **Improved local knowledge** | 8 | 0 | 1 | **9** |
| | **Increased use of SAR Technology** | 4 | 0 | 3 | **7** |
| | **Social Media** | 1 | 0 | 1 | **2** |
| **Total** | | **100** | **36** | **31** | **167** |

### 4.2.4 Lost Person Behaviour Database

The Australian Lost Person Database was the primary location of information pertaining to land search operations, ultimately becoming the Lost Person Behaviour as contained within the National SAR Manual. This database relies on SAR Coordinators entering land search information into the database at the completion of each SAR incident. Table 4.6 identifies those who use the database, with only 5% of FSC's being among those coordinators who did not enter lost person information.

**Table 4.6** *Use of the Australian Lost Person database*

| | | Current SAR Level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| **Do you enter Lost Person Behaviour data onto the Australian LPB Database?** | **No** | 5 (5%) | 0 (0%) | 0 (0%) | 5 (3%) |
| | **Yes** | 95 (95%) | 36 (100%) | 31 (100%) | 162 (97%) |
| **Total** | | **100** | **36** | **31** | **167** |

### 4.2.5 Search for deceased people

The premise of this project was to better enable the search for undiscovered victims of homicide, with Table 4.7 identifying if SAR Coordinators had undertaken searches for deceased persons. The question devoted to the search for deceased persons provided the linkage between searching for missing people and searching for deceased victims of homicide.

**Table 4.7** *Search for deceased persons*

| | | Current SAR level | | | |
|---|---|---|---|---|---|
| | | **FSC)** | **SARO** | **Sen SARO** | **Total** |
| **Have you had to search for a known deceased person (Not a homicide victim, a missing person whose TFFS has expired or there was suspicion of a fatality)?** | **No** | 56 | 10 | 2 | **68 (41%)** |
| | **Yes** | 44 | 26 | 29 | **99 (59%)** |
| **Total** | | **100** | **36** | **31** | **167** |

## 4.3 Discussion

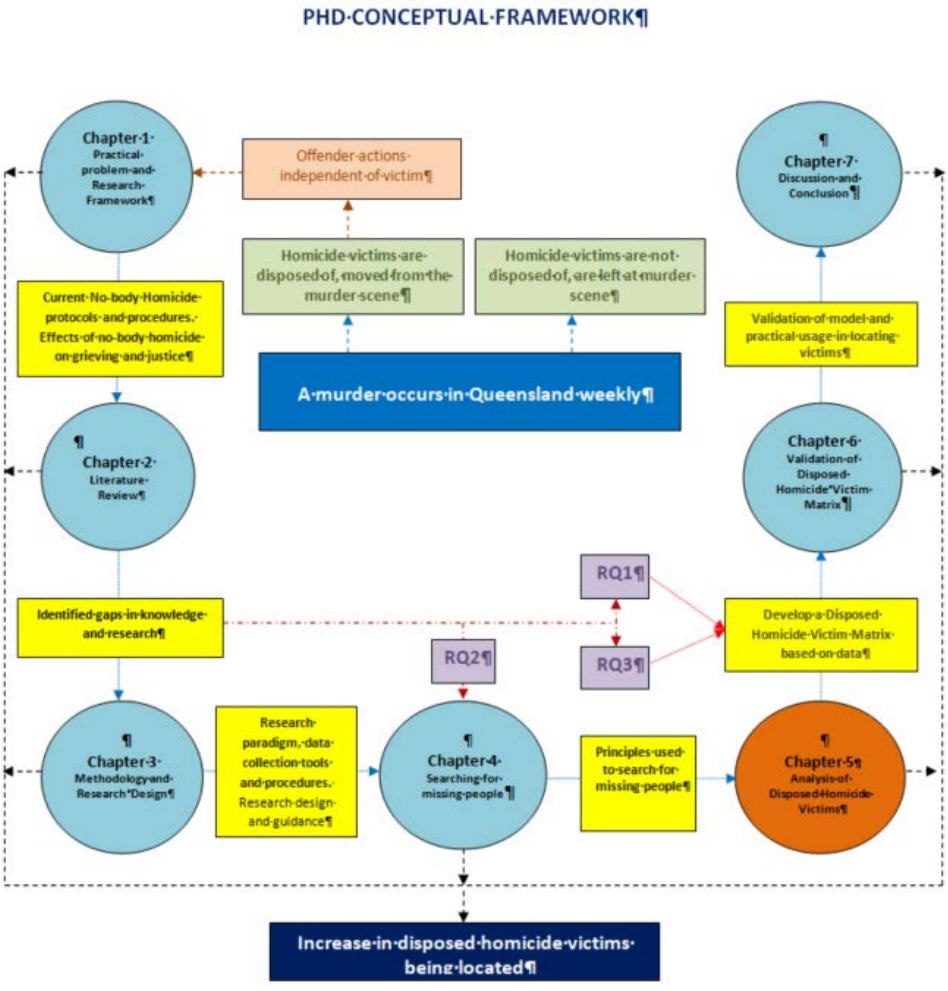
The full discussion on the Queensland SAR system and how it could aid in the location of disposed homicide victims is contained in chapter 7. The discussion ties together the SAR system, the Queensland disposed homicide victim survey and the comparison data obtained from non-Queensland disposed victims. Chapter 7 also explores how the research questions have been addressed through the collection of the data and subsequent analysis.

# 5 Results: Queensland Homicides and the Disposed Homicide Victim Matrix

## 5.1 Introduction

This chapter examines all homicide incidents recorded in Queensland between 2004 and 2020, Figure 5.1. The first half of this chapter provided a detailed overview of Queensland homicide generally. The second half was devoted to those victims that were moved as a means to develop a matrix that could assist searchers when looking for past or future homicide victims. The discussion relating to this chapter can be found in the Discussion Chapter (Section 7.3). An article derived from this chapter has been published in the Forensic Sciences International: Synergy, Volume 8 2024 (Appendix 12).

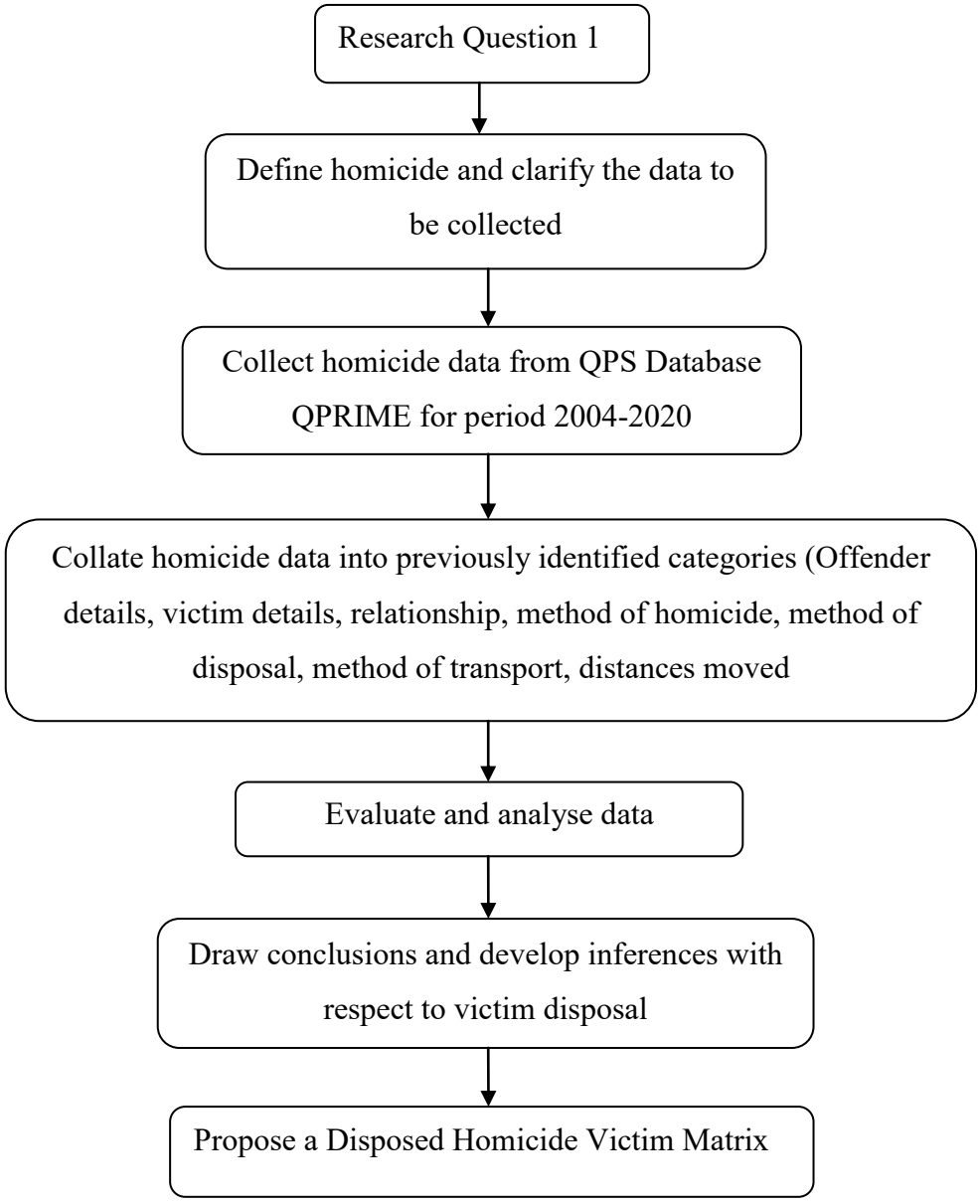
**Figure 5.1** *Thesis outline (Chapter 5)*



## 5.2 Rationale behind homicide data sets

This section focused on those victims of homicide that were disposed. It also identifies what data from those incidents was needed to identify trends and similarities in disposal to increase the probability of a successful victim search. Figure 5.2 reflects this process.

**Figure 5.2** *Flow diagram of homicide data collection*



Each Queensland homicide investigation generates a large amount of information, all of which is stored on QPRIME in basic categories such as demographics, crime scene analysis, post-mortem results, interviews and scientific analysis. It would not be possible to develop a matrix using every item, therefore selected pertinent demographics were identified that would provide sufficient analytical evidence of commonalities and trends. The literature review discovered that there were limited worldwide studies into the disposal location of victims of homicide except for the purposes of offender profiling, that is, using the victim location to suggest possible offender habitats. This section investigated what homicide data was available and what was needed to analyse the relationship between the offender and victim. This analysis also included the method of murder, method of victim transport, method of victim disposal and distances travelled to develop a statistical database that could provide assistance in locating undiscovered victims.

All homicide victims provide forensic evidence, the amount of which is almost always dependent on how long they had been unlocated prior to being found (Dix & Graham, 1999). Locating the victim quickly through the use of search parameters developed from this study would assist in maximising evidentiary value for investigators and prosecutors. Evidence in these instances could include the method of death, time and place of death and transference of fragmentary or trace evidence from the offender to the victim or vice-versa in line with Locard's Exchange Principle (Houck et al., 2018). Locating the deceased victim would also contribute to the closure of the cycle of grief for the co-victims (King, 2016).

### 5.3 Methodology:

The methodology for this chapter was explained fully in chapter three (sections 3.3.1 and 3.4.2). Data was extracted from QPRIME and entered directly into a SurveyMonkey™ form prior to being imported into Excel™ for analysis. The homicide data collection differed from

that of the SAR coordinators in that it was sourced from a single data site and was not reliant on previous research or written articles.

Homicide data prior to the introduction of QPRIME in 2004 was stored on a number of legacy computer systems and paper files at locations throughout the State. Permission was obtained from the Queensland Police Service Research Committee to undertake this project and to access the data contained within QPRIME for this sole purpose. This permission can be found in Appendix 6.

QPRIME contains personal data on almost all Queenslanders, much of which is confidential and potentially embarrassing to those concerned. To prevent unauthorised access every entry and query is computer logged with the officer required to identify the reason for the access prior to being allowed to continue. There are strict guidelines in place to prevent unauthorised access, and penalties apply to those who breach the guidelines. The release, accidental or otherwise, of personal details could cause the loss of public confidence in the police and reluctance to assist in investigations when necessary. The most recent incident involved the release of a woman's address to her estranged husband and the subsequent fear she felt. The officer concerned was sentenced to 2 months imprisonment (Vujkovic, 2019).

During the data collection the identity of neither the offender nor victim was recorded as it was not necessary for this study. Once the data was cleansed the identifying incident number was removed, limiting the identification of any person involved. This incident number is unique to QPRIME and even if left in the data set would be meaningless to those outside the Queensland Police Service.

All homicide incidents during this period were used, although it could be argued that serial killers should be excluded on the following grounds:

- Walton (2017), Hickey (2015), Beauregard and Field (2008b), Alison et al (2002), Lundrigan and Canter (2001), Mott (1999), Goodwin and Canter (1997) and Bennett and Wright (1984) identified that serial killers tended to dispose of their victims in the same or similar locations.
- Historically, Australian serial killers have disposed of their victims in similar location areas, if not the same location. Milat's known victims were all found within 750m radius area in the Belanglo State Forest, NSW; The Birnie's four victims were found in the Gleneagles National Park, WA; Bunting buried two victims in his back yard with a further eight being found in barrels at Snowtown, SA; and Worrell and Miller disposed of four of their victims at Truro, SA.
- The mass disposal of victims in one location would potentially skew the results.
- Murders by serial killers, while not always pre-meditated, are generally the end result after their victim is selected and would again skew any results because of the abnormal number of victims against an age group, disposal location and murder method.

Multiple offenders killing a single victim occurred throughout the study period; there were nine instances where there were two killers, six instances of three killers, two each of four and five killers and one involving seven killers. For the purposes of this study those incidents had been referenced against the identified main protagonist or ring leader with respect to victim disposal actions. There was also a single incident involving a female killer who sought assistance from a male to dispose of the body. While the female was convicted of murder, the male pleaded guilty to interfering with a corpse.

Victim disposal directions were obtained from Google Earth Pro™ based on a straight line from the murder location to the disposal site. The true compass bearing was obtained and

then simplified based on bearings as contained in Table 5. 2, each direction being 45° in width, or 22.5° on each side of the cardinal and inter-cardinal.

**Table 5. 2** *Victim movement directions based on compass bearing*

| True Bearing° | Direction |
|---|---|
| 337.5°-022.5° | North |
| 022.5°-067.5° | North-east |
| 067.5°-112.5° | East |
| 112.5°-157.5° | South-east |
| 157.5°-202.5° | South |
| 202.5°-247.5° | South-west |
| 247.5°-292.5° | West |
| 292.5°-337.5° | North-west |

All survey data was collected from a single homicide incident at a time in order not to miss a question. Excepting the 17 cases where the victim had not been located there were no incidents where the total data could not be collected, and therefore no incident was excluded because of limited data. As the data was located within QPRIME it was entered into the data form manually prior to that entry being closed. At the conclusion of the data collection the entire data set was transposed onto an excel spreadsheet, cleansed of duplicates and identifying features, errors and spelling mistakes. It was then loaded into the IBM SPSS v27™ for analysis. The SPSS software enabled comparisons of the data, identification of the means or averages, standard deviations, percentiles and the final matrix for investigators and searchers. The use of that software also produced evidence of the reliability and validity of subsequent data analysis.

Throughout the analysis the relationship categories were reduced to three sets, ‘Acquaintance’, ‘Familial’ and ‘No known relationship’ as many individual relationship variables occurred only once or twice. The acquaintance category included acquaintances, friends, employees and employers. The familial category contained all the family

connections, spousal, parental, children, siblings and other relatives while the no known relationship category covered those murders where no relationship could be established.

Because the data used in this chapter was factual, such as a definite location, mode of transport, murder method, any perceived bias was not considered an issue that needed to be addressed. The data was not based on emotions, supposition or verbal evidence but was firmly anchored in reality. Most of this data was confirmed through court proceedings and coronial findings.

An issue of replication was identified. As this data was collected from QPRIME it was not available to anyone outside the Queensland Police Service, and it would therefore be almost impossible to replicate exactly the data gathered for this project, but the findings of this chapter could be reproduced using the existing data.

## 5.4 Findings

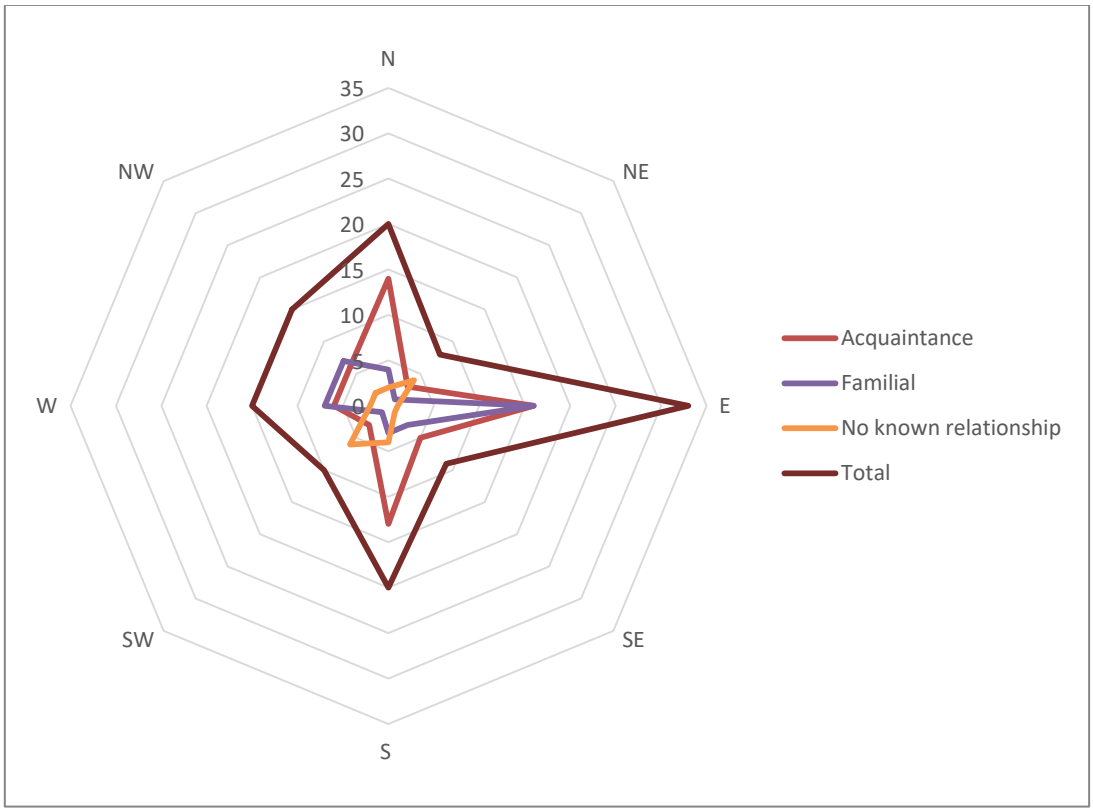
In the period 2004-2020 there were 749 homicide incidents reported to police in Queensland, of which 147 involved the moving of the victim. This may not represent the correct total as there may be incidents falling into the following categories that were never considered or reported as homicides; gangland style killings by underworld groups and outlaw motorcycle gangs, deaths in aged care facilities, incidents classified as a medical condition and missing people who may have been murdered but there is no evidence in support of this (Mouzos, 2001)

All homicide data for the period 2004-2020 were included. The data form completion rate was also 100%, there were no excluded incidents. The collection of an entire data set represents an extraordinary outcome (Taherdoost, 2017).

### 5.4.1 Direction of victim disposal

A visual representation of the victim disposal directions is shown in Figure 5.3, and in frequency order the majority of disposals are east with 25.4%, north and south 15.4%, west and north-west 11.5%, south-west 7.7%, south-east 6.9% and north-east 6.2%. There were a further seventeen victims that have never been located, making it impossible to determine the direction of disposal.

**Figure 5.3** *Victim disposal directions by relationship*



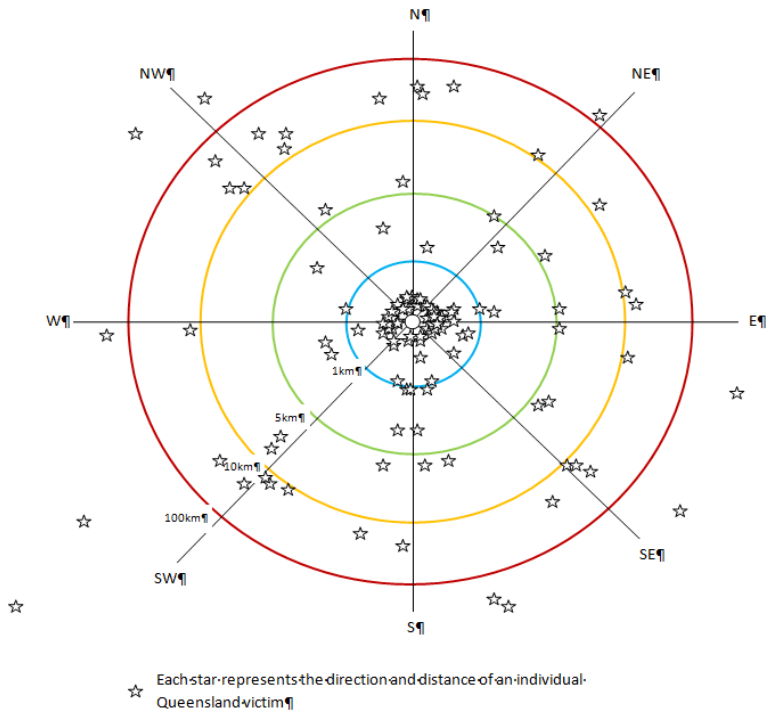

Within the total are the victim disposal directions for the three relationship categories of acquaintance, familial and no relationship. Acquaintance killers who moved their victims most often did so in an easterly direction 24.2%, followed by north 21.2% and south 19.7%. All other directions account for between 4.5–9.1% victims with no direction not being chosen.

In the Familial category the victims were most frequently moved in an easterly direction 38.1%, followed equally by west and north-west 16.6%. The remaining directions accounted for between 2.3-9.5%. All directions were chosen for disposal.

The No known relationship category is the only group that shows a variation in victim disposal directions with south-west being the most frequent direction with 27.3%. This result was not significant at $p<.05$. This was followed equally by south and north-east 18.2%. Victims were moved in small numbers in the remaining directions. There are no known unlocated victims in this category.

Figure 5.4 shows the actual distribution and distance of each disposed homicide victim in Queensland during the duration of this study. There are more victims closer to the cardinal and inter-cardinal directions than not, and there is no identifiable reason for this. A comparison of this diagram with Google Earth Pro™ indicates that in most instances several travel options were available at each murder location.

**Figure 5.4** *Actual direction and distance distribution diagram, Queensland Victims.*



### 5.4.2 Distance victim transported by method

The victim disposal sites ranged from 100m up to 730km from the initial scene. The distance at which the most number of victims were disposed of was 0.1-0.5km closely followed by 3 - 15km. No victim was dragged or carried more than 500m from the murder site, and no motor vehicles were used for any distances less than fifty metres Table 5.3. For those seven distances over 100 kilometres the offender used their own vehicle on six occasions, 85.7%, and an accomplices' vehicle once, 14.3%. There was a cluster of distances between 1.1 and 15 kilometres where the offender has utilised their own or the victims' vehicle for victim transport, and a smaller cluster between 0.6 and 10 kilometres where another vehicle has been used. Significantly, vehicles other than the offenders or victims account for only six transports, 4.1%. A vessel was only used once. A single victim, whose method of transport was never determined, was located in the 11-15km grouping.

Acquaintance relationships had the greatest number of victims removed from the incident site, and within this category were also the largest of the movement options, Table 5.. Moving by the offender's or victim's motor vehicle accounted for 40 victims at 56.3% followed closely by dragging or carrying the victim on 25 occasions, 35.2%. Of those with an unknown relationship, over half of the victims were moved by carrying or dragging at 54.5%, followed by the offender's vehicle at 40.9%.

**Table 5.3** *Queensland: Distance victim transported by method*

| Distance (km) | Carried or dragged | MV/vessel | Unknown | Total |
|---|---|---|---|---|
| **0.1-0.5** | 56 | 8 | 0 | **64** |
| **0.51-2** | 0 | 15 | 0 | **15** |
| **3-10** | 0 | 18 | 0 | **18** |
| **11-20** | 0 | 17 | 1 | **18** |
| **21-100** | 0 | 8 | 0 | **10** |
| **≥100** | 0 | 7 | 0 | **7** |
| **Never located** | 1 | 1 | 15 | **17** |
| **Total** | **57** | **74** | **16** | **147** |

Familial relationships are almost even between dragging and motor vehicle, but together represent 79.6%. Boyfriends were evenly split between carrying/dragging and using their own vehicle when disposing of their girlfriends within this category, and mothers appeared to have a propensity to carry or drag their son/daughter from the scene, while friends opted more for their own vehicle in the victim disposal.

**Table 5.4** *Queensland: Method of victim transport by relationship*

| Method of transport | Acquaintance | Familial | No known relationship | Total |
|---|---|---|---|---|
| **Carried or dragged** | 25 | 20 | 12 | **57** |
| **Motor vehicle** | 40 | 23 | 10 | **73** |
| **Unknown** | 5 | 11 | 0 | **16** |
| **Vessel** | 1 | 0 | 0 | **1** |
| **Total** | **71** | **54** | **22** | **147** |

The distances from the homicide site have been calculated on direct line or Euclidean, measurements on Google Earth Pro™ (Section 4.2.3). Excluding the 17 incidents where the victim had not been located all other victims were located within 730km of where they were killed. Victims located less than 100km accounted for 95.9%, and less than 50km accounted for 92%. Slightly less than 54% of all disposed victims were located within 2km of where they were murdered.

### 5.4.3 Victim concealment in disposal

The most frequent concealment method was simply covering the victim with whatever was proximate to the disposal location, such as leaf litter, branches and debris, 34.7%, and was most popular within acquaintances and familial relationships, Table 5.4. The next grouping, with twenty-one victims, 14.3%, was to leave them on the ground with no attempt at concealment. Most of these victims appeared to have been removed from a vehicle and left on the side of a road or track.

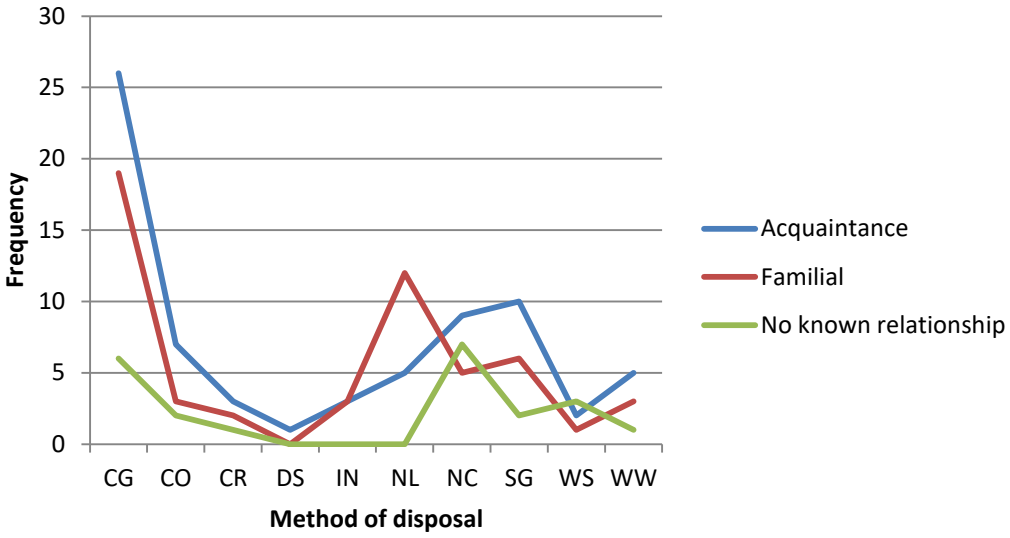
Where there was no known relationship, concealment was almost evenly split between no attempt at covering the victim and covering with leaf litter. In twelve instances, 8.2%, the victims were disposed in a wheelie or industrial bin, and on one occasion each a large tool box and a 44 gallon drum was used. Shallow graves, where the victim was put into a man-made or natural hollow in the ground and covered with soil, accounted for eighteen victims, 12.2%, with a further six victims, 4.1%, being interred at a significant depth. Cremation or attempted cremation occurred on six occasions, 4.1%, with three in an acquaintance relationship, two in a familial (estranged spousal) relationship and there was no known relationship for the remaining victim. The single dismemberment, 0.6%, was from an acquaintance relationship.

**Table 5.4** *Victim concealment method by relationship*

| Concealment method | Acquaintance | Familial | No known relationship | Total |
|---|---|---|---|---|
| Concealed on ground | 26 | 19 | 6 | 51 |
| Concealed other | 11 | 5 | 3 | 19 |
| Interment | 3 | 3 | 0 | 6 |
| No concealment | 9 | 5 | 7 | 21 |
| Shallow grave | 10 | 6 | 2 | 18 |
| Waterways | 7 | 4 | 4 | 15 |
| Never located | 5 | 12 | 0 | 17 |
| Total | 71 | 54 | 22 | 147 |

A visual comparison of relationship categories and the frequency and method that Queensland homicide victims were disposed is shown in Figure 5.5. The figure shows the large numbers of victims that were concealed on the ground and covered with what was available locally, including leaf litter. Not located, no concealment at all and shallow graves can be identified as spikes.

**Figure 5.5** *Victim disposal method graph*




### 5.4.4 Method of homicide where victim disposed

Bladed weapons, blunt trauma weapons and physical assault accounted for 52.3% of all homicides, Table 5.5. Eighteen offenders chose strangulation, 12.2%, while firearms were used on 12 occasions, 8.1%. A cause of death was unable to be determined in 29 cases, 19.7%, as this also included those victims that had never been located. Further analysis identified that bladed and blunt trauma weapons were favoured by women, 28.8%, followed by physical assault at 19.7% and suffocation at 18.2%. The physical assault was against babies and young children, with suffocation between children and spouses. Firearm usage by females was 4.5% compared to 11.1% by men. Men more commonly used blunt force

trauma weapons, 19.6%, bladed weapons 18.5%, physical assault, 17.3% and strangulation at 12.3%.

The murder occurred in the offender's residence on 51 occasions, 34.7%, and the victim's residence a further 46 occasions, 31.3%. The remaining 50 incidents occurred at locations such as parks, wilderness, and work places or are simply unknown.

**Table 5.5** *Method of homicide where victim was moved, by relationship.*

| Method of homicide | Acquaintance | Familial | No known relationship | Total |
|---|---|---|---|---|
| Blade weapon (Knife, machete, axe etc) | 16 | 10 | 2 | 28 |
| Blunt trauma weapon (Hammer, metal pipe etc) | 13 | 4 | 5 | 22 |
| Firearm (Hand gun, rifle, shot gun etc) | 8 | 1 | 3 | 12 |
| Physical assault (Beating, one punch etc) | 10 | 11 | 6 | 27 |
| Strangulation (Rope, belt, wire etc) | 10 | 6 | 2 | 18 |
| Other | 3 | 6 | 2 | 11 |
| Unknown | 11 | 16 | 2 | 29 |
| Total | 71 | 54 | 22 | 147 |

### 5.4.5 Distances victims located from road/track

The distances that the victim was moved after being taken to the disposal site are shown in Table 5.6. For those victims that were dragged this distance was from a fence line whereas the distance for those moved by motor vehicle were from the road or track used. The most prolific distance was 10m, 42.2%, which is basically moving a victim off a roadway. The next two largest distances are 20m at 22.4%, and 30m at 11.6%. The longer distances, over 30m, were used rarely, 5.5%. The average distance a moved victim was located from a road or track was 17.37m.

**Table 5.6** *Queensland: Distances victims were located from road/track*

| Distance (m) | Frequency | Percent |
|---|---|---|
| **≤10** | 66 | 44.9 |
| **11-20** | 5 | 3.4 |
| **21-30** | 51 | 34.7 |
| **≥31** | 8 | 5.4 |
| **Never located** | 17 | 11.6 |
| **Total** | **147** | **100.0** |

Moving a victim 10m from the nearest road, track or fence was the most common distance for all three relationship categories, 43.7% for acquaintances, 35.2% for familial and 54.5% for no known relationship, Table 5.7. Acquaintances also clustered around both 20m and 30m, representing 39.4% of the category. Familial relationships clustered at 20m, 22.2%, while there were no significant clusters in the no known relationship category. The average distances the victim had been moved after being transported for acquaintances, familial and no known relationships were 17.18m, 17.59m and 17.5m respectively.

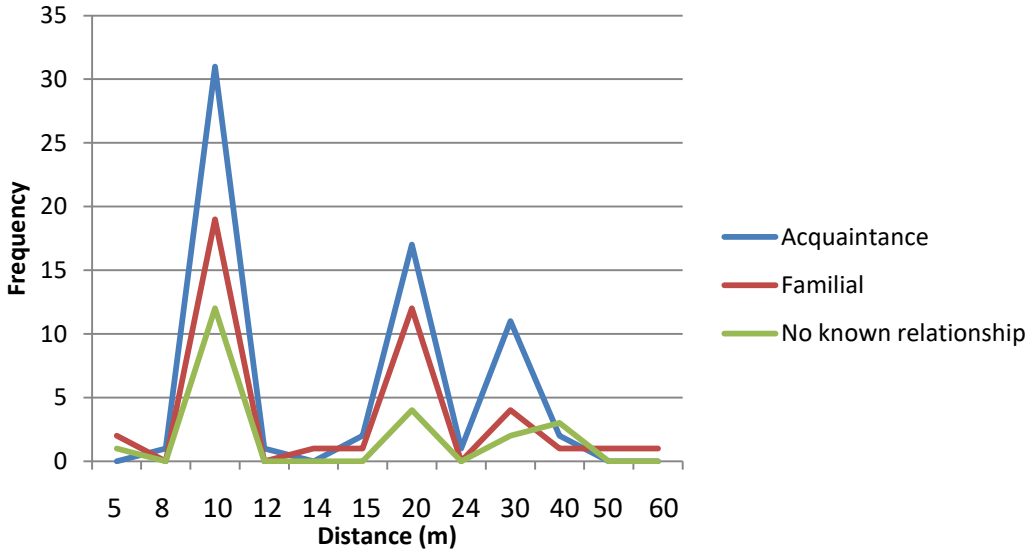
**Table 5.7** *Queensland: Distances victims were located from road/track by relationship*

| Distance (m) | Acquaintance | Familial | No known relationship | Total |
|---|---|---|---|---|
| **≤10** | 32 | 21 | 13 | **66** |
| **11-20** | 3 | 2 | 0 | **5** |
| **21-30** | 29 | 16 | 6 | **51** |
| **≥31** | 2 | 3 | 3 | **8** |
| **Never located** | 5 | 12 | 0 | **17** |
| **Total** | **71** | **54** | **22** | **147** |

**The visual depiction on victim disposal distances from a road or track is shown in**

Figure 5.6. Spikes at 10, 20 and 30 metres were evident. This indicated that searching generally need not go beyond 100m from any road or track, allowing for some variation in disposal.

**Figure 5.6** *Comparison of victim disposal distance from road/track*




### 5.4.6 Victim movement by offender and victim age

Males were the most frequent movers of victim's bodies, with 65 male and 62 female victims for a total of 127, 85.8%. Females only moved 3 female and 8 male victims for a total of 11, 7.5%. The remaining 9 victims were moved by unknown offenders and based on the above frequencies male offenders may be the disposers of at least eight of these victims.

Age would be suspected of having an effect on victim movement, particularly with respect to the offender. Most victims were moved when the offender was aged either between 21-30 or 31-40 years of age, 17.3% and 15.8% respectively, Table 5.8. There are relatively fewer victim disposals for offenders aged younger than 20 years or older than 51 years, 22.3%.

**Table 5.8** *Queensland: Victim movement by offender age*

| Age (Years) | Female | Male | Unknown | Total |
|---|---|---|---|---|
| 16 - 20 | 0 | 3 | 0 | 3 |
| 21 - 30 | 2 | 38 | 0 | 41 |
| 31 - 40 | 4 | 39 | 0 | 43 |
| 41 - 50 | 4 | 27 | 0 | 31 |

| | | | | |
|---|---|---|---|---|
| 50 - 70 | 1 | 20 | 0 | 21 |
| Unknown | 0 | 0 | 9 | 9 |
| Total | 11 | 127 | 9 | 147 |

The age of all known victims at the time of their disposal is represented in Table 5.9. The most frequent age range of a disposed victim is 21-30 years old, 25.8%, followed by 31-40 years, 23.1%, 51-80 years, 19% and 41-50 years, 17.7%. Victims that were 10 years or less in age account for 6.1% of the total victims disposed. In all instances these young victims were killed by a parent.

**Table 5.9** *Queensland: Moved victim by victim age*

| Age (Years) | Female | Male | Total |
|---|---|---|---|
| 0 -20 | 10 | 11 | 21 |
| 21 - 40 | 37 | 35 | 72 |
| 41 - 60 | 14 | 27 | 41 |
| ≥ 61 | 5 | 8 | 13 |
| Total | 66 | 81 | 147 |

### 5.4.7 Method of victim location after disposal

Police involvement was the predominant means for a disposed victim to be located, mostly through welfare checks at other addresses or through organised searching, 60.5%, Table 5.10. The second most common method was a random find by bushwalkers, farmers and the like undertaking their leisure or work activities, at 15%. These instances had occurred in remoter and less accessible locations in Queensland. The offenders themselves provided information as to the disposal site on 10 occasions, 6.8%, and other witnesses accounted for a further 9 incidents, 6.1%.

**Table 5.10** *How victim was located after disposal*

| Method | Frequency | Percent |
|---|---|---|
| Police response (Welfare, search etc) | 89 | 60.5 |
| Randomly found (Bushwalker, farmer etc) | 22 | 15.0 |
| Never found | 17 | 11.6 |
| Offender identified location | 10 | 6.8 |

| | | |
|---|---|---|
| Witness | 9 | 6.1 |
| Total | 147 | 100.0 |

### 5.4.8 Day of victim disposal

Victim disposal was relatively even throughout the week, with the weekend days of Saturday and Sunday having the least number of victims disposed, 16 and 15 respectively, 10.9% and 10.2%, Table 5.10. Victim disposal was most frequent on Friday and Tuesday, 19% and 17% respectively. There were two incidents where the actual date of disposal had never been determined, 1.4%.

**Table 5.11** *Queensland Victim disposal by day*

| Day of week | Sun | Mon | Tues | Wed | Thurs | Fri | Sat | Unknown | Total |
|---|---|---|---|---|---|---|---|---|---|
| **Number of victims disposed** | 15 | 21 | 25 | 19 | 21 | 28 | 16 | 2 | 147 |

### 5.4.9 Victim/Offender height difference frequency

Sexual dimorphism, differences in height and weight between the two genders used in this study, was suspected of having an effect on the disposal of homicide victims. From QPRIME it was possible to establish the height and weight of both the offender and victim. The offender has had a height advantage in most instances, 75.5%, Table 5.12.

**Table 5.12** *Queensland: Height disparity by relationship, victim disposed.*

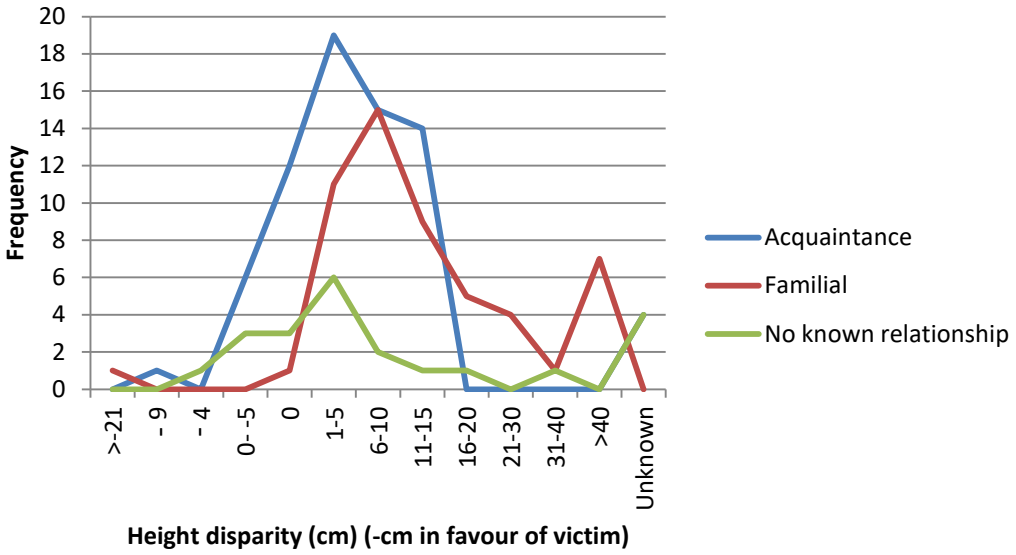
| Height (cm) | Acquaintance | Familial | No known relationship | Total |
|---|---|---|---|---|
| **-11 - ≥ -21** | 1 | 1 | 0 | **2** |
| **0- -10** | 6 | 0 | 4 | **10** |
| **0** | 12 | 1 | 3 | **16** |
| **1-10** | 34 | 26 | 8 | **68** |
| **11-20** | 14 | 14 | 2 | **30** |
| **≥21** | 0 | 12 | 1 | **13** |
| **Unknown** | 4 | 0 | 4 | **8** |

| | | | | |
|---|---|---|---|---|
| **Total** | **71** | **54** | **22** | **147** |

There were 16 occasions where there was height parity, 11%, and only 12 instances where the victim was the taller, 9%. The mean height advantage of the offender was 6-10cm taller than their victim.

A height advantage for the offender did not always translate into greater victim movement distances. Acquaintance relationships had a cluster from nil disparity to an offender advantage of 11cm to 15cm, representing 84.5%. Familial relationships had an offender advantage cluster at the 1cm to 15cm range, representing 64.8% of the total. Where there was no known relationship a small offender advantage cluster was evident between -5cm and 5cm, being 54.5%. The Acquaintance relationship was the only one with any significant advantage to the victim. Figure 5.7 shows the height disparity in graphic format, clearly indicating that the offender almost always has the advantage of height over their victims.

**Figure 5.7** *Height disparity by relationship graph*




### 5.4.10 Victim/Offender weight difference frequency

The weight disparity showed minimal groupings within each relationship category, Table 5.13. A loose cluster was identified between equity and 30kg in favour of the offender,

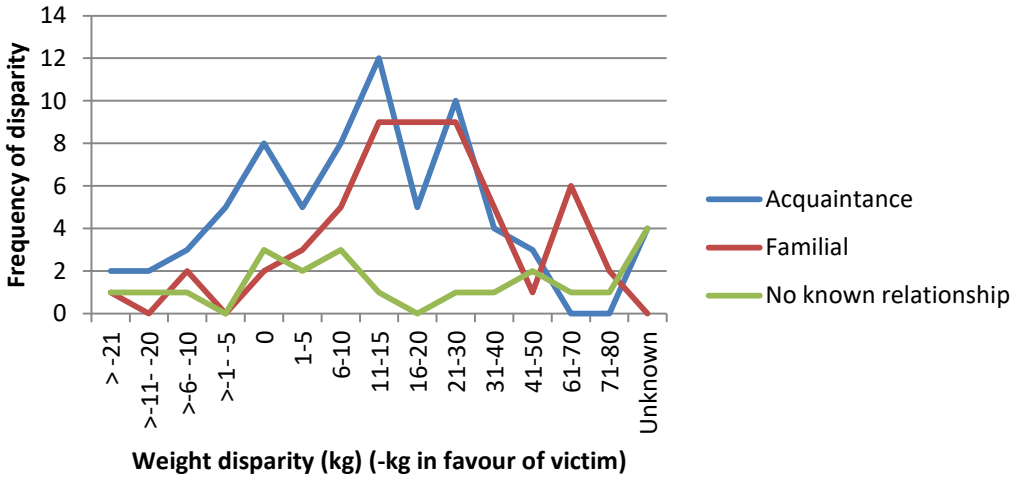
67.6%. In the familial relationship there was a small cluster of 27 incidents, 50%, between 15kg and 30kg in favour of the offender. There were eight incidents, 36.4%, in a barely discernible grouping between 0kg and 10kg within the no know relationship category.

**Table 5.13** *Queensland: Weight disparity by relationship, victim disposed.*

| Weight (kg) | Acquaintance | Familial | No known relationship | Total |
|---|---|---|---|---|
| **≥ -11** | 4 | 1 | 2 | **7** |
| **>-1- -10** | 8 | 2 | 1 | **11** |
| **0** | 8 | 2 | 3 | **13** |
| **1-10** | 13 | 8 | 5 | **26** |
| **11-20** | 17 | 18 | 1 | **36** |
| **21-30** | 10 | 9 | 1 | **20** |
| **31- ≥41** | 7 | 14 | 5 | **26** |
| **Unknown** | 4 | 0 | 4 | **8** |
| **Total** | **71** | **54** | **22** | **147** |

The spikes in frequency can be observed where the weight advantages in favour of the offender occur, Figure 5.8.

**Figure 5.8** *Weight disparity by relationship*




### 5.4.11 Offender/victim height/weight comparison; victim disposed

The victim had a height and weight advantage on 10 occasions, 6.8%, (Highlighted in green) and a further five times they were either taller or heavier than the offender, 3.4%,

(Highlighted in orange), Table 5.14. There was no size advantage to either offender or victim in seven offences, 4.7%, (Highlighted in yellow). The offender outweighed, although was shorter, than their victim on six occasions, 4.1%, (highlighted in mid blue) and was taller and lighter on four times (2.7% and highlighted in sky blue). But in the majority of incidents the offender had both a height and weight advantage over the victim as shown in pink at 72.7%.

**Table 5.14** *Queensland: Offender/victim height/weight comparison, victim disposed.*

| | Offender/victim height/weight comparison | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height-Weight** | **>21** | **>10-20** | **>6-10** | **>1-5** | **0** | **1-5** | **6-10** | **10-15** | **16-20** | **21-30** | **31-40** | **41-50** | **61-70** | **71-80** | **Unknown** | **Total** |
| **>-21** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** |
| **-11 - -20** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** |
| **-5- -10** | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** |
| **0- -5** | 1 | 3 | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **9** |
| **0** | 0 | 0 | 2 | 2 | 7 | 1 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | **16** |
| **1-5** | 0 | 0 | 2 | 2 | 4 | 4 | 6 | 13 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | **36** |
| **6-10** | 0 | 0 | 0 | 0 | 1 | 3 | 6 | 6 | 8 | 6 | 1 | 1 | 0 | 0 | 0 | **32** |
| **11-15** | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 3 | 3 | 8 | 4 | 3 | 0 | 0 | 0 | **24** |
| **16-20** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 1 | 1 | 0 | 0 | **6** |
| **21-30** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | **4** |
| **31-40** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | **2** |
| **>40** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | **7** |
| **Unknown** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 8 | **8** |
| **Total** | **4** | **3** | **6** | **5** | **13** | **10** | **16** | **22** | **14** | **20** | **10** | **6** | **7** | **3** | **8** | **147** |

## 5.5 Discussion

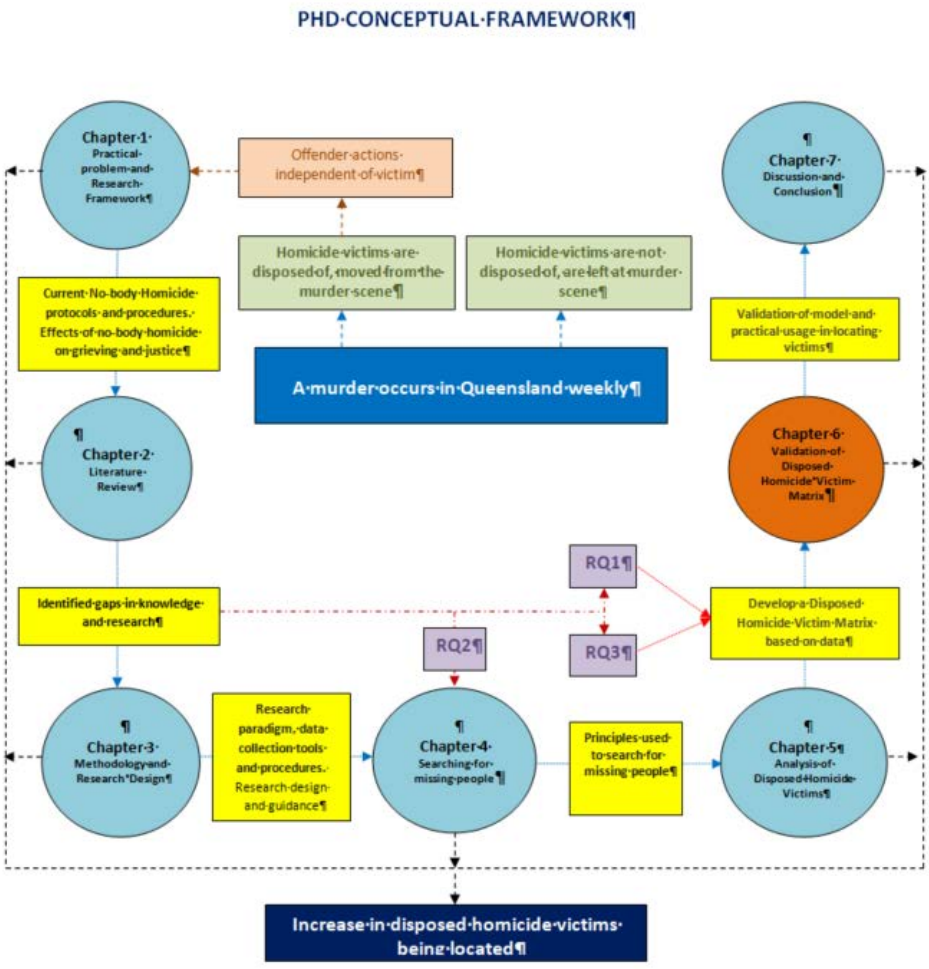
A full discussion of Queensland disposed homicide victims is contained in chapter 7, (section 7.3) including a comparison with the non-Queensland disposed victims. Chapter 7 also references the three research questions and how they have been addressed.

# 6 Results: Validation of Victim Disposal Model

## 6.1 Introduction

This chapter explores non-Queensland disposed homicide victim demographics. In chapter 7 a comparison of Queensland and non-Queensland victim disposal patterns will form a validation of the Homicide Victim Disposal Model (Jebeile & Barberousse, 2016). Having a majority of victim disposals fit within the model framework would demonstrate that the model has validity and therefore usefulness in the search for undiscovered homicide victims. Conformity with known homicide incidents does not make the model perfect, but it does create a framework from which further research can be progressed. The discussion is located in the Discussion Chapter (section 7.4). Figure 6.1outlines the thesis to this stage.

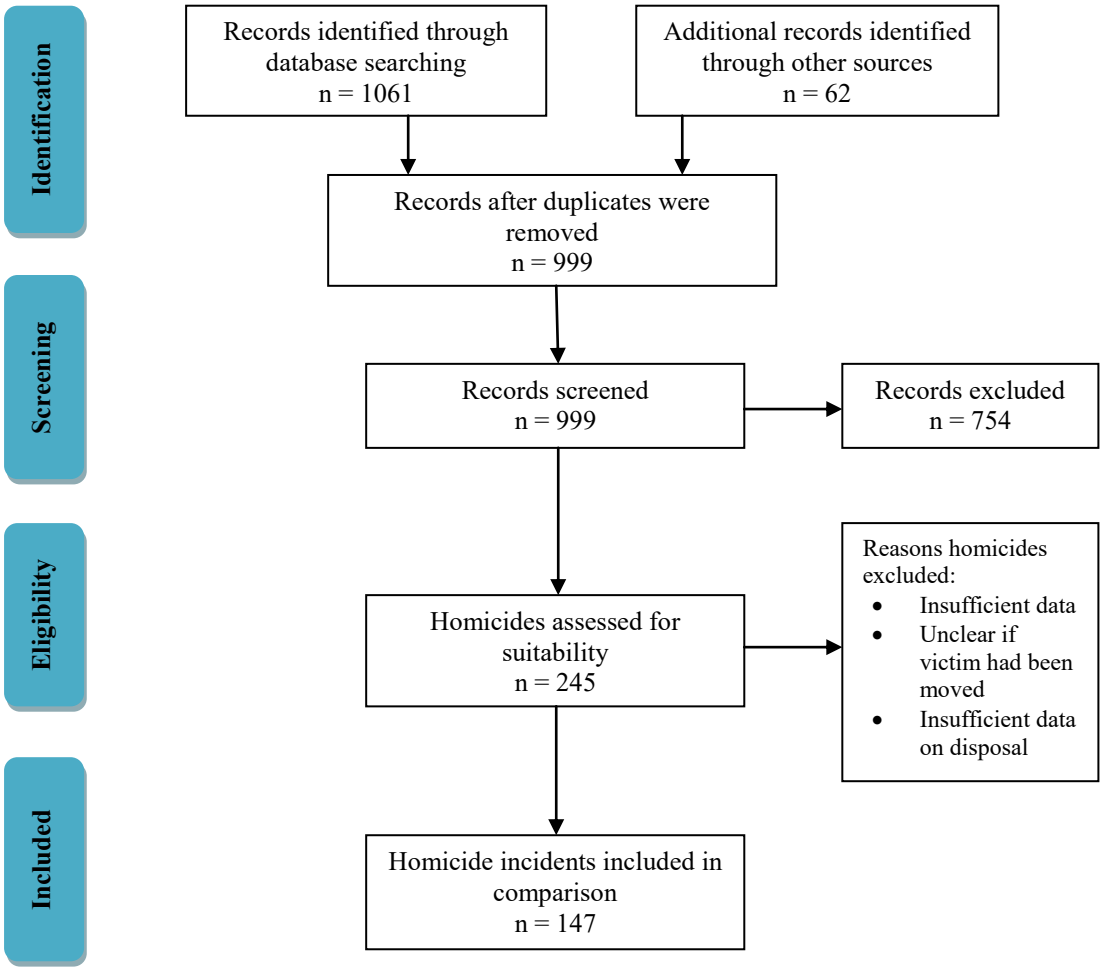
**Figure 6.1** *Thesis outline (Chapter 6)*



## 6.2 Methodology

There were 16 occasions where there was height parity, 11%, and only 12 instances where the victim was the taller, 9%. The mean height advantage of the offender was 6-10cm taller than their victim. The PRISMA flow chart, Figure 6.2, identifies the number of homicides located and ultimately those that were able to be included in this comparison study.

**Figure 6.2** *PRISMA diagram of non-Queensland homicide screening*




*Note: Adopted from Liberati et al. (2009)*

As each victim was identified the narrative was read and where the victim was located at the crime scene the incident was discarded as not fitting within this project. As a suitable victim was identified, further searching through Court Files and media articles elicited the necessary

disposal information. The majority of those incidents were of ordinary people and their murders did not make the main stream press, and as a result there was often a limited amount of information available.

Research was continued until no further new information could be located. This resulted in 147 incidents where the homicide victim had been moved from the crime scene. Within this search there were no unlocated victims. There were no identified incidents that did not fit within the extreme ranges of the model, that is, all were within the maximum distance moved in the original Queensland data of 730km.

The sample homicide incidents were categorised into the same three relationship categories as the model, Acquaintance, Familial and No known relationship, and tabulated to identify the aspects that conform to the modelling. It was acknowledged that there may be homicide incidents where the victim was moved that have not been collected in this study, with no central data base from which to draw data, it was not possible to ensure the capture of all.

Victim disposal directions were obtained from Google Earth Pro™ based on a straight line cardinal direction from the murder location to the disposal site, as per the original Queensland data, Table 5. 2.The linear distances were also calculated using Google earth Pro™. The details of each homicide incident were entered onto an Excel™ spreadsheet. Initially, the name and age of each victim was recorded against the homicide demographics as a means of ensuring that there was no accidental duplication of entries. During the cleansing phase the names were removed to prevent individual identification of the victims. Analysis, using IBM SPSS v27™, was conducted on the disposal information in the same manner as that done with the original Queensland homicide data.

## 6.3 Findings

The collected data was analysed in a similar manner to that contained within Chapter 5, the Queensland homicide incidents. This analysis allowed a direct comparison between the two sample groups.

### 6.3.1 Offender/victim relationship

The non-Queensland homicide data showed an almost even number of Acquaintance and No known relationship murders, 56 and 62 respectively, whereas the familial relationship was approximately half at 29, Table 6.1.

**Table 6.1** *Non-Queensland offender/victim relationship*

| Relationship | Frequency | Percent |
|---|---|---|
| Acquaintance | 56 | 38.1 |
| Familial | 29 | 19.7 |
| No known relationship | 62 | 42.2 |
| Total | **147** | **100.0** |

A comparison of the victims within each relationship category between the Queensland and Non-Queensland samples is shown in Table 6.2. Acquaintance numbers are relatively close while the other two categories, Familial and No known relationship are almost the reverse of each other.

**Table 6.2** *Comparison of data samples by relationship*

| Relationship | Frequency % |
|---|---|
| Qld Acquaintance | 48.3 |
| Non-Qld Acquaintance | 38.1 |
| Qld Familial | 36.7 |
| Non-Qld Familial | 19.7 |
| Qld No known relationship | 14.9 |
| Non-Qld No known relationship | 42.2 |

### 6.3.2 Victim disposal direction

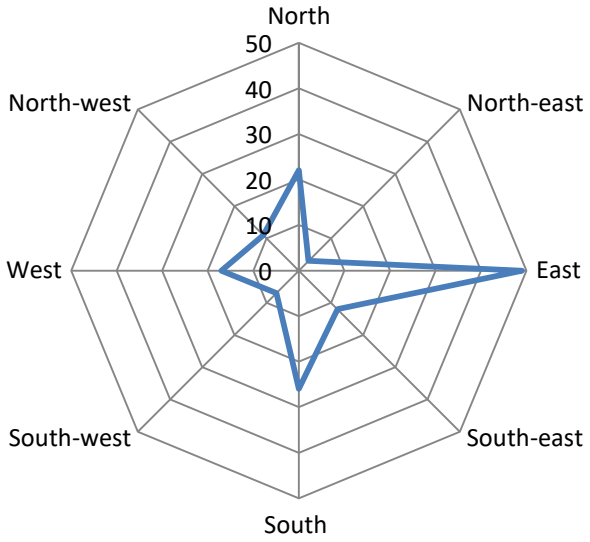
As identified within the methodology in chapter 5 (section 5.3 and Table 5. 2) the directions of victim disposal were simplified to the four cardinal and four inter-cardinal directions based on the plotting of the murder and location sites onto Google Earth Pro™. Table 6.3 identifies the directions that the non-Queensland victims were transported after their murder. The predominant direction was east, with 33% of the total. This was followed by south, 17.6%, north at 14.7% and west with 11.8%. The remaining four cardinal directions account for only 20.8% of the victims.

**Table 6.3** *Non-Queensland victim disposal direction*

| Direction | Frequency | Percent |
|---|---|---|
| East | 49 | 33.3 |
| North | 22 | 14.9 |
| North-East | 3 | 2.0 |
| North-West | 11 | 7.5 |
| South | 26 | 17.7 |
| South-East | 12 | 8.2 |
| South-West | 7 | 4.8 |
| West | 17 | 11.6 |
| Total | 147 | 100.0 |

The direction of victim disposal is pictorially depicted in Figure 6.3, and clearly shows the leading easterly direction.

**Figure 6.3** *Non-Queensland direction of victim disposal*




Victims of non-Queensland homicides were predominantly moved eastwards, 33.3%, Table 6.4, and this was also the case within the individual victim relationship categories. In the Acquaintance category next disposal directions were north and south, being approximately equal with 9 and 8 victims respectfully; while in the No know relationship category north, south and south-east were the second most recurring directions with 8 victims each, at 12.9%.

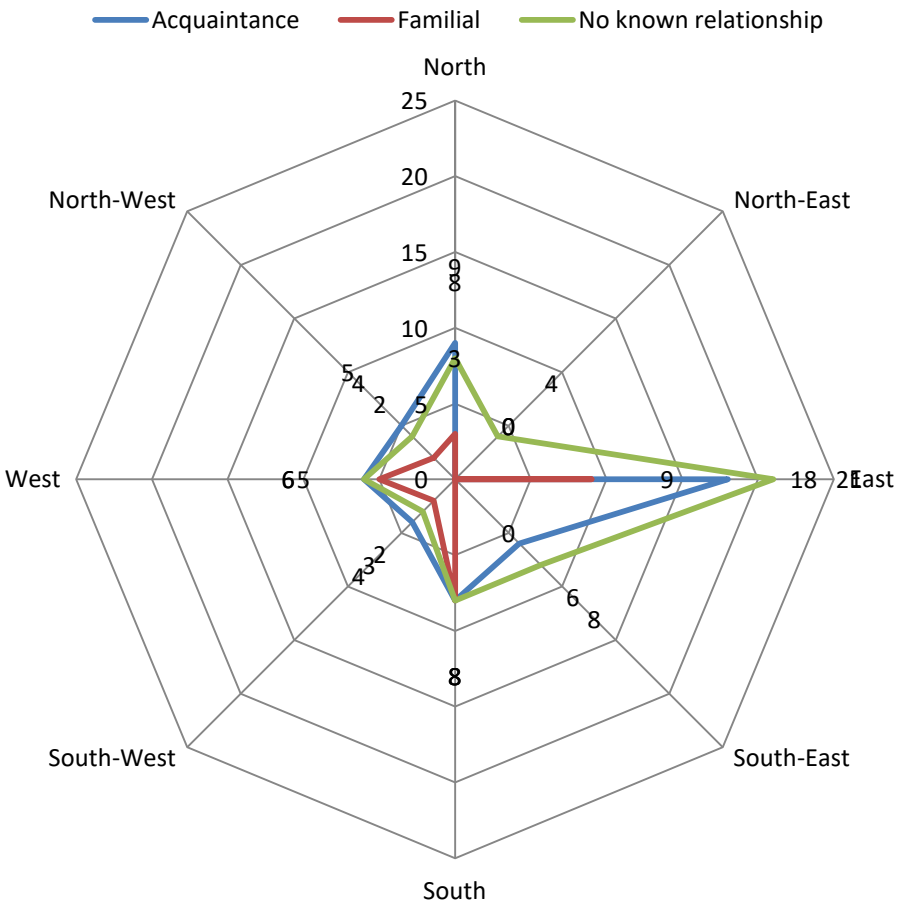
**Table 6.4** *Non-Queensland: Victim disposal direction by relationship*

| Direction | Relationship | | | |
|---|---|---|---|---|
| | Acquaintance | Familial | No known relationship | Total |
| East | 18 | 9 | 21 | 48 |
| North | 9 | 3 | 8 | 20 |
| North-east | 0 | 0 | 4 | 4 |
| North-west | 5 | 2 | 4 | 11 |
| South | 8 | 8 | 8 | 24 |
| South-east | 6 | 0 | 8 | 14 |
| South-west | 4 | 2 | 3 | 9 |
| West | 6 | 5 | 6 | 17 |
| Total | 56 | 29 | 62 | 147 |

A visual representation of victim movement directions for all three categories is shown in Figure 6.4. This clearly indicates east as being predominant overall, followed by north, south

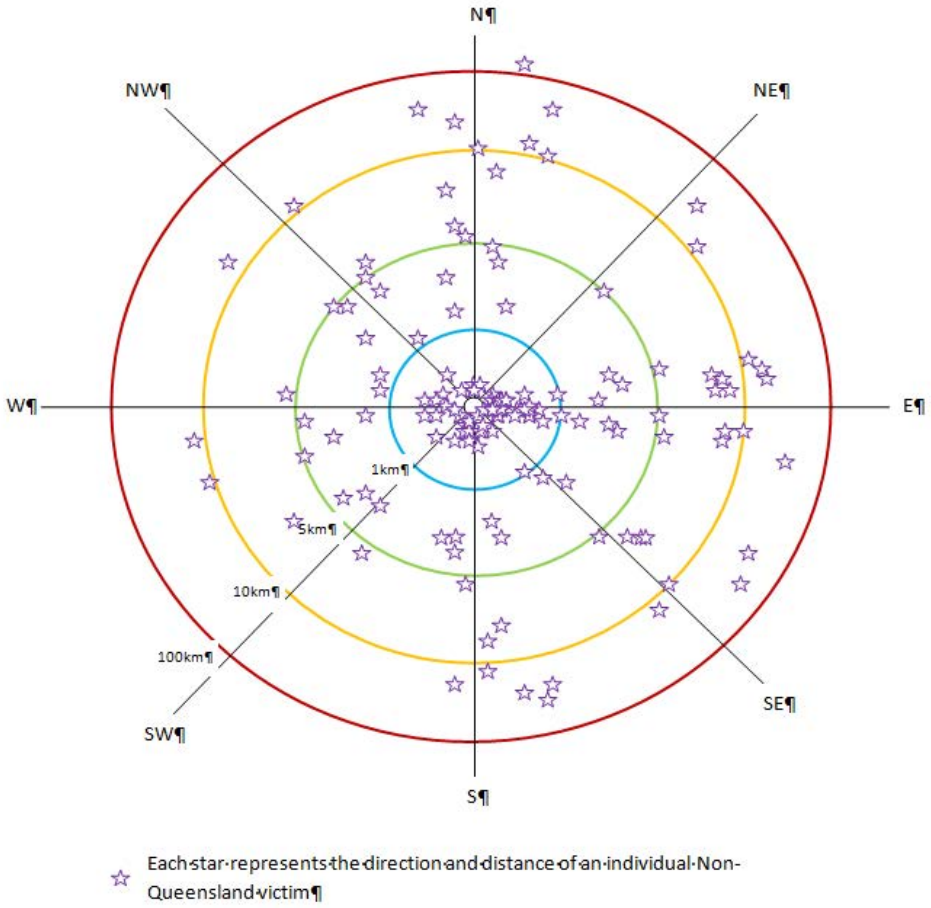
and west. North-east was only used to dispose of victims in the No known relationship category. It also shows that south-west and north-east were the least used for victim disposal by a significant amount. The No known relationship category is the only one that had victims taken in all eight directions.

**Figure 6.4** *Non-Queensland: Victim disposal direction comparison.*




The dispersal of non-Queensland victims is shown in Figure 5.9. When compared to the Queensland dispersal, Figure 5.4, it can be seen that there is a broader range of dispersal in non-Queensland victims.

**Figure 6.5** *Dispersal of Non-Queensland Victims*




### 6.3.3 Method of victim disposal

The method of disposal of non-Queensland victims showed that no concealment was the most commonly used method, Table 6.5, with 47.9%. In these instances, the victim was basically left on the ground after being moved. Concealment on the ground and being covered with what was locally available, such as leaf litter, branches and the like accounted for a further 27.4% of victims. The concealment of a victim in something such as a wheelie or industrial waste bin, suitcase or other repository accounted for a further 14.9% of victims. Of the remainder, shallow graves accounted for 7.7% and there were three victims that were either cremated or dismembered.

**Table 6.5** *Non-Queensland method of victim disposal*

| Disposal Method | Frequency | Percent |
|---|---|---|
| Concealed on ground. | 40 | 27.4 |
| Concealed other | 22 | 14.9 |
| Cremated | 2 | 1.4 |
| Dismemberment | 1 | 0.7 |
| No concealment | 71 | 47.9 |
| Shallow grave | 11 | 7.7 |
| Total | 147 | 100.0 |

Concealment was predominantly the same for both Acquaintance and No known relationship categories, Table 6.6. Making no attempt at concealment was the preferred method, 56.4% and 57.1% respectively. Concealed other was the main method in the Familial category, 47.6%. This category also had the only two cremated victims, while the acquaintance category had the sole dismembered victim.

**Table 6.6** *Non-Queensland: Victim concealment method*

| Concealment | Relationship | | | |
|---|---|---|---|---|
| | Acquaintance | Familial | No known relationship | Total |
| Concealed on ground. | 20 | 5 | 15 | 40 |
| Concealed other. | 6 | 7 | 9 | 22 |
| Other | 6 | 8 | 0 | 14 |
| No concealment | 24 | 9 | 38 | 71 |
| Total | 56 | 29 | 62 | 147 |

### 6.3.4 Method of victim transport

The most common method of victim transport was via motor vehicle in the first instance, totalling 67.3% of all victims, Table 6.7. All of these victims were then dragged from the vehicle to their final location. Approximately one third, 31.3%, of victims were carried and/or dragged from where they were killed to their final destination. A single victim was

dropped from a bridge, 0.6%. There was a single victim where it was not able to be ascertained how they were moved.

**Table 6.7** *Non-Queensland method of victim transport*

| Transport Method | Acquaintance | Familial | No known relationship | Total |
|---|---|---|---|---|
| Carried/Dragged | 20 | 9 | 17 | 46 |
| Dropped | 0 | 1 | 0 | 1 |
| Unknown | 0 | 0 | 1 | 1 |
| Vehicle | 36 | 19 | 44 | 99 |
| Total | 56 | 29 | 62 | 147 |

### 6.3.5 Victim transport distance

The distances non-Queensland victims were transported varied from 200m through to 104km as shown in Table 6.8. The most frequent distances were 200-500m from the murder scene, 44.2%, 600m -5km, 20.4%, and 5-10km with 17.0%. The remainder of the distances were relatively evenly spread up to approximately 15km, and from there to 104km only accounts for 10.2% of victims. The single distance above 70km, at 104km, was within the Acquaintance relationship, whereas the largest distance a Queensland victim was transported was 731km.

**Table 6.8** *Non-Queensland Distance victim moved from murder scene*

| Distance (km) | Acquaintance | Familial | No known relationship | Total |
|---|---|---|---|---|
| 0.2- 0.5 | 24 | 14 | 27 | 65 |
| 0.6 – 5.0 | 11 | 5 | 14 | 30 |
| 5.1 – 10.0 | 13 | 2 | 10 | 25 |
| 10.1 – 20.0 | 6 | 3 | 4 | 13 |
| ≥20.1 | 2 | 5 | 7 | 14 |
| Total | 56 | 29 | 62 | 147 |

### 6.3.6 Victim murder method

The most common method of murder for non-Queensland victims was strangulation, with 56 victims, 38.1%, Table 6.9. Use of a bladed weapon was second, at 28.6%, with physical assault and blunt force trauma being third and fourth, 13.6% and 11.6% respectively. Instances where the homicide method was unable to be determined accounted for six victims, 4.1% and only three victims, 2.0%, were killed by a firearm. Drowning, suffocation and a spear gun were the cause of death in the remainder of victims, 2.1%.

**Table 6.9** *Non-Queensland Relationship/Homicide method*

| Homicide method | Relationship | | | |
|---|---|---|---|---|
| | Acquaintance | Familial | No known relationship | Total |
| Blade weapon | 12 | 7 | 23 | 42 |
| Blunt force trauma | 2 | 7 | 8 | 17 |
| Firearm | 2 | 0 | 1 | 3 |
| Physical assault | 9 | 4 | 7 | 20 |
| Strangled | 29 | 10 | 17 | 56 |
| Other | 2 | 1 | 6 | 9 |
| Total | 56 | 29 | 62 | 147 |

Within the categories, a blade weapon was most common murder weapon where there was no known relationship, with strangulation in the other two categories. The top two methods in all categories were blade weapons and strangulation. Overall, there was very little difference in the numbers involved, with drowning, firearms, suffocation, other weapon and unknown only accounting for a very small number of victims at 12.

### 6.3.7 Distance victim moved from road/track

This section identifies the distances that victims were moved from a road or track to their final location by relationship category. A disposal distance of 20m from the nearest road or

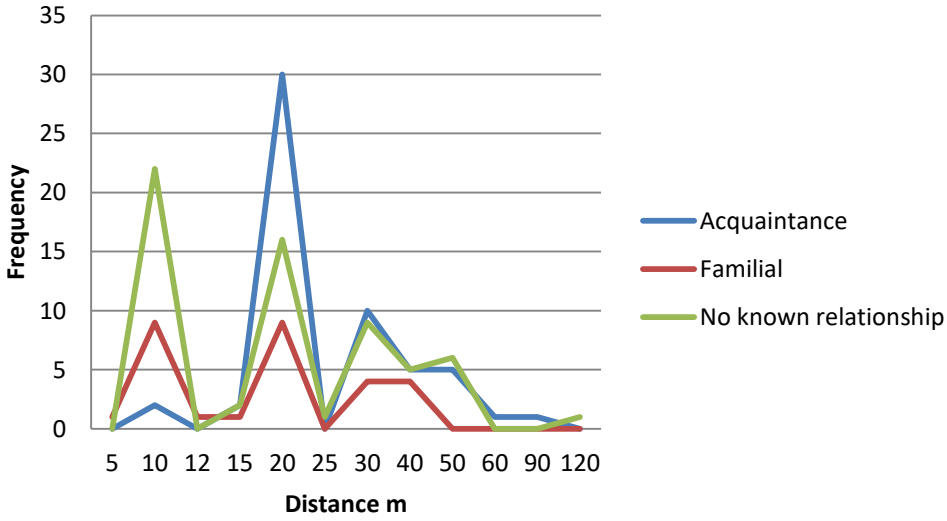
track accounts for approximately a third of all victims at 37.4%, Table 6.10. Victims disposed up to 20m accounted for 27.2% of the total. A further 25.2% of victims were moved between 30m and 50m from a road or track. Beyond 50m only accounted for 2% of victims. No victim was located further than 120m from a road or track, somewhat further than the Queensland victims.

**Table 6.10** *Non-Queensland distance victim found from road/track*

| Distance (m) | Relationship | | | Total |
|---|---|---|---|---|
| | Acquaintance | Familial | No known relationship | |
| 10 | 4 | 12 | 24 | 40 |
| 20 | 30 | 9 | 17 | 56 |
| 30 | 10 | 4 | 9 | 23 |
| 40 | 5 | 4 | 5 | 14 |
| 50+ | 7 | 0 | 7 | 14 |
| Total | 56 | 29 | 62 | 147 |

The distances victims were moved from a road or track by relationship is shown graphically in Figure 6.6. Two spikes are evident at the 10m and 20m distance, with several other high numbers between 30m and 50m.

**Figure 6.6** *Non-Queensland: Distance victim found from road/track*



### 6.3.8 Victim transportation method

In all categories of relationship, a vehicle was the most common method of transport, and most victims were then dragged from a vehicle to their final location site, Table 6.11. Dragging the victim was the second most common method for Acquaintance and No known relationship categories, 25.6% and 28.5% respectively. Carrying or dragging was equal second for the Familial relationship at 19% each. The No known relationship category had the single unknown method of transport.

**Table 6.11** *Non-Queensland: Victim transportation method by relationship*

| Method of Transport | Relationship | | | |
|---|---|---|---|---|
| | Acquaintance | Familial | No known relationship | Total |
| Carried/dragged | 20 | 9 | 17 | 46 |
| Dropped | 0 | 1 | 0 | 1 |
| Unknown | 0 | 0 | 1 | 1 |
| Vehicle and dragged | 36 | 19 | 44 | 99 |
| Total | 56 | 29 | 62 | 147 |

## 6.4 Discussion

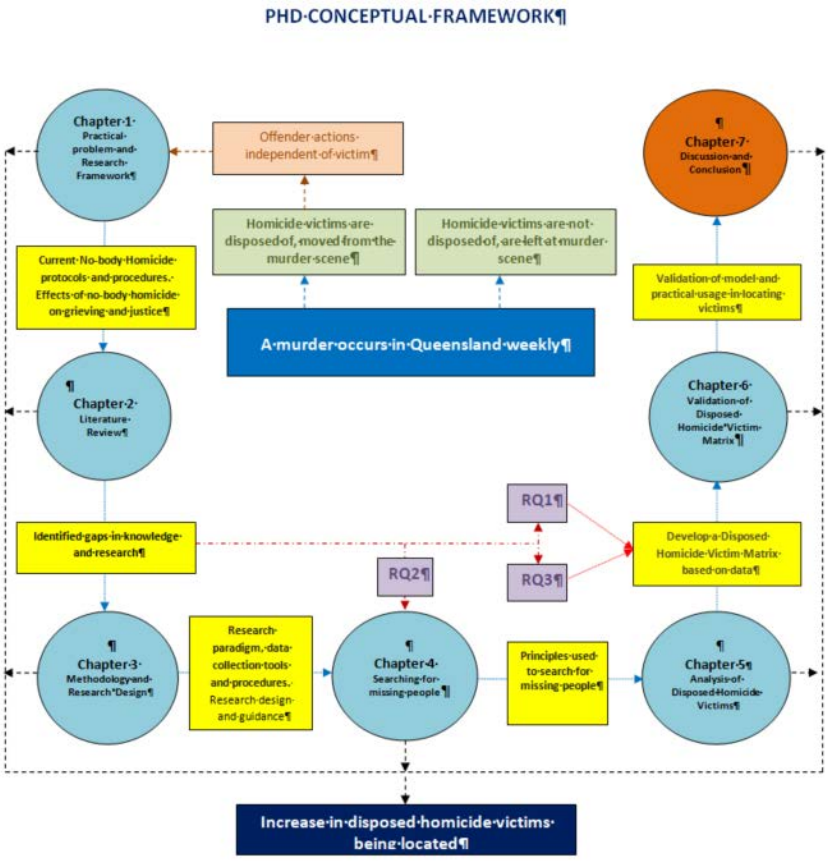
A full discussion of Queensland disposed homicide victims in contained in chapter 7 (section 7.4), including a comparison with the non-Queensland disposed victims. Chapter 7 also references the three research questions and how they have been addressed.

# 7 Discussion and Conclusion

## 7.1 Introduction

This chapter completes the thesis by discussing the previous chapters in a cohesive manner, identifying the linkages between SAR and victim disposal both in Queensland and throughout Australia. The research objectives and hypotheses are also discussed in light of the findings of the research. It suggests that the Disposed Homicide Victim Matrix is a valid tool to assist search coordinators in locating undiscovered victims of homicide, therefore aiding in the co-victim grieving, establishing death and potential perpetrators and increasing community confidence in the police. Figure 7.1 outlines the thesis to this stage.

**Figure 7.1** *Thesis Outline (Chapter 7)*



## 7.2 SAR strategy results discussion

SAR coordinators were actively using the search strategies as contained within the National SAR Manual to good effect, with a 99.1% success rate in finding missing people in land situations within Queensland (Queensland Police Service, 2021d). This success rate is comparable with New Zealand at 98.1% (Ferner et al., 2022) and more so with Queensland being 6.9 times larger, has a greater population and approximately the same number of active SAR coordinators (Ferner et al., 2022). There are no other known comparable country SAR rates. This demonstrates that the current search strategies were providing a sound basis for locating missing people.

### 7.2.1 SAR Strategy usage

The reflex search strategy, (Whitehead, 2021b), was designed as a rapid response to a search situation with limited resources and information. Its use by the majority of coordinators indicated that it was a well-tested strategy. While more prolific with the younger SAR members than older ones its usage was validated through the finding of 81% of missing people without the need to resort to a more formal search (Queensland Police Service, 2021d). A version of this strategy had been around for many years, although it never had a particular name until 2015 and was solely used by land searchers as there is no equivalent marine version (Whitehead, 2021b). Further to this could be the SAR situation itself, depending on the urgency and time delay in reporting, a reflex search may not have been the best initial use of resources and a formal search commenced instead.

The theoretical strategy (Whitehead, 2021b) was used by almost all land SAR coordinators and was the backbone of SAR for many years. At first glance this strategy could possibly be dispensed with but there were occasions when it provided a smaller search area than the Statistical strategy, mostly when the time elapsed by the missing person is relatively short

(Whitehead, 2021b). Tranter and Langmuir have developed tables that can augment Naismith's Rule with respect to the fitness of the target lost person (Magyari-Saska, 2012) but these have rarely been useful because of the over or under estimation of the targets fitness level by friends and family. If the missing person has not received help or assistance then the theoretical calculation should represent the greatest distance and therefore area that the missing person could travel in the time they have been missing. This strategy worked least among Field Search Coordinators (FSC's) and while there was no obvious reason for it several possibilities arise; the calculations were incorrect in that insufficient weight was given to speed of travel or time elapsed or that the initial Lost Person Behaviour (LKP) was incorrectly determined.

The statistical strategy was the most used of the four formal strategies and as it relied less on calculations, appreciations or deductions was possibly the easiest to initiate. The area resulting from the statistical strategy was commonly smaller than that of the theoretical, providing a search area that was able to be searched reasonably quickly. This was tempered with the typical time taken to search 1km² with a team of ten searches being three hours (Whitehead, 2021). The high rate of usage reflects its importance within SAR, notwithstanding that it was one of four interdependent strategies. References to the statistical strategy were easy to locate within the National SAR Manual and a significant period of training was devoted to its use, again, reflected in the usage rate. Only 4% of missing people were located outside the statistical search area, and given that it was based on what most missing people had done in the past this was a remarkable achievement. Entry of search data into the database ensured that the statistics relied on to develop the strategy were as up to date as possible.

Initial and refresher training has identified that map reading skills, a vital component of the subjective strategy, were becoming less prevalent among SAR coordinators, and possibly

younger people in general (Whitehead, 2020b). Evident through training courses and real-time incidents was that newer SAR Coordinators rely on electronic aids such as Google Earth and GPS devices (Queensland Police Service, 2021d). While it was necessary to have an appropriate level of technical or computer skill, SAR was heavily reliant on the ability of a coordinator to identify land topography and features when developing a search area (Whitehead, 2021b). The depreciation of this skill was reflected in the 11% of missing people who were found outside of this strategy. As a result of this, map reading and the skills to do so had become a larger part of training and was included in the biannual skills competency workbooks completed by all QPS SAR coordinators (Whitehead, 2020a).

Utilising the known facts to make judgement-based assessments on the possible movements of the missing person was the basis for the Deductive Strategy (Whitehead, 2021b). In doing so it was possible to narrow down the travel and intention options to a small number of possible courses of action by the missing person (Whitehead, 2021b). This allowed the often-limited resources available to a coordinator to be used to better effect on a smaller number of search areas. Undertaking a deductive analysis was a skill that needed to be learned, in the way a detective needed to look at the facts, and the questionnaire identified that 19% of incidents resulted in the missing person being in a location other than what was deduced. More work in this space will need to be planned for.

There were between twenty and thirty lost persons not located in any given year of this study. Investigations, Peer Reviews and Coronial Inquests had not identified issues with the search strategies; more often this had been due to extreme time frames, weather related events and despondent persons making significant and elaborate attempts to hide themselves (Queensland Police Service, 2021d).

### 7.2.2 SAR success

In theory, more people should be found outside of the statistical search area, than the theoretical search area, however the survey indicated that more people were found outside the theoretical search area, 19%, when compared to the statistical, 4%. It was impossible for more missing people to be outside a generally larger circle than a smaller circle within the larger circle. This would perhaps indicate the poor wording of the question, which should have asked how many people were found outside each strategy search area rather than a yes or no answer.

The statistical strategy, while being well used, did have some inherent problems. Being a statistics-based strategy, it was very much dependent on the information from SAR incidents being inputted by SAR coordinators, and there could never be a guarantee that all incidents were captured. While the 80% statistical distance ring was the most often used search distance (Whitehead, 2021b), the LPB categories also include greater distances out to 95%. As not all land SAR incidents were entered onto the Australian Missing Person Behaviour Database it was not possible to determine the entirety of distances that missing people were found at (Whitehead, 2019). Further investigation into those figures will determine if greater statistical distances were being used.

A small number of targets were found outside the subjective and deductive search areas, 11% and 19% respectively. These figures underlie the need for a SAR coordinator to practice map reading and intelligence gathering skills in order to make valid assessments of the terrain and intentions (Whitehead, 2020b). In several of these instances where the missing person was found outside of the search area there was doubt about the initial starting point, which itself is often based on limited intelligence gathering, and this was frequently confirmed with follow-up interviews with the missing people after the incident (Whitehead, 2021b).

It was possible to develop a search area using a combination of all strategies, noting that time has an impact. The chances of a missing person being outside a search area decrease as each strategy was applied, and when all four formal strategies were used concurrently the highest probability search area was apparent (Whitehead, 2021b). In a perfect world no missing person should be outside a theoretical search area if it had been applied correctly, and a small number outside a statistical search area as the LPB is reliant on what most missing people had done in the past. The fact that some missing people were never found suggests that they had done something out of the ordinary. The aim of the strategies was to develop a high probability search area within which was the missing person, and that could withstand coronial and community scrutiny in the event the missing person was not found. The questionnaire indicated that most SAR coordinators use all available strategies at their disposal.

### 7.2.3 Other SAR Strategies

Respondents were asked to provide information on other strategies that they had found useful during SAR incidents via an open-ended free text question. The use of combined search practices based on circumstances and search asset availability was identified by 5% of respondents. This appeared to relate to the use of all available strategies taking into account the individual SAR circumstances, and was a standard SAR tactic. A further 5% suggested using improved local knowledge, and from experience this would include landowners, National Park Rangers, State Emergency Service members and civilians who had previously searched in that location. Again, this was part of the intelligence gathering process. The increased use of SAR technology had a response rate of 4%. Two responses quoted 'Technology and IT mapping/triangulation programs' and 'GPS tracks and telephone pings'. Technology such as drones, electronic mapping, telephone triangulation and increased use of GPS devices had been addressed over the period since the questionnaire was taken as a result

of Coronial recommendations (Lock, 2018). The final suggestion was the use of social media, made by 1% of respondents. This area of SAR was continually under improvement as methods of accessing the social media accounts of missing people were developed, often requiring specialist IT knowledge.

There was no evidence that any of the respondents had identified or attempted to use other strategies to improve the success rates. While not a strategy, the only new search technique developed over the last decade is the Night Circle Search developed to make better use of the Challenger jets for electrical and optical searching of small land SAR areas (Whitehead, 2021c).

### 7.2.4 Emerging SAR Technology

There are a number of emerging technologies that may value add to the way search and rescue is undertaken within Australia. These technologies include remotely piloted aerial systems (RPAS) or drones and computer based modelling for search area determination and computer aided searching.

RPAS technology has been around for many years, particularly within the military. Over the last five years there has been an increased use of drones to provide a search capability in locations that are difficult or dangerous to access by humans, such as cliff lines and mangrove swamps. The continual improvement in cameras and the ability to record flight vision has contributed to the clearing of search areas and provision of higher probabilities of detection in these remoter areas (Orr, 2023). A further development has been the thermal imaging capabilities of drones, and there have been several successes with missing people being found by their heat signature (Papadopoulos, 2023).

An agent-based model to determine high probability search areas is currently being developed to assist SAR coordinators. This model is centred on computer interpretation of

mapping and incorporates LPB to provide evidence based search areas in a similar manner to what is currently done manually (Dacey, 2022). While still in its infancy this agent-based system does have the potential to speed the process of search area determination, making the most of available resources and time.

### 7.2.5 Search for Deceased People

When questioned as to whether the respondents had searched for a known deceased person, a suspected fatality or someone whose time frame for survival had expired, over half responded in the positive. Homicides were not included because of the many variables associated with body disposal that fell outside search strategies. Of the responses, most identified that the deceased person was located within the search area determined using current methods. Nine percent located the target outside the initial search area and 11% never located the target. The remaining 5% ended with the target being located but not by any official search strategy, most being the accidental finding by bushwalkers, farmers and stockmen after the search had been terminated. This last 5% of target deceased people were in areas initially too difficult or dangerous to search and were not searched as a result.

Over the last decade, 2012-2022, SAR coordinators in Queensland have located 439 deceased missing people from a total of 22,439 reported missing, bearing in mind that these people were those who were known to be lost, in distress or their disappearance was out of character. Since 2007 there had been 327 persons never located despite extensive searches (Queensland Police Service, 2022a). Deceased missing people and unlocated victims of homicide are both non-responsive targets, and as had been proven many times the SAR strategies were more than adequate to aid in the search for the latter.

While outside the scope of this project, the search methods referred to are the standard sector, parallel line, creeping line and barrier search types that are used daily by searchers. Each

search pattern, while being uniform within their category, is tailor made for each search. By this, it is meant that separation gaps between searchers, the speed of advance and whether the searchers are upright or on their hands and knees are individually determined for each search effort. A search for an unresponsive person such as a disposed homicide victim requires searchers to be very closely spaced, equipped with probes and to move at a pace of around 100m per hour. These type of contact searches are an investigation of the entire ground, with probing into the earth for shallow graves. This study suggests that the current search methods could be adapted to the search for disposed homicide victims with minimal changes.

### 7.2.6 SAR Strategy Results Conclusion

The five land search strategies had been identified as being valid and successful. Their usage had been relatively high across all SAR coordinators and the results were commensurate with this. The reflex strategy was always designed as an immediate response, based on the premise that most missing people were located close to where they were last seen. It was identified that not all coordinators were using the reflex strategy. The four formal strategies were not designed to be used alone, working best when done simultaneously to produce a valid search area with a high probability of success. The questionnaire identified that SAR coordinators were using selected strategies over others with the statistical strategy being prominent. As with all things in life, humans vary in behaviour, hence the necessity to use all four strategies to provide the best possible search area. In doing so it also reduced post-event criticism in the event a search was unsuccessful.

The questionnaire had been beneficial in several ways. It provided valuable data into the usage of the search strategies, confirming the success of the Queensland SAR system (Queensland Police Service, 2021d). Further, it provided a validation that the methods of search work and were producing the results expected from coordinators by the community.

This also had a flow on effect with training, indicating that the competency-based training was producing well equipped coordinators. The single source of training also contributed to uniformity and consistency throughout the state and nation.

Australia has a world class search and rescue system, based on the collective experiences of many coordinators (National Search and Rescue Council, 2021). Those experiences have been encapsulated within the National Search and Rescue Manual, which provides all SAR coordinators with the strategies to resolve a SAR incident to achieve the best possible outcome. The questionnaire, while restricted to Queensland, showed that the current methods of land search were valid and were being actively used. The five land search strategies were guiding principles and when augmented with the experience of a SAR coordinator provided the missing person with the utmost chance of being located and rescued.

The SAR System, with its proven ability to locate both unresponsive and responsive targets can be adapted to the search for disposed homicide victims as these represent a sub set within the unresponsive target types. While beyond the scope of this project, the search methods and patterns currently used do not need modification, only the briefing to searchers as to the visual identification techniques to be used. The linkage between SAR and disposed homicide victims is no longer tenuous, and the success of search teams in locating these victims attests to that.

### 7.3 Homicide Data Discussion

This section discusses the results of the Homicide data from chapter 5. The homicide data collected from QPRIME provided a detailed picture of the nature of this crime within Queensland. Males represented the greatest proportion of offenders and this is representative of international studies (Sea, 2018; Beauregard, 2008; Field 2008) but most of these relate to sexual serial killers. Males are also the largest percentage of victims which differs from

international studies, where females dominate serial killer victims. Unknown offenders represented a small percentage of the total number in Queensland with no comparable international studies. Males were the greater movers of their victims with the remainder split almost evenly between females and unknown offenders, which compares with known international studies (Lee, 2019; Sea, 2018; Beauregard, 2008; Field, 2008; Häkkänen et al, 2007) From a sexual disparity standpoint it was understandable that most of the victim movement was carried out by males, and from a weight disparity comparison most offenders were larger than their victims, regardless of sex.

### 7.3.1 Disposal Direction

The order of prominence in disposal direction for victims was east, north and south equally, north-west, west, south-west, south-east and north-east. East had been the most prominent direction for the disposal of homicide victims overall. A variance was the category of no known relationship which showed a preference for south by a significant margin. With murders relating to this category spread throughout Queensland there is no identifiable reason for this.

A map of Queensland clearly identified that the majority of the formed roadways ran basically north-south or east west. The major highway system followed the coast the entire length of the state with other highways branching off westwards. The major connecting roads then linked these highways north-south. Plotting the locations of each incident into Google Earth Pro™ it became evident that most roadways or paths took an easterly direction, confirming the ease of movement in that direction. Notwithstanding this it was possible for a determined offender to travel in any direction of their choosing. Field et al (2008b) had identified that most homicide offenders tended to adhere to known locations or routes. Given that the majority of Queenslanders reside on or near to the coast it seemed logical that an

offender would head in that direction to dispose of a victim. This would also apply to going north or south. There was no obvious causal factor restricting offenders going north-east or south-east, except perhaps the limited number of roadways that went in those directions and/or the lack of knowledge of them. There are no known studies for a comparison of victim disposal directions.

### 7.3.2 Disposal distances

The victim disposal distances were measured in a straight line as in most cases the exact route of travel was not known or recorded. The most prevalent distance was 100m, about as far as an average person could drag or carry a deceased person easily (McCluskey, 2021). Of the four longest distances the reports indicated that the offender was heading for another known location, home town or relative, and disposed of the victim enroute. Interestingly, of the eight greatest distances, four were in estranged spousal relationships, three were friends and one was an acquaintance. Reports indicated that there may have been some long term animosity or hatred between the parties, prompting the offender to inflict further distress on the victim's families by moving them a distance where they would be unlikely to be found. The data indicated that the less intimate the relationship the less distance the victim would be taken for disposal. The rational choice theory (De Jong, 2012; Gul 2009)(Section 1.10.5 and 2.7), may influence the offender in choosing the distance and location of their victim disposal to maximise personal gain, distancing themselves from the murder.

### 7.3.3 Homicide Methods

The methods of homicide for disposed victims were varied, with most being weapons of opportunity such as knives, hammers and bats. At odds with Lee et al (2019) strangulation was not the most prolific murder method of those victims that were disposed. This study identified that bladed weapons, blunt force trauma and physical assault accounted for over

half of all victims. This might indicate that forensic awareness was not as common as would be thought, as all three methods leave behind significant amounts of body fluids and other evidence.

Access to firearms was strictly limited within Queensland, although a small section of anti-social community members had access to them (Johns, 2022). The firearm legislation restrictions were reflected in the relatively small number of murders using this method, less than one in ten. According to Alpers (2021) gun ownership in Australia is 3.3% of the population, a decrease over the last decade, but the number of firearms owned by Australians has increased, with a firearm owner averaging 4 weapons each. The method of murder did not appear to have a large impact on victim disposal or distances taken, but taken in conjunction with the relationship between the offender and victim, patterns did become evident. Intimate relationships, particularly spousal, often had more violent murder methods potentially driven by increased passion (Brookman, 2020), and resulted in the victims being taken further.

From a SAR perspective the method of homicide had a measure of determining how long decomposition would take and what searchers would be looking for. Although not the only factor, additional openings into a cadaver, through gunshot or knife wounds, allowed quicker ingress of insects and bacteria that could hasten decomposition, and easier egress of body fluids (Major, 2012). The murder method and time elapsed since the murder often dictated the content of search briefings based on decomposition and what was being search for (Whitehead, 2021).

### 7.3.4 Victim Concealment

Human bodies are incredibly difficult to dispose of once deceased. Humans represent a literal dead weight that is awkward to move, is difficult to dissect or dismember without

moderate medical knowledge and takes an industrial furnace at 800-1000°C to cremate properly (Roach, 2004). Predominantly, homicide victims were not moved from where they were killed, 81%, although in 41 instances the victim was covered with objects to aid in concealment without being moved.

Many homicides were done in the heat of passion, that is, during an argument or disagreement, and once done the offender was often at a loss to comprehend what had happened, hence the non-movement of the victim (Brookman, 2005). There had been occasions where some considerable effort had been put into victim disposal, suggesting a measure of forethought, sufficient time for afterthought or cunning on the part of the offender. Those include shallow graves either natural or man-made shallow depressions in the ground, not deep enough to fully inter a body. The victims were covered with closely available material such as vegetation, sticks or logs, sheet metal or rubbish.

Basic concealment of the victim on the ground and covering them with whatever materials were to hand was the main method of disposal, accounting for almost a third of all moved victims. It was the main method for acquaintances, boyfriend/girlfriend and friends. Ivan Milat's victims were possibly the most prominent for this method, being only covered with sticks and branches. Interment in a grave was done rarely, possibly due to the planning and equipment required. Interment presents issues for searchers, not least of which was the effect on a body by the covering soil in respect of depth and temperature (McGowan & Prangnell, 2015). Cremation was attempted once with little success as the temperatures needed are far greater than what could be created in a bush fire. Moving the victim but not concealing it was the second most common method despite it being the easiest and in the majority of those disposals the victim was left on the side of remote or rural roads, a task that could be completed in minutes. In these instances the use of a scent or cadaver dog may be beneficial depending on the time lapse between the murder and search.

### 7.3.5 Locating victims

On most occasions the victims were located through a police driven search based on intelligence gathered by investigators. Those searches were not based on any theory but were the equivalent to a reflex search for a missing person, which is, searching in the vicinity of the murder site. This is the initial linkage between search coordinators and the search for victims, using current strategies to provide the best response without formal guidance. Agricultural workers or bushwalkers undergoing their normal employment or leisure activities located the second highest number of victims. Offender and witness information had also contributed to victim location. That those victims were located suggested that offenders gave little thought to victim disposal, choosing locations that appear remote and inaccessible but in reality were not.

Police search and rescue coordinators were proficient at locating disposed homicide victims but could be better served with a comprehensive strategy developed for homicide victims to augment the current lost person strategies.

### 7.3.6 Height/Weight Disparity

Moving of a victim was more prevalent among males, by approximately ten fold; and this could be due to sexual disparity. The number of female and unknown offenders who moved their victims was almost even. Further to this the incidence of male offenders moving male and female victims is approximately even, there being no distinct grouping or significance identified. Within female offenders, the moving of male victims was more than twice as common as moving female victims, at odds with disparity but when explored further many of those male victims were children. Where the offender was unknown there was a higher incidence of male victims being moved with only a single female being identified.

Male offenders aged between 26 and 45 represented the highest incidence of victim disposal at over half, with an equal statistical spread throughout the ages involved. Without supporting evidence, it would be reasonable to attribute this to a males' most physically strongest years, giving them the most strength to move victims during the act of disposal (Findley et al., 1995). A similar situation existed among females, the highest incidence over the same age group, although the number of victims moved was much less. This may also be attributed to the strongest years of these offenders (Findley et al., 1995). These ages also represent the highest number of offenders so the connection between victim disposal and plain murder may be limited.

Females moved only three victims outside the 26-45 age group while males accounted for a further 48 victims. Disparity may account for the smaller numbers moved by females but it was also comparable to the smaller number of victims murdered by females. Many males were disposing of victims into their late sixties, with only a single female between 50-70 years doing the same. This may relate to male aggression, strength and greater opportunities. When it came to victims being moved there was a distinct age bracket of 21-55 years, representing 75% of all moved victims. This also correlated with the age bracket for the highest number of homicides, making it unsurprising that they were also the most moved. Male and female victims show similar patterns in being moved, and cover the entire spectrum of age groups from 0-81 years.

A comparison of the weight disparity of victim and offender basically conformed to sexual disparity; males tended to be heavier than females. The highest weight disparity in favour of the offenders related to murders of babies or young children by adults. Several babies were newborns, with all child victims under ten years of age. Without being recorded it was more

than likely that the offender in those instances had assistance in moving the victims. Even a prolific killer such as Ivan Milat made no attempt to move his seven victims, limiting himself to covering them with lose ground cover and trusting to the isolated location (Whittaker, 2015). There did not appear to be any discernible relationship between the offender and victim height disparity and the distance or method used to transport the victim. It did not always follow that a taller person is heavier.

When comparing disposal distances with weight disparity there was no discernible pattern identified. The highest weight advantage for the offender showed only relatively small distances travelled for victim disposal, whereas the six longest distances travelled identified two instances of a weigh disadvantage to the offender of -26kg and -10kg.

### 7.3.7 Victim Transport

There had been limited methods used in the transport of victims of homicide identified in this project. The offenders' motor vehicle had been used most often, and from a convenience viewpoint this was not unusual as these vehicles would be readily available. The victim's vehicle had been used on five occasions and a vessel was used once. Motor vehicles were used for all disposal distances greater than 100m. This correlates with motor vehicle being readily available, at approximately 1.8 per household in Australia (ABS, 2022).

Dragging/carrying the victim was the second most used method of disposal, although there were instances where it was not known how disposal was achieved. A distance of 100m was considered beyond what an average person could comfortably drag or carry a deceased victim and there were no instances where the victim had been dragged beyond this. This may represent a combination of shorter distances that a victim can be dragged in an urban environment and the difficulty of taking a victim through bushland in a rural environment. The Queensland Fire and Emergency Services only requires a recruit to be able to drag or

carry a 86kg weight for a distance of 30m in a single effort (McCluskey, 2021). It is possible that the adrenaline boost and/or the fear of being caught were significant drivers for offenders to go beyond what would be considered normal.

There were recorded instances where the victim had been put into a wheelie bin or suitcase. Those in the wheelie bins were left there after being dragged, there was no record of the wheelie bin being used as transport. Similarly, those put into suit cases were subsequently carried by motor vehicle and dragged to their final location.

### 7.3.8 Victim Distances from Road/track

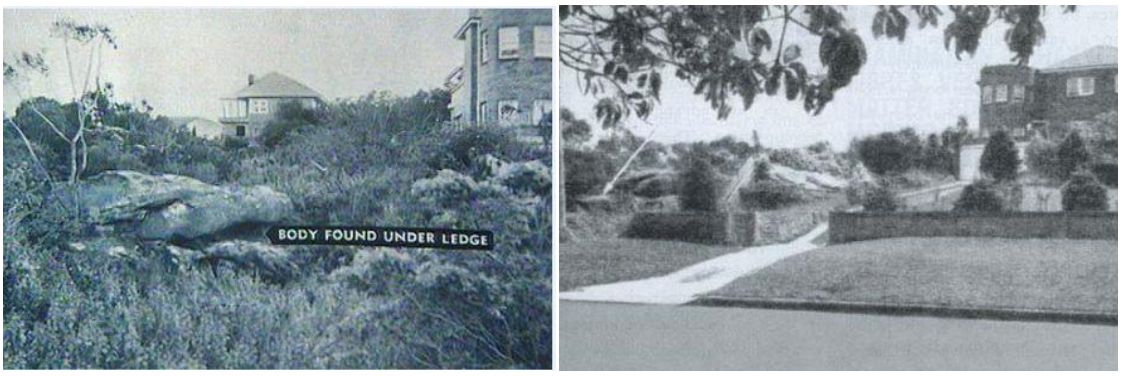
The furthest distance a victim had been located from the nearest road or track was 60m. The most common distance was between 10m and 30m, while the closest was only 5m. In the areas where the victims were left there was generally bushland edging the roadway, offering a measure of concealment and delaying the finding of the body. It is difficult to estimate distances in a bushland setting, with most people believing they had gone considerably further than in reality, perhaps contributing to the shorter disposal distances (Whitehead, 2021c). This study indicated that victims were never disposed in the middle of large acreages or areas, always around the peripheries. From a search aspect this then limits cadaver searching to approximately 100m from any identified road or track, allowing for some flexibility.

### 7.3.9 Downhill

In all instances where the victim had been dragged/carried or moved from a motor vehicle to a disposal location it had been in a downward direction. In this study there are no recorded instances of a body having been taken up hill, and only one found outside the research. The only known up-hill victim disposal occurred in 1960 when the killer of victim 96 hid the

child's body in a slightly uphill direction on a vacant block of ground in the northern Sydney suburb of Seaforth, Figure 7.2.

**Figure 7.2** *Only known uphill victim disposal*




The body was wrapped in a blanket and hidden under a small rocky overhang approximately 20m off Grandview Grove (Tedeschi, 2016).

### 7.3.10 Clustering Effects

Evidence from interviews with convicted killers in the USA had identified that very few of those single victim murderers make any conscious plans for the disposal of their victim prior to the commission of the homicide. Serial killers on the other hand, often either prepared a disposal location in advance or utilised disposal locations known to them (Beauregard, 2008b; DiBiase, 2015b). The Green Bay Killer, convicted of murdering 49 women in Washington State, USA, placed his victims in three separate locations. He was able to return to these locations at a later stage to re-live the murders (Keppel & Birnes, 2003). There has been no known study into the psychology behind victim disposal locations in Australia.

While not evident in this study a clustering effect had been found in some Australian serial killers, Table 7.1.

**Table 7.1** *Clustering of homicide victims*

| | |
|---|---|
| **Milat** | Milat was convicted of killing seven persons, three pairs and a single, in the Belanglo State Forest. Each pair was killed and disposed at the same place, resulting in four body disposal sites in total, all fitting into a circle of 700m diameter. There is no evidence, either for or against, Milat revisiting any of his previous killing sites (Whittaker, 2015). |
| **Worrell and Miller** | Disposed of four of their young female victims at different but relatively close sites outside the town of Truro, South Australia (McNeice, 2006a). |
| **Bunting and Wagner** | Bunting and Wagner stored seven of their victims in a disused bank vault at Snowtown, South Australia (Kidd, 2011). |
| **Birnie and Birnie** | The Birnie's murdered and disposed three of their four victims in the Gleneagles National Park, Perth (Kidd, 2011) |
| **Camalleri and Becket** | Camalleri and Becket murdered and disposed of both victims at Fiddlers Green (Kidd, 2011). |
| **Wanda Beach killer** | The two young victims of the Wanda Beach killer were located semi-concealed within metres of each other at Wanda beach (Whiticker, 2021). |

There had been no evidence that any of those killers had used the disposal location as a means of reminiscing over the events that occurred during the murder but there was some evidence that suggested clustering was a commonality (Kidd, 2011).

### 7.3.11 Proposed Disposed Homicide Victim Matrix

The findings from all aspects of victim disposal: direction of disposal; distance of disposal; method of homicide, victim concealment patterns, victim/offender disparity; victim transport and distance from roads/track, on their own do not provide any significant guidance for police search coordinators. But when all these aspects are brought together, patterns and characteristics in victim disposal emerge. It is these patterns and characteristics that form the basis of the Disposed Homicide Victim Matrix (DHVM), Table 7.2.

The DHVM comprises the most common or frequent actions of an offender when disposing of a victim, within the three relationship categories. The data collected has been descriptively analysed within each of the seventeen data sets, identifying the frequencies in each case. These frequencies, or means, have been developed into a table format that provides the three

most frequent disposal distances, directions, concealment methods, transport methods and distances from roads/tracks. It is not possible to cover all aspects of victim disposal in a single table format. The DHVM represents a summary of an offender's behaviour when disposing of a homicide victim, as either an average of all actions or the mean of all actions. The distances from the homicide site were broken down into three sections: all disposed victim homicides; those disposed less than 100km, 96%, of victims, and finally the distances less than 50km, which make up approximately 92% of all incidents. Due to the infrequency of victims being transported great distances, such as over 50km it was considered reasonable to utilise the latter figures in the initial stages of a search for a disposed homicide victim, and then work outward as intelligence and information became available.

The possible methods of concealment could be narrowed down depending on the environment where the disposal occurred. This included access to covering materials, composition of the ground and ability to create a shallow grave or whether the victim would most likely be disposed but unconcealed. Those factors, once considered, were detailed as part of a searcher briefing to ensure the appropriate methods of searching were used and that target identification was possible.

As previously mentioned, the victim disposal distances from road or tracks were relatively short, precluding the necessity to search far from them. With the difficulties encountered in taking a victim through thick scrub and uphill, reconnoitre of potential search areas by the coordinator would enable area boundaries to be set. Notwithstanding this, the offender was only limited by their strength and determination in disposing of their victim, so may stray beyond the averages suggested by the matrix.

The height and weight disparity, while helpful in determining if a victim could be moved, did not show any marked trends that would be workable within the matrix. Research into links

between murder method and victim transport in South Korea (Lee & Park, 2019) identified that disposed victims generally suffered non penetrating murder methods such as strangulation and blunt force trauma. It was also identified that the offenders were often younger in age and had planned the disposal site beforehand (Lee & Park, 2019). The Queensland study did not conform to this reasoning, with bladed weapons and physical assault being more common than blunt force trauma or strangulation as methods of killing. The greater population density of South Korea, 517 people per km², when compared to Queensland, 2.79 people per km² (National Geographic, 2019) may have necessitated this as a detection avoidance technique.

There was a lot of information of a general nature relating to the disposal of a homicide victim, none of which detailed the exact actions of any one offender. But, taken as a whole it did show that most people who kill tended to do similar actions when it came to the disposal of their victims. Within the parameters identified in this study it was possible that more victims could be located in a timely fashion, returning them to their families and aiding in the identification and conviction of the offenders.

**Table 7.2** *Queensland: Disposed Homicide Victim Matrix.*

| Disposed Homicide Victim Matrix | | | |
|---|---|---|---|
| | **Acquaintance** | **Familial** | **No known relationship** |
| **Distance from murder site (km)** | | | |
| **Mean (All murders)** | 22.76 | 30.90 | 4.67 |
| **Std. Deviation** | 62.47 | 114.72 | 6.27 |
| **68%** | 85.23 | 145.62 | 10.94 |
| **95%** | 147.7 | 260.34 | 17.21 |
| **Mean (<100km)** | 8.13 | 5.82 | 4.67 |
| **Std. Deviation** | 16.33 | 11.62 | 6.27 |
| **68%** | 24.46 | 17.44 | 10.89 |
| **95%** | 40.79 | 29.06 | 17.16 |
| **Mean (<51km)** | 3.7 | 4.48 | 4.67 |
| **Std. Deviation** | 6.28 | 8.36 | 6.27 |
| **68%** | 9.98 | 12.84 | 10.89 |
| **95%** | 16.26 | 21.2 | 17.16 |
| **Method of transport (Most common)** | | | |
| **Motor vehicle** | 49% | 49% | 41% |
| **Dragged/carried** | 35% | 43% | 55% |
| **Method of concealment** | | | |
| **Concealed on ground** | 37% | 35% | 27% |
| **Shallow grave** | 14% | 11% | 9% |
| **Concealed other** | 10% | 6% | 9% |
| **No concealment** | 13% | 9% | 32% |
| **Never located** | 14% | 22% | 0% |
| **Average distance moved from transport (From road/track)** | | | |
| **Distance (m)** | 20m | 27m | 21m |
| **Direction taken to dispose of victim** | | | |
| **Most common three directions** | East<br>North<br>South | East<br>North<br>West | South<br>South-west<br>North-west |

### 7.3.12 Using the Disposed Homicide Victim Matrix

Using the details from the below scenario will demonstrate how the matrix might be used to assist with developing a potential location to search. The victim was initially reported missing to police late on a Friday night after her parents learnt that she failed to attend her after school job. For the first week of the investigation it was not identified that a homicide had occurred and that the victim was being treated as a missing teenager. As information indicated a possible homicide, the investigation moved in that direction and a potential suspect was identified. On day 10 of the investigation a search coordinator was requested to assist in locating the victim.

The following information has been supplied by detectives:

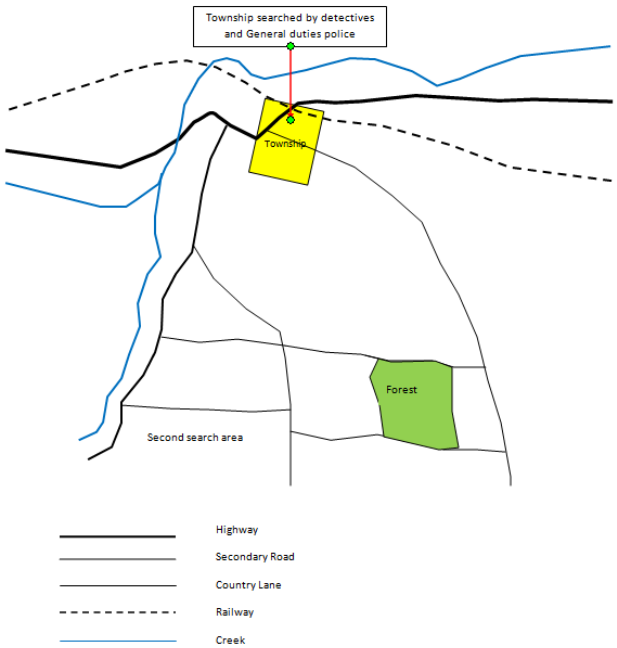
| | **Offender** | **Victim** |
|---|---|---|
| **Age** | 18yr | 16yrs |
| **Gender** | Male | Female |
| **Relationship** | Acquaintance | Acquaintance |
| **Weight/variance** | 85 (+15kg) | 70 (-15kg) |
| **Height/variance** | 178 (+18cm) | 165 (-18cm) |
| **Location of murder** | Outskirts of small rural town | |
| **Transport** | Offender motor vehicle, small two door sedan | |
| **Knowledge of area** | Lived there all their life | |
| **Day of murder** | Friday | |
| **Time of murder** | Between 1600hrs and midnight | |
| **Moon** | New moon on day after murder | |
| **Automatic Number Plate Recognition (ANPR)** | Nil | |
| **Demeanour** | Passive aggressive | Shy and quiet |

The area in which the murder occurred is predominantly farmland, with a mixture of crops grown throughout the year. There are low hills to the north and south, approximately 40km in both directions. What was once a major highway runs through the township, now

bypassed by a freeway to the north. The railway line runs east-west through the northern part of the township and is not accessible by the general public. There is a substantial watercourse to the north that curves around to the south on the western side of the township. There is no vehicular access to the northern side of the waterway for approximately 12km either side of the township. Most of the country lanes run in a rough north-south or east-west direction, with a small forest area south-east of the town that is not accessible by non 4x4 vehicles.

There are few farm homesteads at the roads edge, most being set back at least 100m. The country lanes are generally single vehicle bitumen with verges and table drains out to 10-15m either side of the lane. The lanes are not often mowed, leaving thick and long grass on the verges. Figure 7.3 shows where the investigation searches were conducted, basically within the township confines.

**Figure 7.3** *Initial investigation search*



A search of the town by police failed to locate the victim and a search coordinator was requested to assist by detectives. The Disposed Homicide Victim Matrix, Table 7.2, is reproduced below with the acquaintance section highlighted in yellow.

**Disposed Homicide Victim Matrix**

| | Acquaintance | Familial | No known relationship |
|---|---|---|---|
| **Distance from murder site (km)** | | | |
| **Mean (All murders)** | 22.76 | 30.90 | 4.67 |
| **Std. Deviation** | 62.47 | 114.72 | 6.27 |
| **68%** | 85.23 | 145.62 | 10.94 |
| **95%** | 147.7 | 260.34 | 17.21 |
| **Mean (<100km)** | 8.13 | 5.82 | 4.67 |
| **Std. Deviation** | 16.33 | 11.62 | 6.27 |
| **68%** | 24.46 | 17.44 | 10.89 |
| **95%** | 40.79 | 29.06 | 17.16 |
| **Mean (<51km)** | 3.7 | 4.48 | 4.67 |
| **Std. Deviation** | 6.28 | 8.36 | 6.27 |
| **68%** | 9.98 | 12.84 | 10.89 |
| **95%** | 16.26 | 21.2 | 17.16 |
| **Method of transport (Most common)** | | | |
| **Motor vehicle** | 49% | 49% | 41% |
| **Dragged/carried** | 35% | 43% | 55% |
| **Method of concealment** | | | |
| **Concealed on ground** | 37% | 35% | 27% |
| **Shallow grave** | 14% | 11% | 9% |
| **Concealed other** | 10% | 6% | 9% |
| **No concealment** | 13% | 9% | 32% |
| **Never located** | 14% | 22% | 0% |
| **Average distance moved from transport (From road/track)** | | | |
| **Distance (m)** | 20m | 27m | 21m |
| **Direction taken to dispose of victim** | | | |
| **Most common three directions** | East<br>North<br>South | East<br>North<br>West | South<br>South-west<br>North-west |

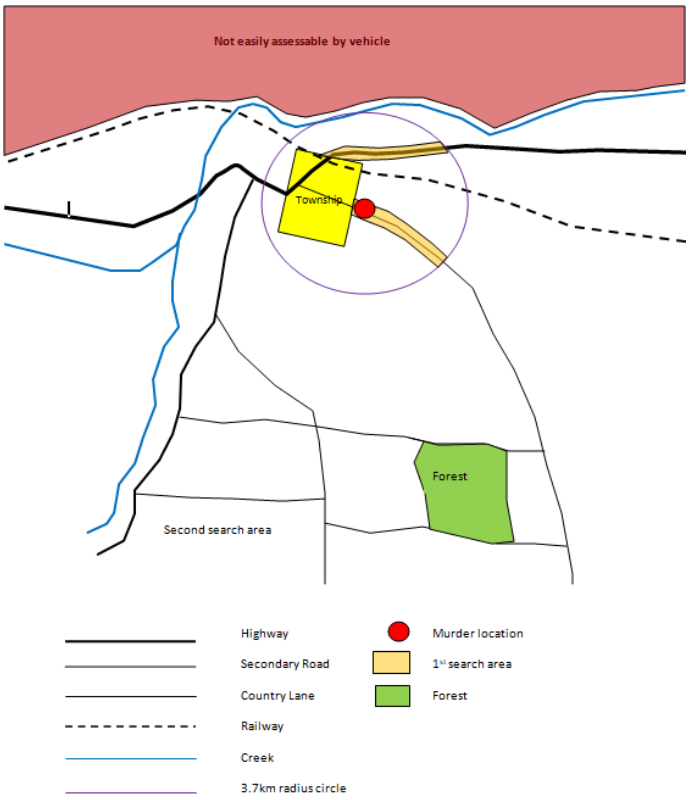
The following advice was provided to the Field Search Coordinator (FSC) by the State Search and Rescue Coordinator & Training Officer (SSARCTO):

- The mean distance for an acquaintance relationship is 3.7km (Red box in matrix) from the murder site but the 95% percentile is 16.26km (Dark blue box in matrix).
- The victim is more likely to be located on the side of a road/track rather in the middle of a field.
- The distance from a road/track is likely to be less than 20m (Maroon box in matrix)
- The victim is likely to have been transported to a disposal site in the offender's vehicle (Black box in matrix).
- The offender's vehicle is a small sedan, limiting travel to suitable two wheel drive roads.
- It is unlikely that the offender used a major roadway.
- The direction of victim disposal is likely to be east, then north and south (Light blue box).
- Where ever the victim was disposed the movement from the vehicle to the final resting place would only take minutes.
- The height/weight disparity between the offender and victim would enable any victim movement to be accomplished by the offender without assistance.
- It is likely the offender has knowledge of the disposal site.
- It is unlikely that the victim would be taken up hill.
- It is likely that the victim has been concealed on the ground by what was readily available.
- It is unlikely that the victim has been interred.
- It is unlikely that the victim would be at the offenders address.

The development of the first coordinated victim search area is shown in Figure 7.4. The distance circle of 3.7km, representing 68% of located acquaintance homicide victims, was placed around the suspected murder site (Purple circle). Initial searching by volunteers was undertaken on the roads within that circle without success (Orange colour).

The area to the north of the waterway (Maroon coloured) was not easily accessible by sedan, with the two nearest bridges being approximately 12km away on either side, as a result it was initially disregarded as a search area.

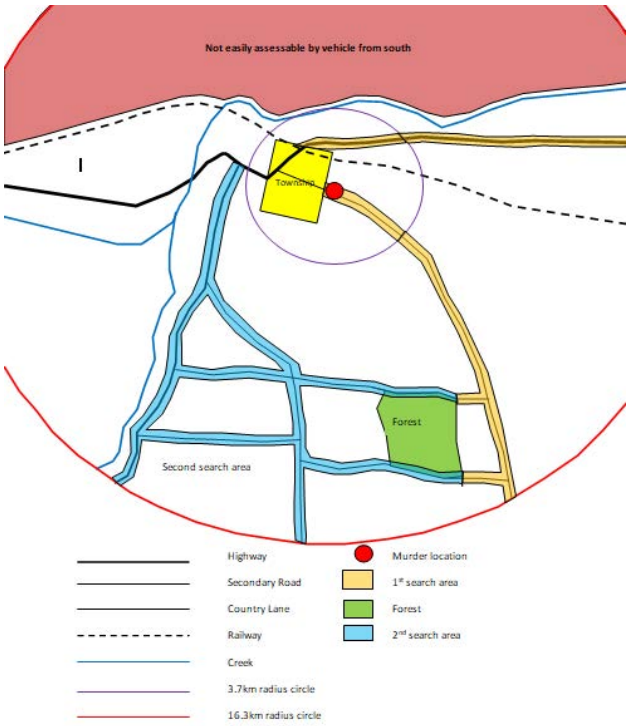
**Figure 7.3** *First Disposed Homicide Victim Search*




After further consultation with the SSARCTO the 95 percentile circle for acquaintance relationships of 16.26km was drawn around the murder site (Red circle) and further search areas were mapped. The old highway to the east and the country lane to the south-east were targeted (Orange areas). As the area to the north of the township (Maroon shading) were not easily accessible by sedan they were discounted initially. With no evidence or victim located

the search was subsequently moved to the south (Blue areas) over the next two days, covering all the country lanes and access roads to the south of the township (Figure 7.5).

**Figure 7.4** *Second and third day of victim searching*

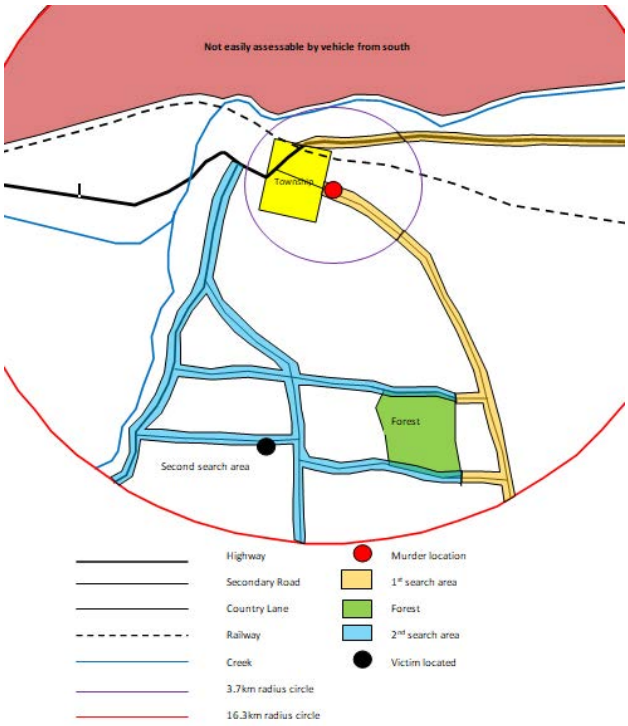



Searching was undertaken by volunteers (State Emergency Service) and police. Two search teams of fifteen searchers were briefed to search using the parallel line method with a spacing of 2m between each searcher. One searcher was placed on the road edge, with the remaining team members spread out across the table drain, verge and paddock at right angles to the road. The speed of the search was kept to 1kph to enable a detailed visual and physical inspection of the ground to be done.

It was on day 13 after the murder that the victim was located on the side of a country lane (Figure 7.6), dragged from the roadway approximately 15m and covered with some of the long grass that was growing on the road verge. The distance from the murder site was approximately 10.5km in a direct line and was between the 157.5°T to 202.5°T bearings

identified as south. The victim was found on level ground and the location had been known to the offender as he had relatives that could be accessed via this lane.

**Figure 7.5** *Victim located*




Further information that was not provided to the FSC was a time line that showed a small window of opportunity for the offender, limiting the distance that could be travelled to the disposal location. In this case the offender had sufficient time to travel out of town, determine a suitable location and return. It was never learnt if the disposal location was a random choice or he took the victim directly there.

### 7.3.13 Homicide Data Conclusion

This is the first known study into the disposal of homicide victims within Australia. Although limited to Queensland, with approximately 24% of all Australian homicides (ABS, 2020), a further, nation-wide study would confirm if inferences and conclusions drawn from the data represent the wider Australian community.

Homicide within Queensland is wide and varied, but a number of similarities were identified in the Disposed Homicide Victim Matrix, Table 7.2. This table created the base level of victim disposal behaviour, and could be augmented through comparisons with other demographics in the findings to provide a profile of the offender and potential victim disposal actions. It was accepted that the Disposed Homicide Victim Matrix was basic but it did represent the first step in providing information and suggestions to SAR coordinators when faced with determining where to search for a suspected homicide victim.

The method of homicide can have an impact on SAR, particularly for the decomposition factor, when it does take on importance for the briefing of search teams and search strategies involved. The more opening a body has, the faster it will decompose, within other limits such as temperature, humidity, environment, terrain and predatory animals. In many cases the method will not be known with certainty until the victim is located, in which case standard decomposition protocols would be used based on body farm studies (Hayman, 2016).

Searching is only focused on those victims that have been moved, and with the majority of historical cases showing limited amounts of deliberate concealment search briefings can cover these possible factors. Searching in homicide incidents may not commence for a significant period as other inquiries are made by investigators, such as confirming a murder, identifying the location, and interviewing witnesses and suspects. It can be appreciated that many murder investigations start with the victim being reported missing, and not always by the offender, meaning that there can be a time lapse before a homicide can be confirmed or suspected.

The relationship between the offender and victim is vital as it directly impacts on possible murder methods, disposal methods and distances and also contributes to concealment.

Identifying this will also provide the height/weight disparity, be a factor in motive and with judicious questioning may indicate potential disposal locations. The statistical direction and distance of travel is also a factor relating to the relationship.

Unlike many other countries Australia does not have a history of keeping deceased victims in or near the house where they were murdered, such as John Christie (Kennedy, 1961) or John Wayne Gacy (Sullivan, 2013). Historically, victims have been disposed within hours of being killed (Whiticker, 2021; Whittaker, 2015; Kidd, 2011; McNeice, 2006a). Having an understanding of the times frames involved can contribute to determining how far the offender could have travelled and may assist in identifying traffic monitoring and CCTV cameras from which evidentiary footage could be gathered.

General conclusions that can be drawn from the disposed homicide victim data in Queensland are outlined in Table 7.3. The weight disparity between the offender and the victim was initially considered a determinant factor in the movement of the victim, but an analysis shows that it is not a precise indicator. While there has been extreme height/weight disparity, both advantageous and disadvantageous to the offender, the resulting distances have been small. It appears that no conclusive results can be drawn for any height/weight disparity with respect to disposal distances.

It is theorised that emotion and determination may play a larger part in victim disposal than pure body strength or disproportion in size. East is the most prominent direction for moving a victim in six of fourteen relationship types, and it is common for all but three of these groups. Victims are generally left near to roads or tracks, with limited efforts being made to take them further afield.

**Table 7.3** *Queensland: General conclusions from homicide incidents*

| | |
|---|---|
| **1** | The method of homicide is material as far as assisting with decomposition effects, |
| **2** | For those victims moved the most common method of disposal is dumping them on the ground with no effort in concealment, followed by concealment with items to hand such as logs, branches and leaves. Shallow graves in the form of small man-made or natural depressions and cremation are next in order of occurrence. |
| **3** | Searching by police, using current methods, is the most successful means of locating moved victims. |
| **4** | The victim has been disposed up to 12km from the place of homicide in 75% of all incidents, |
| **5** | The furthest a victim has been left from a road or track has been 60m. |
| **6** | East is the most prominent direction for disposal overall, and for six of the fourteen relationship categories involved. |
| **7** | Weight disparity does not appear to have an influencing effect on victim disposal. |

Being the first study of its sort, this will form the starting point for an in-depth analysis into the psychology of victim movement and may spur other Australian police jurisdictions to undertake a study to see whether Queensland is truly representative of Australian homicide victim disposal.

### 7.4 Extending Queensland Homicide Data conclusions to other locations.

There have been limited studies into homicide victim disposal, Finland (Häkkänen et al, 2007) and Canada (Nethery, 2004) and neither of which provided sufficient detail to compare with the Queensland findings. To enable a comparison of the data it was necessary to source disposed homicide victim data from outside Queensland.

A total of 1061 non-Queensland homicides were located, and based on the ABS this represents approximately one quarter of all cases. As identified earlier, many did not make it to main stream media due to the lack of media and public interest, or because they were not protracted investigations. It was identified that murders resulting from domestic violence were rarely reported in the media up until the high-profile murder of Luke Batty by his father in 2014, bringing domestic violence to the forefront (Hulme et al., 2019).

The findings indicate that almost all of the non-Queensland homicide incidents, 90.5%, where the victim had been moved, fit within the Disposed Homicide Victim Matrix. This indicates that people living in Australia are perhaps predisposed to undertake certain actions based on relationship, the location of the homicide, access to transport, knowledge of the local area and determination not to be caught (Salfati, 2003)

### 7.4.1 Offender/victim relationship

The 147 suitable non-Queensland homicides were categorised into the three relationship types as per the Queensland data: acquaintances; familial and no known relationship, Table 7.4. This is not representative of the overall national homicide statistics from the ABS, but as this project is based around the movement and subsequent disposal of the victims no inferences can be drawn from this. Initially it could be suggested that Familial relationships result in less victim disposal, perhaps because of the emotional bonding but it is also in part because of the difficulty in finding suitably detailed incidents.

**Table 7.4** *Relationship frequency between Queensland and Non-Qld samples*

| Category | Acquaintance | Familial | No known relationship |
|---|---|---|---|
| Queensland | 71 | 54 | 22 |
| Non-Queensland | 56 | 29 | 62 |

From the information collected on each of the non-Queensland homicide incidents it was not possible to ascertain with any certainty data pertaining to any height/weight disparity and therefore this has not been included in the comparison data in most instances. Of those instances where there was a distinct advantage in favour of the offender, the victim was either a small child or an elderly person, both easily overcome and transported to their disposal site.

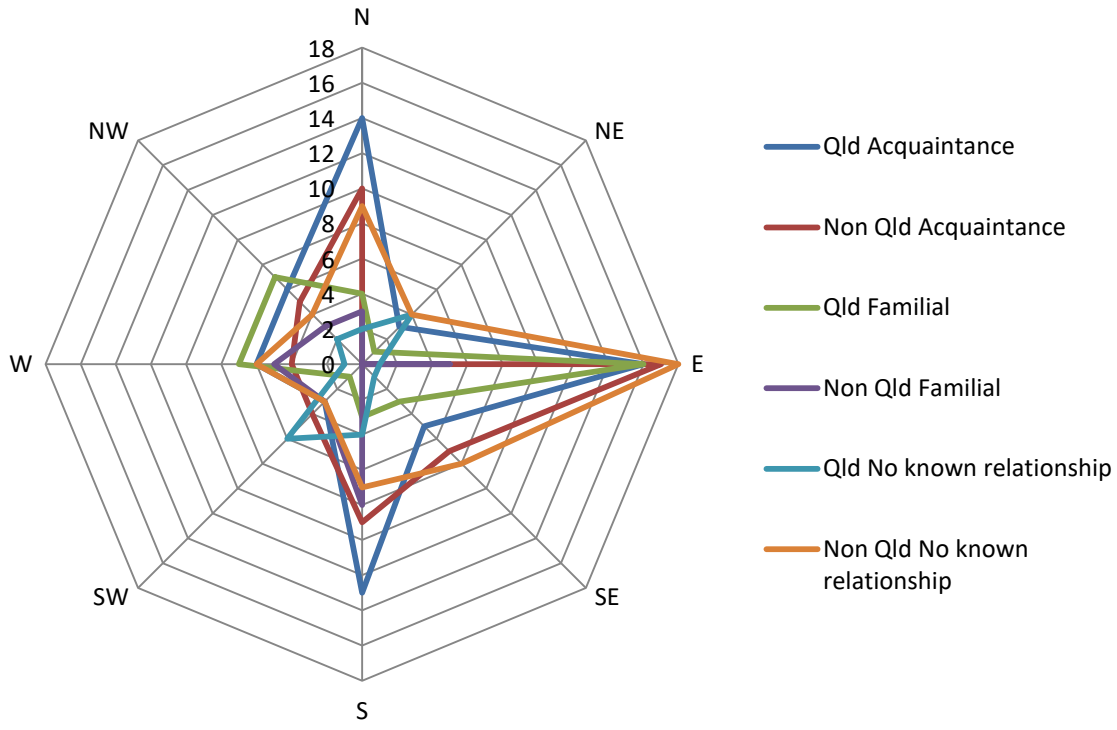
### 7.4.2 Victim disposal direction

The data indicated that east was the most common direction for victim disposal overall for non-Queensland homicide victims, in line with the Queensland data. There was no obvious reason for this, as plotting all the incident locations identified that in over half of them there were alternate directions that could have been used. Further investigation of Australian cities and towns clearly showed that most are grid orientated to a certain degree, based on topographical and natural features. Most of these grids were loosely north-south and east-west orientated, which might be a clue to east being the direction of choice for the disposal of murder victims. Without any definitive proof it may be that east is a pre-programmed direction, although, as identified in Beauregard et al (2008), Ceballos et al (2006) and Field et al (2006) some murderers have a specific disposal location identified prior to committing the killing. This occurred much less in single victim killings when compared to serial killing. It was of interest to note that the four cardinal directions were used over three quarters of the time, leaving the remaining four inter-cardinal directions accounting for less than one quarter of all victim movements.

All six groupings of victim disposal are superimposed upon each other in Figure 7.6. This clearly indicated that the movement of victims is relatively consistent over all categories and that the Queensland modelling replicates the national situation. East was the most prominent direction overall, followed by north. A variation, with no identified cause, can be seen in the Queensland no known relationship category where south west was predominant. Western Australia did not show any difference in disposal directions that would indicate uniqueness within Australia. The A theory by Bond (2021) was that modern humans have evolved from being home centric, being able to walk home from any location such as First Nation people and their walkabout, to being north centric based on the compass. This meant that in most

cases it was east or north based on our ability to identify either relatively easily through sunrise direction or compass. This process may impact on the direction chosen by an offender when disposing of their victim.

**Figure 7.6** *Comparison of Qld and Non-Qld victim movement directions*




### 7.4.3 Method of victim disposal

At 50-60% water by weight it would be considered that a human body could be disposed of easily (Kindersley, 2019). This is not the case as proved by the Tennessee and Blue Mountains 'Body Farms' (Bass, 2004). There were only six methods of victim disposal for the sample of non-Queensland homicides, with no attempt at concealment being the most common overall. This was basically leaving the victim on the ground, making no effort to hide them, and possibly relying on the location as a means of limiting discovery. This strategy was ultimately unsuccessful within the sample as all the victims were located. In the familial category concealing the victim under what was locally available, leaf litter, earth, branches and debris, was the most prevalent method at 40.7%, with no concealment only

accounting for 18.5%. It has been suggested by several researchers (Bricknell & Doherty, 2021; Wolfgang, 2016) that the closer emotional bonds that exist within the Familial category affects the disposal methods, in that there is a certain amount of remorse after the killing that results in some attempt at concealment as a means of protection.

Within this sample there were only 18.5% of victims that were left unconcealed, the remaining 81.5% were covered, hidden inside a receptacle, cremated or buried in a shallow grave. This suggested that in the Acquaintance and No known relationship categories victims would only be concealed as a means to limit them from being found, and would also partly explain that the majority were just left where they were placed, with no emotional bond to generate empathy.

Moving the victim and putting them into a bin was undertaken on 14.9% of occasions. This method required some considerable effort in lifting the victim and could only occur when there was a very distinct advantage to the offender with weight, and therefore was limited to children and elderly persons when a single offender was involved. Cremation occurred on two occasions, with the use of petrol as the accelerant. Both instances were ultimately unsuccessful due to lack of preparation and research. A human body can take up to 90 minutes to be fully reduced in temperatures of up to 900°C, which is impossible to achieve on the side of the road with limited fuel (Cremation Resource, 2019). A shallow grave was utilised 7.7% of the time, with most being simply a depression in the ground where the victim was laid prior to being covered with earth. There were no instances where a specifically dug grave was used.

A comparison of Queensland and non-Queensland victim concealment methods is shown in Table 7.5, with those categories that are similar in percentage terms identified in yellow and those with large discrepancies are highlighted in orange. Concealment on the ground using

local items such as leaf litter and branches is almost equal for both Acquaintance and No known relationship samples.

**Table 7.5** *Comparison of victim concealment method*

| Concealment method | Acquaintance | Non- Qld Acquaintance | Familial | Non-Qld Familial | No known relationship | Non-Qld No known relationship |
|---|---|---|---|---|---|---|
| Concealed on ground | 36.6% | 35.1% | 35.2% | 17.9% | 27.3% | 24.2% |
| Concealed other | 9.9% | 12.3% | 5.6% | 21.4% | 9.1% | 14.5% |
| Cremation | 4.2% | 0% | 3.7% | 7.1% | 4.5% | 0% |
| Dismemberment | 1.4% | 1.8% | 0% | 0% | 0% | 0% |
| Interment | 4.2% | 0% | 5.6% | 0% | 0% | 0% |
| Never located | 7.0% | 0% | 22.2% | 0% | 0% | 0% |
| No concealment | 12.7% | 42.1% | 9.3% | 32.1% | 31.8% | 61.3% |
| Shallow grave | 14.1% | 8.8% | 11.1% | 21.4% | 9.1% | 0% |
| Waterside | 2.8% | 0% | 1.6% | 0% | 13.6% | 0% |
| Waterways | 7.0% | 0% | 5.6% | 0% | 4.5% | 0% |

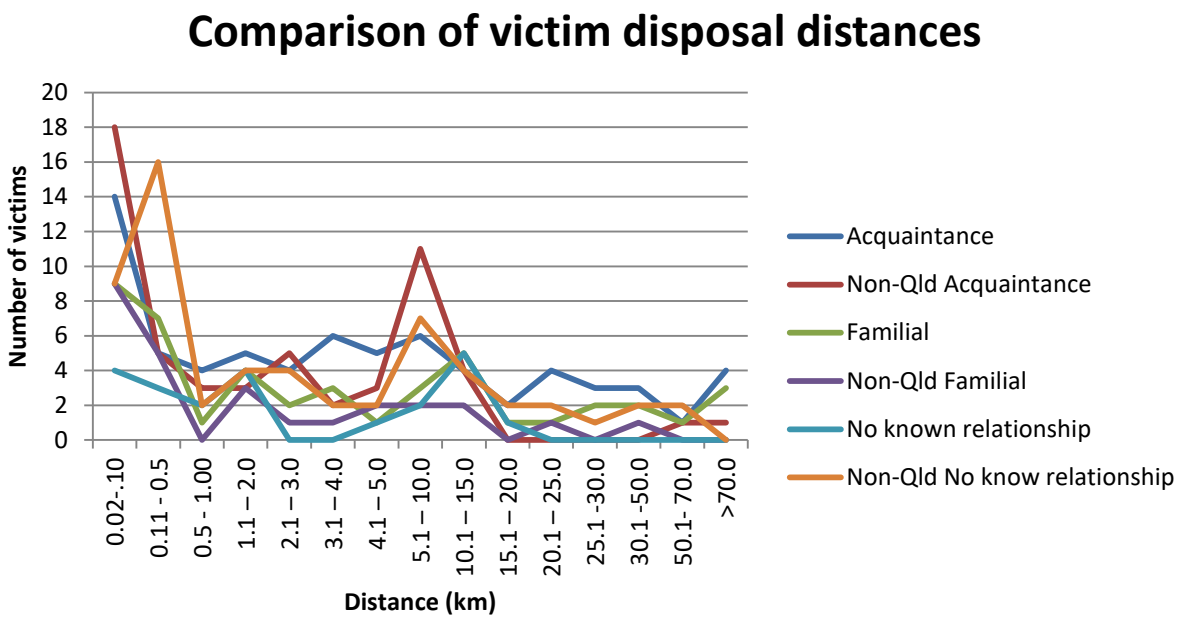
The methods with the greatest divergence were no concealment and shallow graves, with the three relationship categories being diametrically opposed in both samples. There is no obvious reason why more non-Queensland offenders did not conceal their victims in all three categories or why the non-Queensland Familial murders resulted in more shallow grave concealments.

### 7.4.4 Distance victim moved

As identified in Figure 7.7 the distances a victim had been moved replicates the Queensland data, with several obvious spikes, 100m, 110-500m and 5-10km. As with Queensland there were no victims that were dragged or carried over 100m, in fact 60m was the greatest for non-Queensland victims. All other victims were moved by motor vehicle. Interestingly,

there was only a single non-Queensland victim moved beyond 100km from the murder site, compared to seven in the Queensland data. There was nothing in the data that offers suggestions for this.

**Figure 7.7** *Comparison of victim disposal distances*




There was an identified overall spike in the 6-10km distance. It is possible that the offenders considered this distance to be sufficient to separate themselves from their victims and minimise the chances of any connection being made. This was the second most distance grouping in the Acquaintance relationship category, adding some weight to this theory (Nethery, 2004a).

Within the three relationship categories Familial saw most victims only moved up to 500m. This perhaps contributes to the theory that the heat of passion had dissipated through the killing leaving a measure of remorse and the need to quickly move the victim without any forethought (Armour, 2005). Where there was no known relationship most victims were also moved out to the 500m distance although there was a spike at 5-10km. Again, the theory of being out of sight is out of mind for the offender and that they consider this distance to be

sufficient to limit being connected with the crime (Brookman, 2005). In a country as large as Australia a distance of 10km is insignificant but still provides a search area of potentially 314km² for police. It is also noteworthy that only two victims each in the Acquaintance and Familial categories was moved more than 15km, allowing for conjecture that there is an emotional connection that would limit transport distances.

A comparison of the percentage distances moved is shown in Table 7.6, with those similar highlighted in yellow and different shaded in orange. The table indicates that there are more similarities between the Queensland and Non-Queensland Acquaintance and Familial categories than differences.

**Table 7.6** *Comparison Qld/Non-Qld Relationship/Distance victim moved (%)*

| | Relationship | | | | | |
|---|---|---|---|---|---|---|
| **Distance (km)** | **Acquaintance** | **Non-Qld Acquaintance** | **Familial** | **Non-Qld Familial** | **No known relationship** | **Non-Qld No know relationship** |
| 0.02- 0.5 | 41% | 38.7 | 51.8% | 40.7% | 42.4% | 43.5% |
| 0.5 - 1.00 | 5.4% | 0% | 0% | 0% | 3.4% | 3.2% |
| 1.1 – 2.0 | 5.4% | 8.8% | 11.1% | 11.1% | 6.8% | 4.8% |
| 2.1 – 5.0 | 17.9% | 12.8% | 14.8% | 14.6% | 22.1% | 14.5% |
| 5.1 – 10.0 | 19.6% | 22.8% | 7.4% | 7.4% | 11.9% | 16.1% |
| 10.1 – 30.0 | 7.1% | 22.8% | 11.1% | 22.1% | 15.7% | 9.6% |
| 30.1 -70.0 | 1.8% | 1.8% | 3.7% | 7.2% | 6.8% | 8.0% |
| >70.0 | 1.8% | 1.8% | 0% | 0% | 0% | 0% |
| Total | 56 | 57 | 27 | 28 | 59 | 62 |

The one significant difference is the 5.4% of Queensland Acquaintance victims being moved between 500-1000m, whereas the Non-Queensland equivalent had nil victims moved that distance, but did have twice as many being moved the shorter distance of 110-500m. There was no direct correlation between the two No known relationship categories although there was a propensity to move victims out to 70km. Throughout the comparison, those in the

Acquaintance and Familial categories did not move victims as far when compared to the No known relationship categories.

### 7.4.5 Method of victim transport

A comparison of victim transport methods showed motor vehicles predominate, Table 7.7, followed by carrying or dragging. This was perhaps indicative of the ease with which this method could be used, that is, it was a reflex action although the practicalities may not be that easy in reality. There was a single incident where it could not be identified how the victim was transport in the non-Queensland data compared to 16 in the Queensland data. This could be the result of media speculation and/or reporting for the non-Queensland incidents as the Queensland incident came direct from the police data.

**Table 7.7** *Comparison of Qld/non-Qld victim transport*

**Comparison method of victim transport by relationship %**

| Method of transport | Acquaintance | Non-Qld Acquaintance | Familial | Non-Qld Familial | No known relationship | Non-Qld No known relationship |
|---|---|---|---|---|---|---|
| Carried or dragged | 28.2% | 42.1% | 37.0% | 35.7% | 54.5% | 29.1% |
| Motor vehicle | 56.3% | 57.9% | 42.6% | 64.3% | 45.5% | 69.3% |
| Unknown | 7.0% | 0% | 20.4% | 0% | 0% | 1.6% |
| Vessel | 1.4% | 0% | 0% | 0% | 0% | 0% |
| Total | 71 | 57 | 54 | 28 | 22 | 62 |

As per previous tables the similarities are in yellow while orange represents areas of significant diversity. An example is 28.2% of Queensland acquaintances and 54.5% of no known relationship victims were carried or dragged, while non Queensland victims were almost the opposite at 42.1% and 29.1% carried or dragged respectively. Acquaintance homicide offenders tend to use motor vehicles as transport in similar numbers, but non-

Queensland offenders in the other two categories have shown a tendency to use vehicles more often than the Queensland sample. Carrying or dragging the victim from the scene was relatively equal in both Familial samples, but was more prevalent among Non-Queensland Acquaintances and Queensland No known relationship samples although there was no indication as to why this would be so, apart from the 7% of unknown methods in the Queensland sample, which may have been carrying or dragging without any direct evidence to indicate so. In the Familial category, carrying and dragging were very similar with motor vehicles being more prevalent in the non-Queensland sample. There was a considerable number where the method was unknown in Queensland, 20.4%, which, if there was sufficient evidence, may even out the comparison.

Vehicle ownership within Australia is currently 1 vehicle per 1.24 Australians, making vehicles a ready and convenient way of moving objects, including murder victims (ABS, 2020). Of the non-Queensland victim transport methods motor vehicles accounted for 66.2% of all victim movements, by far the most common method. Using a vehicle does pose problems for the offender, the not least of which is Locard's Principle of evidence transfer, to and from the vehicle and victim (Houck et al., 2018). A murder method that results in the puncture of the victim's body can result in body fluids leaking in the vehicle, an issue that is very difficult to rectify and address.

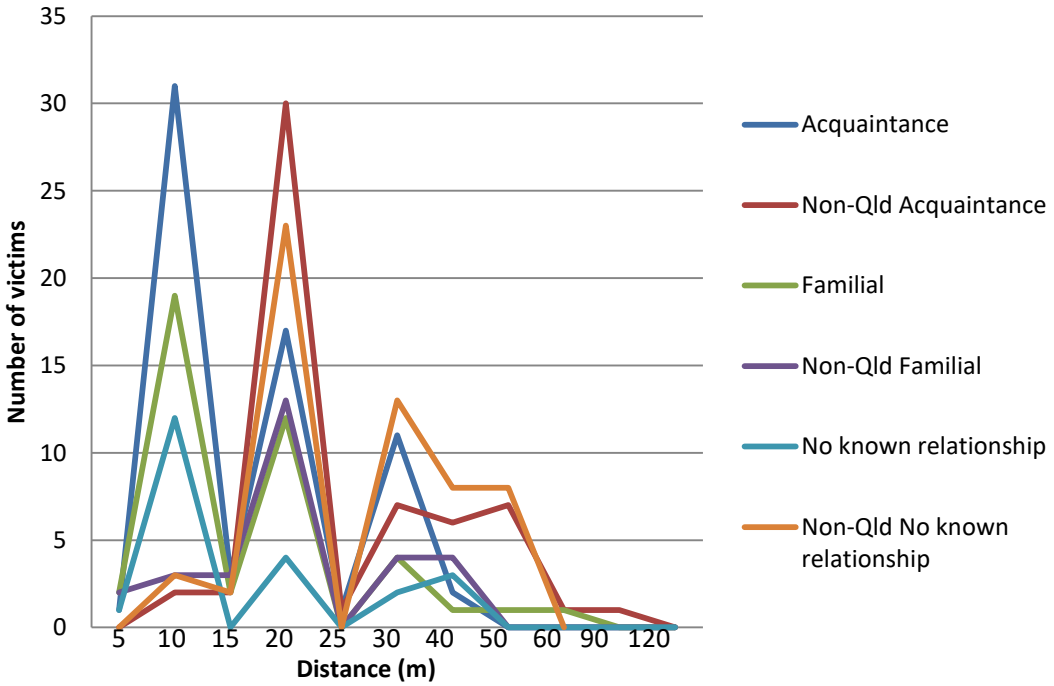
### 7.4.6 Distance victim moved from road/track

This measurement is the distance the victim was moved from a motor vehicle or other means of transport to their final disposal location. Deceased humans are literally a dead weight and are very difficult to manoeuvre or carry any great distances, particularly if there is a height or weight disparity in the favour of the victim. It was not surprising that most victims were taken distances of 20m or less from a road or track, and that 87.3% were 40m or less. In

geographical terms this could be equated with moving a victim off the road and into the vegetation that generally lines a road or track. In suburbia, the distances from the road edge or kerb and a front fence or hedge vary from 5-15m depending on local bylaws (Logan City Council, 2023), whereas in rural areas the table drain and tree line is between 5-20m, again depending on location and topography. The above victim movement distances appear to coincide with vegetation and/or fencing type barriers on the side of roads and tracks. There were only a small number of incidents where the victim was taken a considerable distance from the nearest road or track.

The distances the victim was moved from a road or track showed an almost exact duplication of the distances by relationship type, that the relative distances the victim was moved has been replicated in each of the six sample groups, Figure 7.8. Some discrepancies did occur in the 30-60m distances and these may be explained in terms of the vegetation and topography on the side of the road/track and the difficulty in moving a deceased person. It may also be that with less vegetation and/or a more open area there was a need to move the victim further to limit discovery. The conclusion drawn is that victims were only taken as far as necessary to potentially prevent or limit discovery. That they were all found shows that these distances are not sufficient to achieve that aim.

**Figure 7.8** *Comparison of distance victim moved from road/track*




### 7.4.7 Non Queensland Homicide Conclusion

The comparative data suggests that the non-Queensland sample of disposed victim homicide incidents confirm that the Queensland findings are generally relevant throughout Australia, with a few variations. Of significance were that the major components of the Disposed Homicide Victim Matrix had been replicated with murders that have occurred outside Queensland.

The findings from the Queensland and non-Queensland studies ascribe to the premise that homicide offenders had a tendency to undertake similar actions under similar circumstances, as theorised by many researchers. Most previous studies had been within the serial killer framework, showing that there were many similarities in the way serial killers behave towards their victims. This study, using all homicide incidents for a single jurisdiction,

showed that much of the offender/victim analysis and theorising with respect to commonalities was true, within the confines of human behaviour.

Both sample sets were similar in size and have shown that there were more commonalities in the disposal of homicide victims than there were differences, and this may be down to an unconscious primitive programming within the human psyche. The benefits of those commonalities was that the searching for undiscovered victims of homicide could be undertaken with a small measure of scientific assurance that the theory behind the search area determination was sound and based on actual incidents, in the same manner that the Lost Person Behaviour was developed.

The findings indicate that almost all of the non-Queensland homicide incidents where the victim had been moved fit within the Disposed Homicide Victim Model. This indicates that humans are perhaps predisposed to undertake certain actions based on relationship, the location of the homicide, access to transport, knowledge of the local area and determination not to be caught (Salfati, 2003).

Being the first study of its nature, this research filled, to a small degree, a gap in the knowledge of both homicide investigators and search coordinators with respect to homicide victim disposal. This project formed the basis from which other research can be undertaken to refine and continually update our knowledge in the field of human activity.

### 7.5 The Research

At the commencement of this study, three research questions were identified that would guide the project throughout its development. This research was undertaken to identify if there were similarities, commonalities or trends within homicide victim disposal that could assist in the search for undiscovered victims. These three research questions are shown in Table 7.8.

**Table 7.8** *Research Questions*

| | |
|---|---|
| **RQ1** | Are there identifiable trends or characteristics in homicide incidents where the victim was moved from the incident scene to a secondary location where they were located? |
| **RQ2** | Are the current search and rescue strategies used to locate lost/missing people, particularly those who may be deceased, effective and can they be adapted to improve the ability to locate undiscovered victims? |
| **RQ3** | Can the data from the study of disposed homicide victims provide guidance to police to assist in the location of undiscovered homicide victims? |

In conjunction with the Research Questions there were also a number of Research Outcomes that were identified to both fill a gap in our collective knowledge of this aspect of homicide and also improve the ability to locate undiscovered victims of homicide. These are shown in Table 7.9

**Table 7.9** *Research outcomes*

| | |
|---|---|
| **1** | Contribute to the reduction in the number of unlocated homicide victims to zero. |
| **2** | Locate victims to assist in the grieving process by the co-victims, enabling them to move on with their lives and continue to be viable members of our communities. |
| **3** | Locate the victims to assist the justice system to discover the truth, either a victim confirms who the offender was or, in some circumstances shows that the prosecution case is wrong. |
| **4** | Improve the community confidence in police, and the justice system. |
| **5** | Improve the SAR system with respect to disposed victim locating. |

This study has culminated in the research questions being addressed.

### 7.5.1 Research question 1

*RQ1: Are there identifiable trends or characteristics in homicide incidents where the victim was moved from the incident scene to a secondary location where they were located?*

This research question was answered through the collation of data from all Queensland homicide incidents between 2004 and 2020 where the victim was moved from the incident scene. The 147 incidents of victim disposal were broken down into three main relationship types, acquaintance, familial and no known relationship, with analysis conducted on the demographics of each incident.

As a result of this analysis a matrix was developed that outlined the most common or prevalent characteristics of victim disposal, including direction of travel, means of transport, distances of transport, methods of concealment and distances from roads or tracks. While not being exact in its characteristics, it did provide a search coordinator with a starting point from which to develop a search plan and was very similar in nature to the Lost Person Behaviour used by search coordinators.

The relationship between the offender and the victim has been identified as a contributing factor in victim disposal, with each of the three relationship categories having consistent characteristics. That the age of both the offender and victim impact victim disposal has been illustrated in the data, young offenders tend to move their victims further while younger and older victims tended to be moved further. The location of the homicide also impacted on victim disposal. This has been shown to be true in the similarities in direction that victims have been moved. East has been the most prominent direction of victim disposal in all categories of relationship.

The research has identified that the murder method has a limited impact on victim disposal, but a greater impact on victim location due to the increased decomposition rate for those with penetration injuries. Penetration wounds and the associated leakage of body fluids also has a forensic association through the ability of police to detect very minute traces of blood in vehicles used to transport deceased victims. Forensically aware offenders may opt for a non-

penetrative means of murder, such as strangulation, thereby limiting the amount of body fluids that could seep into a motor vehicle or leave a trail to be followed.

Transport options impacted on victim disposal, as identified with the limited options used for victim movement. Most victims moved up to 100m from the murder site were either carried or dragged, and no victims were dragged or carried beyond 100m. Where a vehicle was used for transportation it belonged to the offender in most instances, with a small number of victim disposals using the victims own vehicle or an accomplice's.

It was identified that the method of concealment would impact on victim location. Of the Queensland homicide incidents, 17 victims had not been found to date, whereas all those that had been disposed and located were concealed utilising only seven different methods ranging from no concealment at all to full internment. It would be recognised that a body left on the ground with no attempt at concealment would present the easiest victim to locate, but this is time and environment dependent, whereas a victim buried will remain intact for a considerable period but it is conversely more difficult to locate.

### 7.5.2 Research question 2

> *RQ2: Are the current search and rescue strategies used to locate lost/missing people, particularly those who may be deceased, effective and can they be adapted to improve the ability to locate undiscovered victims?*

Chapter four undertook a review of the search and rescue system used in Queensland and identified an effectiveness of approximately 99.1% when used to locate lost people in a land environment. This included unresponsive people such as those with dementia, autism, hypo- and hyperthermia and who were deceased. It has been identified that the current SAR system could be adapted to the search for homicide victims as they represented a particular group of unresponsive targets within the collective SAR space. A search coordinator has the

prerequisite tools available to assist in the development of suitable and feasible search areas which can be augmented by the Disposed Homicide Victim Matrix in those instances.

Although the aim of all searches is to locate the target person, much of the background search area determination is about identifying areas that are not relevant to the search, based on Lost Person Behaviour, and the Disposed Homicide Victim Matrix. In reality, only one search team will ever find the missing person, but many teams contribute to the search by clearing areas from further searching. In the context of searching for an undiscovered homicide victim this process is of vital importance, the clearing of search areas can strengthen the matrix, in the same way that locating a victim can.

Unresponsive missing people present the same degree of difficulty for search coordinators as do homicide victims in that both do not have the ability to assist in their recovery at all. It has been proven on the numerous occasions through search actions that unresponsive targets had been located through organised formal searches, on average approximately 40 occasions annually within Queensland (Whitehead, 2021d). This has also been borne out by SAR coordinators and the number of deceased persons that had been found in Queensland.

The search strategies used by SAR coordinators can be adapted to the search for disposed homicide victims and at the time of completing this research six homicide victims were located in Australia based on the Disposed Homicide Victim Matrix, the details of which are sub-judice.

### 7.5.3 Research question 3

> *RQ3: Can the data from the study of disposed homicide victims provide guidance to police to assist in the location of undiscovered homicide victims?*

It has been identified that there need not be any modification to the current search and rescue capabilities with respect to the search for undiscovered victims of homicide. The main

concession to be undertaken is that the victim is identified as an unresponsive target from the outset and that all search planning be done on that basis. This is the same as the case of a lost person whose time frame for survival has expired and they are believed to be deceased.

The impact of this on searchers is the need to be clue aware for different aspects of the environment when compared to a responsive target, such as shallow graves, concealment by leaf litter and the like in bush settings and being more aware of disposal locations in an urban environment such as wheelie and industrial bins, back yard garden plots and rubbish dumps. It has been identified that there are distances where victims have been transported that are more prevalent than others, as are directions of travel which will impact on search area determination. The distances a victim has been moved from a motor vehicle or other transport method becomes critical in this planning, as all victims have been located less than 60m from the nearest road or track. This single parameter obviates the need to search vast areas of land that have no vehicular access and can narrow a search area down significantly.

The development of the Disposed Homicide Victim Matrix has been possible with the research conducted to date. Comparison with a random sample of non-Queensland homicide incidents where the victim was moved has shown that the similarities between both sample sets are sufficient for the development of this matrix.

# 8 Implications for Theory

A number of articles were located that identified patterns in offender behaviour within serial killings (Trojan, 2011; Beauregard, 2008; Field, 2008; Snook, 2005; Lundrigan, 2001; Rossmo, 2000 and Mott, 1999) but there were no known studies on once only killers in a single jurisdiction. The initial approach for this project was to identify if there were patterns in homicide victim disposal, and whether these patterns could be used by police to aid in the

search for these victims. This project evolved to find if victim disposal patterns existed in once only killers in Queensland.

A number of implications have arisen as a result of this research, which, when combined, may assist police in the locating of undiscovered homicide victims. The results of the research support the contention that homicide offenders tend to dispose of their victims in line with the matrix, that is, within a range of parameters associated with their relationship to the victim.

The theory that the disposal of homicide victims has commonalities in methods, locations, distances and concealment has been borne out with the research. It has been shown that the demographics of victim movement and subsequent concealment can be grouped into relatively broad clusters that have relatively few outliers. The results support the use of the Disposed Homicide Victim Matrix in planning for searches and the prediction of suitable search areas. The matrix also demonstrates that while very broad, the existing literature around victim disposal is grounded. It also demonstrates that a state-wide examination of homicide victim movement data is possible as a means of confirming smaller data sets such as relationship types that ultimately impact on the victim disposal.

While currently a theory, the DHVM can continually be strengthened through successive research as new homicide cases becomes available, as larger numbers provide a more robust statistical analysis. As outlined in section 7.7 the DHVM Theory has been implemented on a number of occasions with a reasonable level of success. Further research may allow this theory to be included in training curriculums for the police responsible for the investigations into homicide incidents. The finding of a single victim, and to date there have been eight such findings, has made this project a worthwhile endeavour.

## 8.1 Implications for Practice

As with the Lost Person Behaviour tables that form the basis of the statistical search strategy for SAR coordinators throughout Australia, the Disposed Homicide Victim Matrix provides the equivalent statistical reference in the search for unlocated victims. Being trend and commonality based it represents what the majority of killers have done with their victims previously, and while there are many similarities there are also individual traits that cannot be accounted for.

As with lost person behaviour, the DHVM is not a panacea for all disposed victims and cannot account for the actions of all killers and their subsequent actions in disposing of their victim. The matrix provides the biggest single leap forward in search planning for disposed homicide victims aside from the offender actually identifying the disposal site. At the time of writing the matrix has been used on eight occasions, with seven homicide victims being located from six incidents.

The seven homicide victims from six incidents, in four Australian states, have been located using the Disposed Homicide Victim Matrix. Five of these homicides are still before the Courts and are sub-judice and therefore only basic details are provided below. The remaining case was the search for Victim 103 killed near Gatton.

### 8.1.1 Victim 103

The search for Victim 103, a 15 year old female, was commenced over a week after her disappearance, when it became clear she was the victim of a homicide. Using the last known location, information about the offender and the topography of the area a number of potential search areas were identified within a 17km radius of Gatton, Queensland. The victim was located approximately 20m off a lonely country road, covered with grass from recent hay

making, thirteen days after her disappearance. She was south of the murder location. It has to be stressed that this search was based on a behavioural model theorised at the commencement of this project. The initial form of the DHVM was used in this instance, and at that stage it was based more on experience than collected data.

### 8.1.2 Victim 33

Victim 33, a 52 year old male, was murdered in his suburban home, with the police investigation identifying that there was sufficient located blood at the scene to suggest the victim could not have survived the assault. A suspect had been identified through further investigations but had refused to cooperate with police. The Police SAR unit requested assistance with possible search locations, and after being provided information of the incident a number of parameters were provided that could be potential victim disposal sites, including disposal distances, concealment methods and direction. Based on this information police were initially unable to locate the victim after searching areas that fitted within the parameters. Based on what locations had been searched, a refinement was made and police were redirected to a forest area adjacent to the first search area, where the body of the victim was located. The straight line distance was 9km in an east by south direction with the victim being 10 metres from the nearest track. There was no attempt at concealment. A period of fifteen days had elapsed since the murder. The initial location was incorrect based on information supplied, but was able to be corrected with a change to the relationship category.

### 8.1.3 Victims 40 and 92

Victims 40 and 92, a 73 year old female and 74 year old male respectively, disappeared from a camping ground and were reported missing by concerned family members. Investigations by the Police Missing Persons Unit uncovered evidence of ongoing arguments with a fellow camper at the above location. Executing warrants at a number of locations used by the

suspect police located forensic evidence including blood stains and identified attempts to cleanse these. It was believed that the suspect had disposed of the victims in bushland and had returned at a later time to burn and scatter what human remains remained. The suspect was eventually charged with the double homicide but had not volunteered the location of the victims. Assistance was sought for potential search areas based on the last known location and relationship. A number of search areas were developed using the matrix and forwarded to Police. Subsequent searching by police and volunteers located the remains of both victims within one of the areas targeted, approximately 7km east from the murder site and a short distance off a fire trail. Concealment was initially by covering with vegetation but after revisiting the site body parts and cremated remains were scattered in the vicinity.

### 8.1.4 Victim 188

Victim 188, a 14 year old female, was last seen walking across a bridge over a river in the centre of a rural town. Initially reported as a missing person, police inquiries soon identified that she may have been the victim of homicide. Six weeks after the disappearance police sought assistance in the search. Using the Disposed Homicide Victim Matrix and Google Earth Pro™ a number of potential search areas were identified around the disappearance site. Two weeks later police located the victim concealed under two logs, approximately 7m off a small track within a forest reserve to the east. The victim was located 100 metres short of the average distance provided, within the 15m from the road/track and concealed as predicted. The direction of disposal was slightly north of east. In conjunction with other information this was sufficient for police to effect an arrest, and a subsequent confession by the suspect.

### 8.1.5 Victim 121

This victim, a 31 year old female, disappeared from her home under suspicious circumstances, and given her physical disabilities it was totally out of character for her. She

was initially reported as a missing person, with criminal investigation running parallel. Information was sought on possible search locations if she had been murdered and a number of locations were identified for searching. Fifteen days after her disappearance, she was located in dense bushland within an identified search area, 4km south-east of the murder site. There was no attempt at concealment, perhaps because of the remote location. An acquaintance of the victim has been charged with her death after forensic evidence at the scene was able to be linked to him.

### 8.1.6 Victim 97

Victim 97, a 57 year old woman, disappeared from her home, which she shared with her killer. She was reported missing by him two months after being killed. Investigations into the disappearance were initially undertaken by the Missing Persons Unit until it was suspected that foul play may have occurred. After a warrant was executed at the victim's home and forensic evidence located it was deemed that she had been murdered. Assistance was sought with respect to potential search areas which were identified. Prior to a formal search being conducted the victim's remains were located in a random find by four-wheel drivers in a forest, 21km north-east of the murder site, less than 10m from a four-wheel drive track. There was some charring of the body but it was otherwise unconcealed.

### 8.1.7 Victim 181 (Not currently located)

Victim 181, a 46 year old female, was murdered by her son in a shared home. Numerous searches have been undertaken at the request of investigating officers without success. The victim's son, convicted of her murder, has not provided a location of his mother apart from vague directions to the west. The Matrix has been applied to this case but searching to date in several locations has failed to locate the victim. It is believed that the victim was interred

in a shallow grave and is now under approximately 10m of water due to the raising of a dam wall.

### 8.1.8 Victim 39 (Not currently located)

Victim 39, a 33 year old male, was murdered over drugs and his body was disposed soon after. Two offenders have been convicted of his murder but have failed to identify the location of the victim to police. The Matrix was used to identify several possible locations where the victim may be found, all of which were searched without success. One offender then confirmed that the last location, in a State Forest was correct which resulted in an extensive search by police and volunteers. This extended to excavating several areas of interest in the search area. The victim was not located.

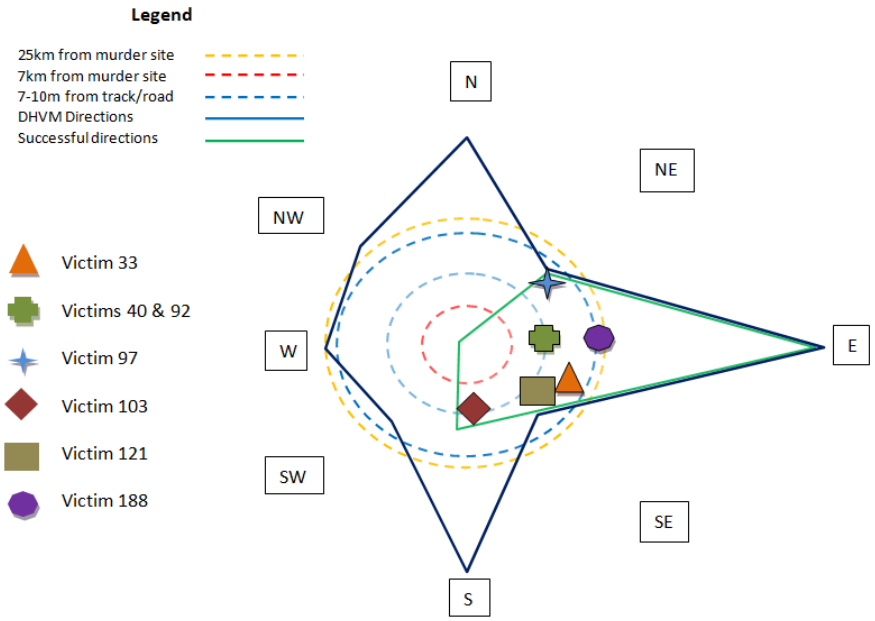
## 8.2 Matrix comparison

Victims located through the use of the Matrix conform to the major directions as evidenced by the data, Figure 7.9. For victims located to date east is the prominent direction followed equally by north-east, south and south-east. All located victims were found within the average distances from the nearest road/track.

The Matrix suggests that distances from 20-27m are common, whereas all located victims were located less that 15m from the nearest road/track. Three located victims were concealed by what was near to hand, branches, logs and grass; the remaining three showed no attempt at concealment. An attempt was made to cremate one victim, without success. The number of victims located that had not been concealed is higher than the mean and there is no identified reason for this. In all of these instances the offender had both a height and weight advantage over the victim, and while no conclusions can be drawn from this, the 100% occurrence rate is higher than the 72.7% for all homicides where the victim was disposed.

While limited in usage to date, the Disposed Homicide Victim Matrix is the first real step forward to assist police in locating these victims and this research represents the first time that this issue has been addressed from the victim perspective as opposed to most literature focussing on the offender. The outcomes from using the Disposed Homicide Victim Matrix should be the location of more victims with the flow on effects of convictions within the justice system and the ability of the co-victims to fully mourn and complete the cycle of grief.

**Figure 7.9** *Comparison of successful searches using the DHVM*




## 8.3 Limitations

Initially this research was constrained by only having access to Queensland homicide data via the Queensland Police Service QPRIME system. During the gathering of comparison data from the other states and territories in chapter six it was identified that this limitation may not have been as constraining as initially thought. With a comparable number of non-Queensland disposed homicide victims located it identified that the Disposed Homicide Victim Matrix developed in chapter five was relevant and transposable to the remaining states and

territories. At the completion of this research, it was identified that this limitation was not restrictive on the outcomes, and validation of the matrix was possible.

Within QPRIME, it was possible, although highly unlikely given the number of overviewing systems in place, that a homicide incident was wrongly coded and therefore was not included in this study. All incidents are entered by the initial investigating officer and are first checked by the shift supervisor prior to the end of that shift. The incident record is then forwarded to the Officer in Charge of that station or section, or their delegate, for checking and if deemed satisfactory would progress to the Regional Crime Manager for assessment. Non criminal incidents, such as traffic matters, non suspicious sudden death, noise complaints or SAR operations would be finalised at Officer in Charge level as there would be no further action beyond station level. All crimes progress to the Regional Crime Manager. It is highly unlikely that a miscoded murder would not be detected.

Further limitations include deaths that had not been recorded or reported to police, such as itinerant workers, those in the sex industry and those reported missing without further details to indicate homicide. Mouzos (2010) indicated that it was possible for over half of the unlocated reported missing people annually may have meet with foul play.

The direction of victim disposal has been simplified to the eight major cardinal directions as opposed to plotting each individual compass bearing direction for the disposed victims. Doing so may identify that the broader cardinal directions are too broad for any conclusions to be drawn. This had been identified during the searches for those victims located by the DHVM, in that there was an amount of interpretation in the application of directions to search teams.

A limitation that was highlighted during a particular search was the underlying knowledge of the officer interpreting the data before applying it to a search. In those instances identified

the researcher applied information, interpolation and personal experience to create search areas that were both viable and relevant. It is this experience that can only be gained by many years of working in the field and may limit the use of the matrix.

This project did not attempt to identify race within the data. This may be relevant given the multicultural nature of Australian society. Minority groups, such as First Nations, sex workers and homeless people have not been identified as such.

This project was a descriptive analysis between variables relating to homicide victim disposal, a starting point for further research, but none the less, an important start on the search for disposed victims.

There were also delimitations within the scope of the research, to exclude serial killings, mass murders and those incidents where the victim was not moved from where they were killed. The application of these findings to non Australian locations has not been attempted and may provide paths for further research.

## 8.4 Opportunities for Further Research

Access to homicide data is the single largest issue for conducting further research into this topic. With suitable data being stored within police computer systems access is generally limited to police, and only those who have an identified need to use that data. Freedom of information and research access can be granted by police jurisdictions but the labour intensity of collecting the required aspects of homicide demography would be an impediment to any data being supplied.

This research provides a world first in the study of homicide victim disposal within an entire state, and comparison with incidents throughout Australia. It does provide a starting point for

further research into the disposal patterns of victims in non serial and mass killings, not just in Australia but throughout the world. The following opportunities have been identified for researchers to continue to explore homicide victim disposal:

- Extend the study to include all Australian states to provide a national perspective.
- Expand the research out into the individual relationship categories rather than the simplified three used within this research.
- Expanding the research to include those on the National Missing Person database.
- Explore the effects of disposed victim homicides on the co-victims.
- Train more police to undertake research into all aspects of homicide.
- Undertake specific research focused around on updating and expanding the matrix in a similar way that the LPB is continually being updated.

## 8.5 Conclusions

This research has explained that there is a necessity to search for undiscovered homicide victims on several levels, that of assisting to see that justice is served, to assist the co-victims in the grieving process but more importantly as a community we need to show to no homicide victim is ever forgotten. The critical findings of this research are identified below.

### 8.5.1 Co-victims of homicide.

The co-victims are a little studied field, but the impact of losing a loved one to homicide can have a detrimental effect on the co-victims lives and their ability to grieve. These effects include anger with the justice system and the perceived bias towards the offender/s, the inability to complete the cycle of grief without the victim being located and laid to rest, and the endless '*never knowing'* associated with a disposed victim.

### 8.5.2 Production of a victim

While the lack of a victim's body does not mean a conviction cannot be obtained for a homicide criminal case, it does impose considerable obligations on the prosecution to prove

death which can be difficult without a body. The small number of successful disposed victim convictions in Australia attests to the reluctance of juries to convict a suspect without definitive proof that the victim was murdered.

### 8.5.3 Community confidence

Failure to locate undiscovered victims of homicide impacts on the community's confidence in the police. While police are generally diligent in all instances of homicide there is often the perception that minority groups, such as sex workers and homeless people, may receive less attention. Compared to other serious crime police devote considerable efforts to homicide incidents, as is reflected in the high conviction rates, but there are a number of incidents that stall because of lack of information and inability to locate the victim.

### 8.5.4 Search and Rescue System

The current search and rescue system is fully capable of being used to locate disposed victims of homicide, as it is successful in locating unresponsive lost people. Although not intended for homicide victims the actual methods of determining viable search areas are the same, generally based around lost person behaviour. In the case of disposed homicide victims the DHVM provides the base details from which to determine where to search.

### 8.5.5 Victim Disposal Commonalities

This research has identified that there are commonalities in the disposal of homicide victims within the three broad relationship categories. It is these commonalities, within the constraints of the limited sample size, that form the basis of the Disposed Homicide Victim Matrix. This is based on theories, such as Bayesian, that humans tend to make the same or similar choices when faced with similar stimuli, in this instance the disposal of a victim of murder.

### 8.5.6 Matrix Use

The Disposed Homicide Victim Matrix provides police search coordinators with parameters from which to develop viable search areas. The matrix cannot account for every variation in victim disposal but in terms of general direction, distance and concealment methods it can give an experienced coordinator options for searching. Prior to the matrix there were no guides that could provide any assistance.

### 8.5.7 Matrix Success

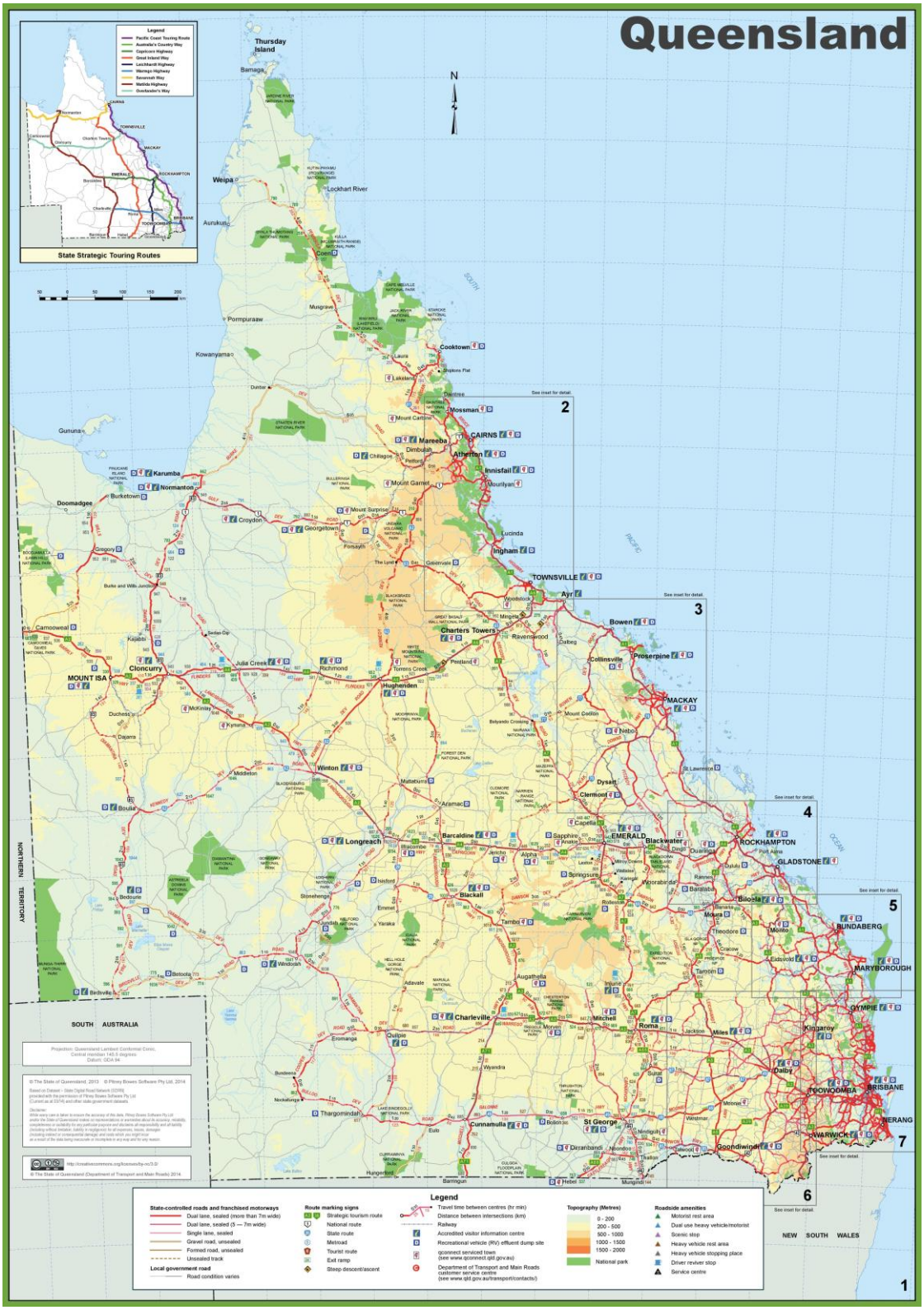
The Disposed Homicide Victim Matrix, in conjunction with the researcher's experience, has been successful in locating seven victims to date. The importance of this cannot be overstated, as this allows closure for seven families, contributes to community confidence in the police, aids justice to be served and contributes to the collective knowledge surrounding victim disposal and searching.

# 9 Appendices

## 9.1 Appendix 1: Literature Review Search Terms

| Key words and search terms | | |
|---|---|---|
| Disposed victim | Disposed victim homicide | No body |
| Homicide search | Disposed victim homicide search | Disposed victim murder |
| Disposed victim murder | Murder search | Missing person |
| Homicide co-victim/s | Murder co-victims | Co-victims |
| Body disposal | Human body disposal | Victim disposal |
| Homicide victim disposal | Murder victim disposal | Victim search |
| Search | Rescue | Search and Rescue |
| Body search | Lost person | Shallow grave |
| Clandestine grave | Body concealment | Concealed body |
| Evidence search | | |

## 9.2 Appendix 2: Queensland: Focus of the research.

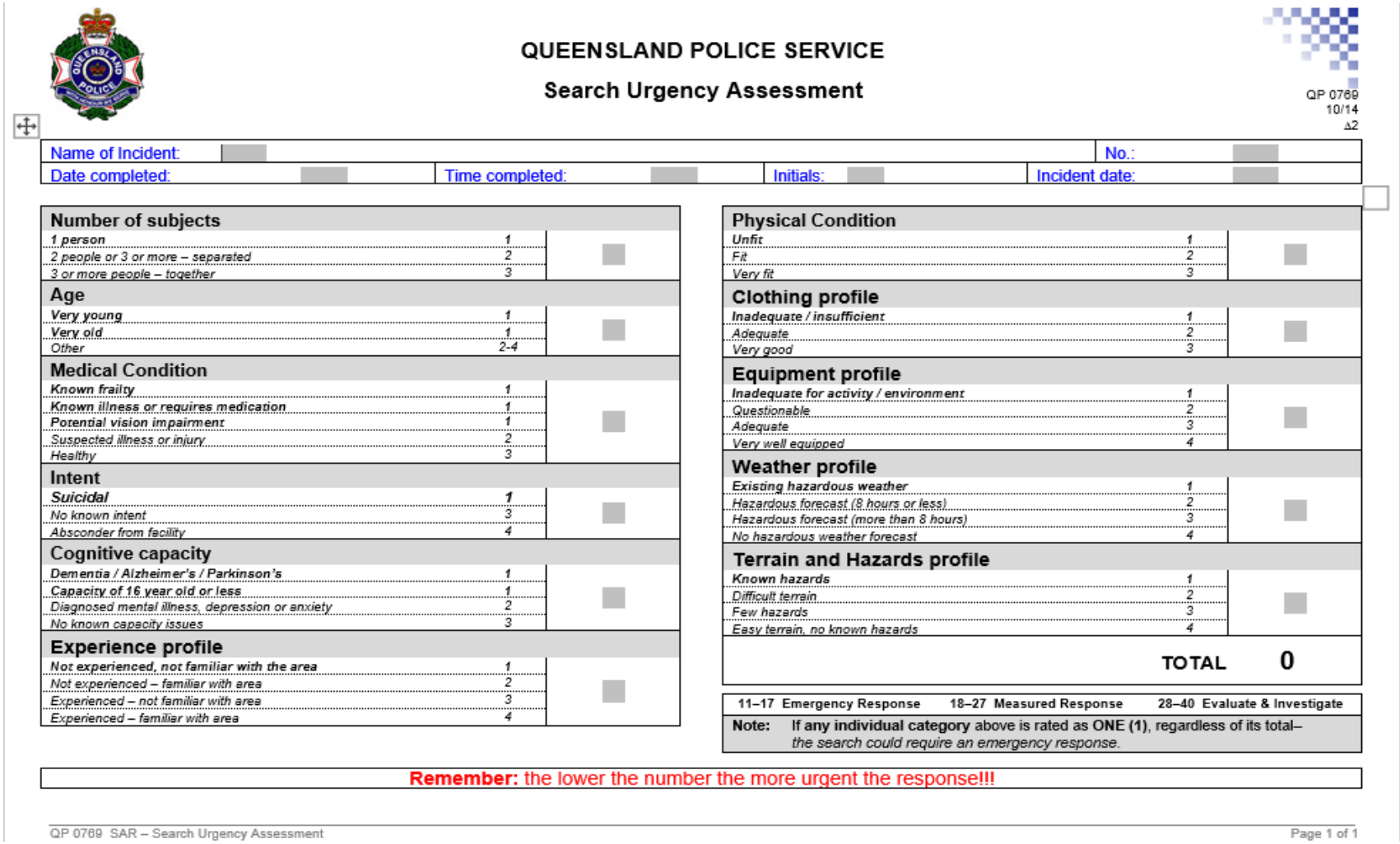



*From Tourism Queensland 2021*

## 9.3 Appendix 3: SAR Coordinator survey

| No. | Question | Rationale | Coding |
|---|---|---|---|
| 1 | Do you agree to voluntarily participate in this survey? | This to ensure that all respondents understand that this survey is voluntary. | Yes/No (Note if No did not continue with survey) |
| 2 | What is your current SAR level? | This will provide a measure of SAR experience and also provide a cross section of respondents | Sen SARO, SARO, FSC |
| 3 | How many SAR incidents have you coordinated? | This will provide a level of SAR experience in the SAR Coordination of the respondents. | 1-5, 6-10, 11-20, 21-30, 31-40, 41-50, More than 50 |
| 4 | What type of SAR incidents have you coordinated? | This question will provide further data on the experiences of the respondents. | Marine, Land, Aviation, Land and Marine, Land and Aviation, Land marine and aviation. |
| 5 | With respect to land SAR have you used the Reflex Search Strategy (Bicycle Wheel or Initial Action)? | This question will identify those SAR coordinators who utilise this strategy in the initial stages of a search. | Yes/No |
| 6 | With respect to land SAR have you used the Theoretical Search Strategy (Naismith's Rule)? | Naismith's Rule was the original land SAR strategy and this question will determine whether it is still being actively used. | Yes/No |
| 7 | With respect to land SAR have you used the Statistical Search Strategy (Lost Person Behaviour)? | The Statistical strategy is based on Lost Person Behaviour and has proved 90-95% accurate. This question will identify if it is being actively used. | Yes/No |
| 8 | With respect to land SAR have you used the Subjective Search Strategy (Topography and Decision Points)? | The Subjective strategy is based on the coordinators map reading ability. This question will identify if this strategy is being actively used. | Yes/No |
| 9 | With respect to land SAR have you used the Deductive Search Strategy (Using facts to develop inferences)? | The Deductive strategy is based on the use of known facts to develop inference re MP behaviour. This question will identify if this strategy is being actively used. | Yes/No |
| 10 | Was your target missing person/s located within the determined search strategy area, excluding those never located? | This question will provide data on the validity of the above four search strategies. It will confirm if the search strategies used are working. | The same four responses were provided for the five search strategies: Never/ Some of the time/ Most of the time/ All of the time |
| 11 | Has the National Land Search Operations Manual been useful in assisting with the development of search areas? | The National Search and Rescue Manual is the depository of SAR strategies used in Australia. It is hypothesised that the non-use of the manual will correlate with less successful searches. | Yes/ No/ Never used it |
| 12 | Have you identified additional methods of determining a land search area? | This question asks coordinators if they have found any alternate or different methods of developing search areas not covered in the manual. | Free field |
| 13 | Have you had to search for a known deceased person (Not a homicide victim, but a missing person who's TFFS have expired or there was suspicion of a fatality)? | This question is seeking if coordinators have previously had to search for a deceased person. | Yes/No |
| 14 | If you answered yes to the above question, were the search strategies applicable? | Only respondents who answered yes to Question 12 were required to provide a response to this question. If the land search strategies are valid in locating living lost persons, then it is hypothesised that they will also be valid in locating deceased persons that had succumbed to the environment while lost and/or missing. | Yes, the target was located within the search area<br>No, the target was located outside the search area<br>No, the target was never located<br>No, the location of the target was known |
| 15 | Do you enter Lost Person Behaviour data onto the Australian LPB Database (http://goo.gl/OLZmW)? | This question is seeking to identify those coordinators that are providing data on the Australian Lost Person Database. Data from this database contributes greatly to the Statistical search strategy as a representation of how individual missing person categories behave. | Yes/ No/ Wasn't aware of the database. |

## 9.4 Appendix 4: Search Urgency Form



**QUEENSLAND POLICE SERVICE**

**Search Urgency Assessment**

QP 0769
10/14
∆2

| Name of Incident: | | No.: | |
|---|---|---|---|
| Date completed: | Time completed: | Initials: | Incident date: |

| Number of subjects | | |
|---|---|---|
| *1 person* | 1 | |
| *2 people or 3 or more – separated* | 2 | |
| *3 or more people – together* | 3 | |
| **Age** | | |
| *Very young* | 1 | |
| *Very old* | 1 | |
| *Other* | 2-4 | |
| **Medical Condition** | | |
| *Known frailty* | 1 | |
| *Known illness or requires medication* | 1 | |
| *Potential vision impairment* | 1 | |
| *Suspected illness or injury* | 2 | |
| *Healthy* | 3 | |
| **Intent** | | |
| *Suicidal* | 1 | |
| *No known intent* | 3 | |
| *Absconder from facility* | 4 | |
| **Cognitive capacity** | | |
| *Dementia / Alzheimer's / Parkinson's* | 1 | |
| *Capacity of 16 year old or less* | 1 | |
| *Diagnosed mental illness, depression or anxiety* | 2 | |
| *No known capacity issues* | 3 | |
| **Experience profile** | | |
| *Not experienced, not familiar with the area* | 1 | |
| *Not experienced – familiar with area* | 2 | |
| *Experienced – not familiar with area* | 3 | |
| *Experienced – familiar with area* | 4 | |

| Physical Condition | | |
|---|---|---|
| *Unfit* | 1 | |
| *Fit* | 2 | |
| *Very fit* | 3 | |
| **Clothing profile** | | |
| *Inadequate / insufficient* | 1 | |
| *Adequate* | 2 | |
| *Very good* | 3 | |
| **Equipment profile** | | |
| *Inadequate for activity / environment* | 1 | |
| *Questionable* | 2 | |
| *Adequate* | 3 | |
| *Very well equipped* | 4 | |
| **Weather profile** | | |
| *Existing hazardous weather* | 1 | |
| *Hazardous forecast (8 hours or less)* | 2 | |
| *Hazardous forecast (more than 8 hours)* | 3 | |
| *No hazardous weather forecast* | 4 | |
| **Terrain and Hazards profile** | | |
| *Known hazards* | 1 | |
| *Difficult terrain* | 2 | |
| *Few hazards* | 3 | |
| *Easy terrain, no known hazards* | 4 | |
| | **TOTAL** | **0** |

| 11–17 Emergency Response | 18–27 Measured Response | 28–40 Evaluate & Investigate |
|---|---|---|

**Note:** If **any individual category** above is rated as **ONE (1)**, regardless of its total– *the search could require an emergency response.*

**Remember:** the lower the number the more urgent the response!!!

## 9.5 Appendix 5 Identified data required for research project

| Data | Rationale |
|---|---|
| **Incident number** | To ensure duplication is eliminated. Prior to any analysis being commenced these numbers will be cleansed from the data, ensuring that there is no linkage between the data provided and the system number. A further anonymity measure inbuilt into this study is that all the identification numbers provided are only accessible via the Queensland's police computer systems and are not available to persons outside of this jurisdiction. |
| **Offender sex** | Indicator of size and strength, contributing to disposal location and options.<br>• Male<br>• Female<br>• Unknown |
| **Offender age** | Indicator of size and strength, contributing to disposal location and options<br>This data will be collected in 5-year blocks from the age of five through to persons over eighty. Although there are no known homicide offenders in Queensland under the age of ten years there are several examples in both the USA and UK.<br>• 1929: The deliberate shooting of a friend by an 8-year-old child in Kentucky, USA.<br>• 1993: Two males, both 10 years old, killed a 4-year-old boy in the UK.<br>• 2005: The stabbing death of a friend by 9-year-old girl in Brooklyn, USA.<br>• 2008: The shooting of his father by an 8-year-old boy in Arizona, USA. |
| **Offender height and weight** | Height and weight differences between the offender and victim may provide clues to any ability to carry and/or dispose of a victim. |
| **Victim sex** | Sexual disparity may be an indicator of size disparity, contributing to disposal location and options. Sex is that of the offender and victim at the time of birth. There are no known instances of transgender or gender reassignment.<br>• Male<br>• Female |
| **Victim age** | Indicator of size and physical condition may contribute to disposal location and options. Newborn through to 100 years of age in five-year increments. There are no known Queensland homicide victims over 100 years of age. |
| **Victim height and weight** | Height and weight differences between the offender and victim may provide clues to any ability to carry and/or dispose of a victim. |
| **Offender/victim relationship** | Information from FBI profiling indicates that the relationship between the offender and victim plays a large role in the method of killing and the disposal of the victims (Alison et al., 2002) . There are 25 relationship types covering all circumstances. In paired groups the offender is the first named. It was initially considered that the use of parent/child would be sufficient for analysis but recognising the wide variety of dynamics possible through the different combinations of parent and child homicides the option of |

| Data | Rationale |
|---|---|
| | using all combinations was chosen. |
| **Offender/victim relationship (Continued)** | Specific terms describe types of murders, with the most common being used below. Of these relationships four were not represented within the homicide statistics.<br>• Spousal (Married)<br>• Spousal (Estranged)<br>• Same sex relationship<br>• De-facto<br>• Engaged<br>• Family<br>• Father/Son<br>• Father/Daughter<br>• Mother/Son<br>• Mother/Daughter<br>• Son/Father<br>• Son/Mother<br>• Daughter/Father<br>• Daughter/Mother<br>• Sibling<br>• Other relation<br>• Boyfriend/Girlfriend<br>• Girlfriend/Boyfriend<br>• Friend<br>• Employer/Employee<br>• Employee/Employer<br>• Co-worker<br>• Acquaintance<br>• Neighbour<br>• No known relationship<br>• Unknown |
| **Incident location** | The location of the initial incident is necessary so that distances and transport options can be calculated between murder scene and the victim location. This will contribute to the development of search strategies for locating those victims that have yet to be discovered. Both the incident and victim location will be plotted using Google Earth Pro to obtain the exact linear distance and direction. For those incidents where the homicide location cannot be identified it may be possible to correlate the victim location with their place last seen. |
| **Incident day** | This is being collected to identify if there are patterns with victim disposal relating to what day of the week the incident occurs. Homicide studies by the National Homicide Monitoring Program (Bricknell, 2020a) shows that the majority of homicide incidents occur on Friday and Saturdays. Further to this there may be a correlation in day of week and distance/method of disposal which also may be affected by geographical location and transport options available to offender. |
| **Incident date and time** | The incident time and date will provide a starting point for decomposition of the victim. The stages of decomposition have a large effect on both searchers and searching. Victims found relatively soon after a homicide, while still confronting, are far better physiologically and visually than locating the semi-decomposed remains of a victim sometime after the incident. Similarly, locating skeletal remains does not normally have the same traumatic effect as does a decomposing body. The potential state of the victim will also influence the method and manner of searching. A search for a victim in the last stages of decomposition or disarticulation will require differing techniques compared to searching for the same body in the early stages of decomposition (Whitehead, 2020c). |
| **Victim location** | This location, in conjunction with the incident location, will provide the distance and direction of disposal of the victim. Analysis of those victims moved and found may provide trends and characteristics that will be relevant to no-body incidents. |
| **Date and time of location** | Using this information in conjunction with the incident time will contribute to information relating to decomposition under varying weather, vegetation, and disposal conditions within Queensland. Limited studies have been conducted on the decomposition of humans under Australian conditions (Hayman & Oxenham, 2017; Powell, 2010) while there has been somewhat more overseas, particularly in the United States (Carter & Tibbett, 2008; Dent et al., 2004; Galloway et al., 1989; Rodriguez & Bass, 1985). |

| Data | Rationale |
|---|---|
| **How was the victim located?** | Search evidence indicates that disposed victims are often located by a person completely removed from the incident, such as bush walkers or farmers (Queensland Police Service, 2021d). The first two bodies located in the Belanglo State Forest were found by persons using the forest for recreational activities while the third was done so by a local who believed that there were more victims in the forest (Whittaker & Kennedy, 2015). This highlights the difficulty associated with searching for deceased victims of crime. This category can be divided into smaller sub-sets:<br>• **Offender identified location:**<br>o 1979: James Miller identified the location of murder victims disposed of in a paddock at Truro, South Australia. He, with Christopher Worrell, killed at least seven women in 1976 to 1977 (Victims 101, 103, 110, 114, 119, 150 & 159). Two other bodies were previously found accidently by people involved in other activities (McNeice 2006a).<br>• **Organised search (Police, family, etc):**<br>o 2015: The body of Victim 107 was located in a farm paddock outside Gatton, Queensland, as a result of a coordinated search effort by police.<br>• **Randomly found (Bushwalker, farmer etc):**<br>o 1983: Victim 104, murdered by Bevin Spencer von Einem, was located by a geologist near Kersbrook SA about 8 weeks after he disappeared.<br>o 2002: The bodies of Victims 109 and 196 were found by park rangers in the Yarra Ranges National Park.<br>• **Never found**:<br>o 1996: The disappearance of Victim 117 within 2 days of her birth. Her mother, Keri, was eventually convicted of the child's murder but to date has provided no details as to the method or location of the baby. In proving that the baby did not exist, the police cross checked over 86,000 children of a corresponding age, eventually finding one child with the same name and date of birth although she was ruled out on DNA evidence. They also tracked down all 37 men with the same name of person Lane claimed was the father and to whom she had given the baby, again with negative results.<br>o 1997: The body of Victim 55 was never located after she was murdered by a jealous woman in Melbourne.<br>• **Medical response (Located by ambulance crew or hospital):**<br>o 2016: Victim 122 was found deceased by an ambulance crew. The victim had suffered severe internal injuries as a result of beatings from his mother's defacto partner, William O'Sullivan.<br>• **Police response**:<br>o 1993: Police discovered the bodies of Victims 134, 135, 136 & 137 at their Greenough residence, 400km north of Perth (McNeice 2005a).<br>o 2001: Cooked pieces of Victim 160 were located by police before he was to be served to the children of murderer Katherine Knight at Scone, NSW. Knight was an abattoir worker and had previously skinned and dressed the body of Price. |

| Data | Rationale |
|---|---|
| **How was the victim located? (Continued)** | • **Witness (Direct observer to incident):**<br>o 2010: Chase Day was able to guide police to the murder site of Victim 5 in the Belanglo State Forest. Day was present during the murder and provided detailed information to police. |
| **Method of homicide** | The method of homicide often has a direct influence of the method of disposal and the decomposition rate of the victim. Those victims with open wounds, as a result of firearms, stabbing injuries or blunt force trauma provide additional entry points for insects and bacteria while also allowing body fluids to drain quicker, hastening the overall decomposition process. This category has been divided into a number of specific methods:<br>• **Firearm (Hand gun, rifle, shot gun etc):** Firearms are used in about 14% of homicides nationally and has been falling since the early 1990's (Bricknell, 2020a). Gangland and Outlaw Motorcycle Gang killings have been predominantly with firearms, somewhat skewing the overall homicide statistics. The 1996 firearm buy-back may have influenced the reduction of firearm murders.<br>o Martin Bryant is possibly Australia's most infamous firearm murderer after killing 35 people with a high-powered weapon at Tasmania's Port Arthur in 1996.<br>o 1973: Victim 145 was shot 'gangland' style at Moonie, Qld after having been kidnapped and repeatedly raped by Allan Baker & Kevin Crump (McNeice 2006b)<br>• **Firearm other (Hand-made gun, single use gun):** The prevalence of this type of weapon is not possible to state at present as they are included with the overall firearm usage. The use of home-made guns or single use weapons is not that common in Australia.<br>o 2004: A spear gun was the weapon of choice of John Sharpe when he murdered Victims 105 and 106 at Mornington, Victoria (McNeice 2005c).<br>• **Blade weapon (Knife, machete, axe etc**): Total blade weapons account for 44% of homicides (Bricknell, 2020a). These weapons are generally the easiest to obtain and also conceal.<br>o 1986: Victim 41 was stabbed to death at Blacktown, NSW, by the Murphy Brothers, John Travers and Michael Murdoch. 1997: Victims 13 and 47 were stabbed by Leslie Camilleri and Lindsay Beckett (McNeice 2005h).<br>o 2008: Katherine Worrall, 20, repeatedly stabbed Victim 210, to death as she emerged from the bathroom of their family home at Strathfield after a disagreement.<br>• **Blunt trauma weapon (Hammer, metal pipe etc):** Bashing and beatings are included together by the National Homicide Monitoring Program and represent 24% of all homicides (Bricknell, 2020a).<br>o 1977: Victim 203 was bashed to death with a house brick while at a YMCA Camp in the Adelaide Hills. His killer was a 12-year-old boy from the same camp.<br>o 1983: Victim 103 was killed by severe blood loss as a result of brutal anal raping with blunt objects, possibly beer bottles, by Bevin Spencer von Einem.<br>o 2011: Victim 202, a two-year-old child, suffered fatal blunt force trauma to her head from a wooden spoon, repeated hits into a glass shower screen and kicking by her mother's boyfriend. |

| Data | Rationale |
|---|---|
| **Method of homicide (Continued)** | • **Strangulation (Rope, belt, wire etc):** Strangulation, suffocation and hanging are included together in the national statistics, with 7% of victims dying in this manner.<br>o 1985: Victim 49 was sexually assaulted and then hung in a cupboard by her 19-year-old cousin, David Glen.<br>o 2005: Father Terrence Dann hanged Victims 57 and 58 in the Derby Cemetery, WA.<br>o 2006: Victim 169 was manually strangled to death in a disabled toilet at a Canning Vale shopping mall by Dante Arthurs.<br>• **Suffocation (Pillow, plastic bag, gag etc**): Suffocation has been included with strangulation as part of the national figures and as such it is not known how prevalent this method is.<br>o 1968: Victim 8 was abducted from his Sydney back yard and murdered by having a rolled newspaper forced down his throat.<br>o 2007: The suffocated and sand-choked body of Victim 172 was located at Port Elliot, SA, having been murdered by Garry Newman after he was rejected by her.<br>• **Physical assault (Beating, one punch etc):** This category covers all physical assaults where weapons are not used, including shaking of small children.<br>1957: Victims 23, 24 and 205 were bashed to death by Raymond John Bailey at Sundown Station, SA.<br>• **Fall (Pushed off cliff, building, bridge, aircraft etc**): About 1% of homicides have been recorded as resulting from falls (Bricknell, 2020a)<br>o 1988: A rash of gay murders occurred on the cliffs to the east of Sydney, including Victim 102, found at the base of the cliffs below North Head; Victims 152 and 202, who were found below the Bondi and South Head cliffs respectively in 1989. Victim 125, was found at base of the Tathra Beach cliffs. All were believed to have been either pushed or thrown off the cliffs by gangs preying on homosexuals.<br>o 2005: Des Campbell was found guilty of pushing Victim 30 off the ocean cliffs of the Royal National Park as a means of claiming her estate.<br>o 2009: The murder that possibly shocked the nation the most was Arthur Freeman dropping Victim 81 from the rails of the West Gate Bridge, Melbourne, in January of that year. This incident occurred the day after the Federal Court finalised custody arrangements limiting his access rights to Darcy and her two brothers Tonge 2016a).<br>• **Chemical (Poison, acid, medication, intravenous substance etc):** This method includes the deliberate use of poisons, overdosing of prescription and illegal drugs to murder another and represents less than 2% of all recorded homicides (Bricknell, 2020a)<br>o 1953: Caroline "Aunty Thally" Grills murdered four victims using the rat poison Thallium.<br>o 1964: Victim 104 was murdered by cyanide injection while at Sydney's Royal Alexandria Hospital.<br>o 1986: Victim 111 died as a result of an overdose of drug laced cola given to her by Michael Guider as part of a planned sexual assault. |

| Data | Rationale |
|---|---|
| | ○ 2010: Two victims of Brett Kuzimski, Victims 31 and 90, were deliberately injected with an overdose of methyl amphetamines as a means of killing them.<br>• **Electrical:** This is the deliberate or probable consequence death of another through electrocution and is not recorded in the national homicide statistics (Bricknell, 2020a).<br>○ 1970: Elmer Crawford murdered Victims 51, 52 and 53 by attaching an electrical lead to their ears with alligator clips as they slept. Victim 54 was battered to death with a hammer. Crawford has then driven the bodies to Port Campbell, where he pushed the vehicle off a cliff in an attempt to stage a murder/suicide situation.<br>• **Motor vehicle**: This is the deliberate killing another through the use of a motor vehicle but does not include deaths from traffic related offences. Statistically about 3% of homicide victims die in this manner (Bricknell, 2020a).<br>○ 1983: A disgruntled truck driver, Douglass Crabbe, drove his semi-trailer into the Inland Hotel, Yulara, NT, killing 5 and injuring 16 persons.<br>○ 1985: Victim 50 was killed through carbon monoxide poisoning in a vehicle that had been configured for a murder/suicide.<br>○ 2017: Victim 55 was killed and 19 injured when Saeed Noori deliberately drove his vehicle through a crowded intersection in Flinders St, Melbourne. |
| **Method of homicide (Continued)** | • **Drowning:** Less than 1% of homicide victims die from being held underwater with the intent to kill (Bricknell, 2020a).<br>○ 1992: Victim 182 was abducted and drowned as she walked home at Bargo, NSW, by Andrew Garforth.<br>○ 2005: Robert Farquharson drove into a dam near Winchelsea, Victoria, drowning Victims 75, 76 and 77 as they sat buckled into their seats. He was initially convicted of their murder, successfully appealed and then in 2010 reconvicted. This infanticide was an attempt to punish his ex-wife who had managed to move on after their divorce.<br>• **Explosives:** This is the use of an explosive device as a murder weapon. Suicide bombings would fit into this category. The disposal of a victim after the use of an explosive device may be problematic.<br>○ 1986: A car bomb was detonated outside the Russell Street Police Complex, Melbourne, resulting in the death of Victim 189<br>• **Neglect:** Failing to provide the necessities of live accounts for less than 1% of homicides (Bricknell, 2020a). This generally relates to very young children or the elderly, though there have been some overseas incidents of this occurring to kidnap victims.<br>○ 2016: The mother of Victim 123 was found guilty of neglect in failing to seek medical help for her son. The child had suffered severe internal injuries as a result of beatings from her defacto partner, William O'Sullivan.<br>• **Unknown:** This could be because the post-mortem was unable to identify the cause of death or where the victim was never located. Six percent of victims fall into this category (Bricknell, 2020a). |

| Data | Rationale |
|---|---|
| **Method of victim disposal** | The method of disposal will have a direct effect on the visibility of the victim and of their decomposition rate. Those victims interred to a reasonable depth, whether in a box, wrapped in cloth or not, will decay at a slower rate than a victim left on the surface (Dix & Graham, 1999). The method of disposal will also have a large bearing on how easily the victim will be located and therefore to the probability of detection of the overall search. The number of possible victim disposal methods is as limitless as the offender's imagination. The following have been recognised as the most common employed by offenders.<br>• **Interment:** An interred body is one that has been deliberately buried and covered with earth. There is no agreed depth for a body to be classed as interred excepting that it must not be visible from the surface. During the plague in 1665 the Mayor of London legislated that all graves should be at least six feet deep to avoid the spread of the disease (Whiticker & Mullins, 2013).<br>All Australian States/Territories have similar burial acts or regulations which require that there be a minimum of 1 metre of soil over a casket or body, making the depth of a standard grave at about 150cm (South Australia Government, 2013). Although due to urban pressures there has been an increase in body stacking of family member in a single grave and cremation as an economical and space saving trend. A grave has a relatively small footprint on the surface and historically they have only been located through the assistance of the offender/suspect.<br>o Although a hole in the ground can never be restored to its original state the tell-tale signs of a buried body are often hard to detect (Powell, 2010). Soil subsidence and/or mounding in the early stages is a good indicator, but over time the growth of plants and the actions of the weather tend to return the site to a similar state to the surrounds. 1989:<br>o The body of Victim 18, murdered by Dieter Pfennig, was buried in the Murray Bridge grave in which he had previously placed the body of Victim 15 after killing her in 1983.<br>• **Shallow grave**: There is no agreed definition of a shallow grave. For this project it will suffice to include all burials less than 1,000mm deep and/or where the deceased is close to the surface but otherwise still covered with earth. A shallow grave can be either man-made or natural. Without proper tools it is often difficult to dig down any depth into the ground and therefore only a shallow depression may be made by an offender. The falling of a tree will often create a depression near the root ball, allowing a victim to be, at least, partly concealed. Similarly, the rill from a creek or waterway will provide a suitable depression.<br>o 1965: The Wanda Beach murders are a classic example of victims being discovered in a shallow grave, in this instance Victims 173 and 176 were placed in a shallow depression and covered with sand in the dunes above the beach (McNeice 2005e).<br>o 1983: Police located Victims 6 and 32, in a shallow grave at Berry Springs, NT, after having been killed by Martin Leach.<br>o 2004: Victim 105 and 106 were initially buried in a shallow grave in the backyard after having been shot with a spear gun by her husband, John Sharpe, at Mornington, Victoria (McNeice 2005c).<br>o 2012: Victim 140, was located in a shallow grave at Gisborne South, Victoria, after having been raped and strangled by Adrian Bailey. |

| Data | Rationale |
|---|---|
| **Method of victim disposal (Continued)** | • **Concealed on ground:** No attempt has been made to bury these victims, they generally have been left on the surface at the location they have been taken to and covered in easily obtainable material such as leaf litter, branches, rocks, rubbish and other close items.<br>o 1997: Victims 14 and 48 were located at Fiddler's Green Creek, Victoria, covered in debris from the scene (McNeice 2009a).<br>o 2001: Victim 187 was dumped at the Wingfield dump by Mark Rust. She was eventually found after 1,500 tons of rubbish was sifted in a month-long search for her body.<br>• **Concealed other:** This is the method of concealing a victim inside a wheelie bin, industrial rubbish bin, motor vehicle or similar in order to delay their discovery.<br>o 1985: Victim 49 was killed in a murder/suicide by a possessive Wolfgang Hindenburg shortly after they started dating. In 1992 both were discovered inside Hindenburg's vehicle on a remote track east of Melbourne. Investigation suggests that the victim was forcibly restrained in the vehicle while both she and Hindenburg succumbed to carbon monoxide poisoning from the engine.<br>o 2010: Victim 31 and 90 were found hidden in an abandoned and burnt motor vehicle at Wattle Grove, Western Australia.<br>• **No concealment on disposal**: This is where no attempt has been made to conceal the victim after they have been moved from the crime scene. The primary purpose of this method is again to delay detection; hence most of these victims are placed in areas where the offender believes the possibility of discovery is slight such as isolated bushland, abandoned buildings and creek/waterways.<br>o 1990: Victim 70, who was shot as a thrill killing, was located under a tree in a paddock approximately 20km from the incident location, Rathdowney, Queensland.<br>o 2006: The body of Victim 82, shot once in the head by her husband, was located where she was killed. Her unconcealed body was left on Patterson's Ridge fire trail just off the Bells Line of Road in the Blue Mountains<br>• **Waterways:** This is the weighing down of a victim and disposing of them in a waterway in an attempt to keep them undiscovered. There is possibly a train of thought among killers that weighing down a body will conceal it forever or at least until it decomposes sufficiently to make finding it almost impossible. There are many instances, in both Australia and overseas, where the gaseous distension resulting from the decomposition process is sufficient to raise a body, and objects as heavy as small engine blocks, to the surface. This is an occurrence that only occurs in relatively shallow water (Haglund & Sorg, 2001)<br>o 1997: Victim 124's badly beaten body was found in Blue Rock Dam near Moe.<br>o 2013: Victim 39's body was placed in a 44-gallon drum and filled with concrete before being pushed into the Caboolture River, Caboolture, Queensland. In this instance the drum washed ashore to be noticed by local fishermen, upon inspection they observed a bone poking out of the concrete and raised the alarm. |

| Data | Rationale |
|---|---|
| **Method of victim disposal (Continued)** | • **Waterside**: This is where a victim has been disposed on the side or bank of a waterway, although not actually placed in the water. This method of disposal is very similar, except for the location type, to the non-concealment method, as generally no attempt has been made to hide or otherwise cover the body. The offender relies on the isolated nature of the location.<br>o 1992: The skeletal remains of Victim 26, were located on the banks of Edgars Creek, Thomastown, Vic.<br>o 2012: Victim 7, killed by her husband, was located on the bank of Kholo Creek, Brisbane, after she had apparently been thrown off the overhead road bridge. She landed just below the high-water mark on the creek side.<br>• **Dismemberment**: This method involves the cutting up of a victim into smaller portions in an attempt to make it easier to dispose of. There is a range of dismemberment from the simple removal of fingers and head in an attempt to avoid victim identification through to the dissecting of a body into many smaller pieces. Attempts are then made to dispose of the smaller pieces, down the toilet, rubbish bins or scattered in the scrub.<br>o 1981: Victim 12 was decapitated and had her fingers removed by killer Graham Potter in an attempt to make identification, and capture, impossible (McNeice 2005b).<br>o 1983: Dr Rory Thompson hated his wife to the extent he stabbed her to death prior to dissecting her into eighty-three pieces. Fifteen kilograms of the smaller pieces, including her heart, a finger and genital organs, were recovered from the toilet pipes while Thompson led police to the larger parts that he had strewn in a vacant block near his wife's house.<br>o 2001: Victim 73, killed as revenge in a gangland style incident, was dismembered and tossed into the Hastings River, Port Macquarie, NSW.<br>o 2012: Victim 96 was murdered by his friend, dismembered, and thrown into the sea off Rottnest Island, WA. His head washed ashore.<br>o 2014: After Victim 60 was murdered in a drug dispute his corpse was dismembered and disposed of in a wheelie bin at Kalgoorlie, Western Australia.<br>o 2014: There are a few recorded instances where the victim has been cooked and eaten by the offender. One was the murder of transgender Victim 159 by her chef boyfriend. Parts of her were discovered being cooked in their Teneriffe apartment just prior to the offender absconding and fatally injuring himself.<br>• **Cremation:** This is the deliberate burning of a body in an attempt to both conceal it and to destroy any potential evidence.<br>o 1951: The badly charred bodies of Victims 199 and 200 were located in their burned-out house at Casino, NSW. Both had been shot dead by a third person.<br>o 2015: Victim 175 was located partially cremated in the Cocoparra National Park, New South Wales after being murdered by the caretaker of the Leeton High School where she worked.<br>• **Concealed insitu**: This is where the offender has concealed the victim at the place of death and where there has been no attempt to move the victim.<br>o 1977: Victim 95 was left under the floorboards at the Woodside home of his killer, James Beauregard-Smith, in South Australia. |

| Data | Rationale |
|---|---|
| **Method of victim disposal (Continued)** | ○ 1992: Victims 38, 72, 86, 91, 149, 172 and 198 murdered by Ivan Milat, (Backpacker murders) were covered with branches arranged lengthways so that their bodies were not readily visible from a distance (McNeice 2005g).<br>○ 2003: Karen Kramer killed both her parents at Ingleburn and hid them under her house for the next 18 months until they were discovered.<br>• **No concealment insitu**: In these incidents the victim has been left exactly where they died with no attempt to hide or cover them. The reasons behind this are numerous. The offender may believe that the death scene is sufficiently remote, isolated, or secure they have no need to move the victim. They may have insufficient time or means to otherwise dispose of the victim or the thrill of the kill has been sated and they are no longer interested in the victim (E. W. Hickey, 2015). But more likely, the killing was one of passion, done in the heat of the moment and the realisation of what they have done hits home (Bricknell, 2020a).<br>○ 2000: Victims 27 and 206, both murdered in the Millewa State Forest, were left unmoved and unconcealed in the motor vehicle where they were shot.<br>○ 2003: There was no attempt to conceal the body of Victim 146 at Coochin Creek, Queensland. This location was in an extremely isolated area of the Sunshine Coast.<br>• **Never located:** These victims have never been located.<br>○ 1966: Arguably the most well-known victims never to have been found are Victims 14, 15 and 16 That they were murdered has never been proved although there are some compelling arguments, (A. J. Whiticker, 2006; Whiticker & Mullins, 2013) about an identified protagonist who is now deceased.<br>○ 1976: The disappearance of Victim 209 from her Beaumaris home has never been solved.<br>○ 1980: Victim 34, who disappeared at Uluru, has never been found.<br>○ 2001: Victim 74 disappeared from Barrow Creek in suspicious circumstances.<br>○ 2014: The search for Victim 194 is still ongoing in New South Wales. |
| **Method of transportation** | This is a limiting factor in how far from the scene a victim will be located. An offender without a mode of transport will need to dispose of any victims within a relatively close distance from the incident scene; conversely an offender with the means can dispose of a victim in any location accessible. Australia, in common with most other countries, has a disjointed homicide recording system making it possible for an offender to commit a murder in one state and dispose of the victim in another without them immediately being recognised as the same incident (DiBiase, 2015b).<br>• **Offender's vehicle:**<br>○ 2003: Victim 93 was driven from the murder scene at Westmeadows, Melbourne, to where it was disposed at Beveridge by Novica Jakimov.<br>• **Victim's vehicle**<br>○ 2010: Daniel Holdom drove Victim 155 to the Belanglo State Forest in her vehicle before killing her and disposing of her body. |

| Data | Rationale |
| --- | --- |
| **Method of transportation (Continued).** | • **Other vehicle:**<br>  o 2000: After murdering Victim 27, Raymond Prior drove her wrapped body into the bushland, 17km from Tenterfield, using a vehicle belonging to her new partner.<br>• **Train:**<br>  o 2000: After killing victim 67, John Surry dismembered him and carried the body parts to the disposal location on the suburban train system inside suitcases.<br>• **Carried or dragged:**<br>  o 1988: After killing his Victim 156, 17-year-old Sidney Bowtell dragged her body to a nearby industrial bin where he disposed of her.<br>• **Unknown:**<br>Many of the no-body homicide incidents fall into this category, and until the victim has been located there is limited ability to identify any method of transport. |

## 9.6 Appendix 6 Homicide demographic/biometric data

| Data required | Rationale for dataset |
|---|---|
| **QPRIME incident number** | To avoid duplication, removed prior to analysis to prevent identification of parties involved. |
| **Offender age** | Comparison with victim may have bearing on disposal |
| **Offender gender** | Comparison with victim may have bearing on disposal |
| **Offender height** | Comparison with victim may have bearing on disposal |
| **Offender weight** | Comparison with victim may have bearing on disposal |
| **Victim age** | Comparison with offender may have bearing on disposal |
| **Victim gender** | Comparison with offender may have bearing on disposal |
| **Victim height** | Comparison with offender may have bearing on disposal |
| **Victim weight** | Comparison with offender may have bearing on disposal |
| **Offender/victim relationship** | The relationship may have a bearing on disposal and concealment actions |
| **Time and place of incident** | Establishes start point and time of offence |
| **Day of incident** | Establishes prime days for homicide |
| **Time and place of victim location** | Establishes distance and direction patterns for located victims |
| **Method of homicide** | The method has a bearing on decomposition, and search techniques |
| **Method of transportation** | This has a bearing on the distance and direction the victim was taken for disposal |
| **Method of concealment** | Method of concealment is tied closely to search techniques and time to locating victim |
| **How victim was located** | This will contribute to knowledge on search techniques |

## 9.7 Appendix 7: No-body convictions in Australia

| No-body convictions in Australia | | |
|---|---|---|
| **Year of death** | **Victim/s** | **Incident description** |
| **1902** | 26 and 33 | The Kenniff brothers, bushrangers near Roma, killed a police Constable and grazier who were tracking them. Burnt human remains were located at one of their camps. |
| **1936** | 60 | The victim disappeared from his petrol station at Glenelg NSW. McDermott was convicted of the murder in 1946. The victim's remains were located in 2004. |
| **1974** | 64, 65 and 66 | All three victims were killed out of fear that the mother would be able to implicate the offenders in several nightclub fires. Believed to have been killed soon after their disappearance. Their bodies have never been found. |
| **1980** | 16 | Uluru, NT. The victim disappeared from a camping ground at Uluru. Her mother was convicted of her murder in 1982 and her father was convicted as an accessory to the crime. However, following the discovery of the baby's clothing in an area frequented by the animals, the charges were overturned in September 1988. Ultimately a dingo was found to have been the culprit and the mother was exonerated and pardoned. |
| **1982** | 30 | Dawson murdered and disposed of his wife in 1982 so that he could wed their children's nanny. He was eventually convicted in 2022. The victim has never been located. |
| **1983** | 98 | Sydney NSW: Adams strangled the victim while forcing her to have sex. He claimed he disposed of her body in the Lane Cove NP but she has never been found. |
| **1983 1989** | 9 and 12 | Adelaide, SA. Pfennig abducted and murdered both children. Pfennig has failed to disclose the location of victim 9 because he admitted that victim 12 was in the same place. |
| **1986** | 54 | Sydney, NSW. The nine-year-old girl was abducted from her home. Guider, a paedophile who drugged his victims with Temazepam before molesting them, pleaded guilty to her manslaughter when he was already behind bars for other crimes. According to Guider, victim 54 never recovered after being drugged, and he later buried, dug up, and re-buried her body in two different Sydney locations to evade suspicion. It is believed that the body was ultimately removed or destroyed during the construction of a carpark. |
| **1987** | 59 | Melbourne, Vic. Suckling abducted the victim from Melbourne, taking her to a property north of Mildura where she was raped and murdered. Photographs and small personal items were found but no body. |
| **1990** | 45 | Brisbane, Qld. Byers was convicted of murdering victim 45 somewhere in south-eastern Queensland after their relationship soured. His body has never been found. In 1993 she was convicted of attempting to murder her then lover John Asquith. |
| **1992** | 14 | Melbourne, Vic. Camilleri abducted and murdered the 13yo after raping her. She has not yet been found. |
| **1995 1997** | 61 & 204 | Sydney, NSW. Burrell was convicted to abducting and murdering victim 204 for financial gain. Burrell had been an employee of the victim. He was also convicted of murdering victim 61 for financial gain. Neither victim has been found. |
| **1996** | 57 | Sydney, NSW. In 1996 Lane gave birth to victim 57, third of four babies, who subsequently disappeared two days after the birth. Victim 57's body has never been found. |

| No-body convictions in Australia | | |
|---|---|---|
| **Year of death** | **Victim/s** | **Incident description** |
| **1997** | 27 | Broome WA: Dorrough suicided in 2014, posting a box of evidence to his then partner providing evidence of three homicides. Dorrough took victim to Broome wharf, and murdered her after she refused him sex. Believed to have dumped victim into sea. |
| **1999** | 32 | Badgingarra WA; Offender abducted victim as she walked on roadway, murdered her after raping her. |
| **1999** | 41 | Nambour Qld: 16-year-old victim 41 was kidnapped and murdered by Derek Bellington Sam on the Sunshine Coast in Queensland. The body has never been found but Sam was convicted of her murder in 2002. Sam murdered victim 41 while she was babysitting his children at his Nambour home. |
| **2000** | 2 | Melbourne, Vic. A "contract killing" where three men were convicted of the crime. Victim 2 was a solicitor and Clarke had been defrauding the trust account. He contracted the other two to murder the victim to cover the theft. |
| **2001** | 36 | Barrow Creek, NT. Murdock was convicted of the murder of victim 36 in outback NT. The victim was vacationing with his girlfriend, Joanne Lees. Lees survived the ordeal and identified Murdoch as the killer |
| **2002** | 83 | Lilydale Vic: Offender and ex-partner had two children, and the victim was her new lover. Victim killed to prevent his drug taking to impinge on the offender's relationship with his children. |
| **2004** | 56 | Sydney, NSW. Pregnant victim 56 thought she would be starting a new life with her married lover Paul Wilkinson. Instead of leaving his wife, Wilkinson murdered her in April 2004 and later tried to cover his tracks by burning down the rental house he shared with his wife. The victim's body has never been found. |
| **2008** | 68 | Adelaide, SA. Gavare murdered her elderly victim for financial gain, dismembered her body with an angle grinder and disposed of it at Christie Creek. The victim has never been found. |
| **2008** | 71 | Pooraka SA. The victim was lured to the offender's home, bashed and murdered over a drug debt. |
| **2009** | 151 | Nerang Qld: Son of victim killed his mother and buried her under what is now Hinze Dam. |
| **2009** | 36 | Murgon Qld: Victim was bashed and murdered by three others over drugs. Body disposed in Beerburrum Forest. |
| **2009** | 17 | Hobart, Tas. Victim 17 went missing from the couple's yacht, Four Winds, off Hobart. His body was never located. |
| **2012** | 63 | Warwick, Qld. Hannaford murdered the victim after she ended their relationship but has failed to provide a location for her. |
| **2012** | 90 | Palmerville Qld: Victim was a prospector and with three others was prospecting on the Struber property. He was asked several times to leave and then disappeared. Police found blood and evidence of burning but no body. |
| **2015** | 190 | Fernvale, Qld: The victim was a teenage sex worker and was last seen with the offender Rodney Williams. Blood and electronic evidence pointed to murder. Convicted in 2022. |
| **2016** | 101 | Fregon, SA. Davey raped and murdered the outback nurse and has failed to disclose her location. |
| **2023** | 63 | Brisbane: Dawson was convicted of killing his wife in 1982. She has never been found. |

## 9.8 Appendix 8: Research Approval from QPS

## 9.9 Appendix 9: Informed Consent

This administrative form has been removed

## 9.10 Appendix 10: Alphabetical list of homicide victims

| Victim | Year | Age | State | Gender | Victim | Year | Age | State | Gender | Victim | Year | Age | State | Gender |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | 1934 | 29 | Vic | Female | **71** | 2005 | 2 | NSW | Female | **141** | 1989 | 14 | NSW | Female |
| **2** | 2000 | 53 | Vic | Male | **72** | 1989 | 21 | NSW | Female | **142** | 2018 | 58 | WA | Female |
| **3** | 1998 | 16 | Qld | Female | **73** | 2001 | 40 | NSW | Male | **143** | 2008 | 21 | SA | Male |
| **4** | 1982 | 14 | NSW | Male | **74** | 2001 | 29 | NT | Male | **144** | 2010 | 37 | WA | Female |
| **5** | 2010 | 17 | NSW | Male | **75** | 2005 | 10 | Vic | Male | **145** | 1973 | 35 | NSW | Female |
| **6** | 1983 | 15 | NT | Female | **76** | 2005 | 7 | Vic | Male | **146** | 2003 | 14 | Qld | Male |
| **7** | 2012 | 44 | Qld | Female | **77** | 2005 | 2 | Vic | Male | **147** | 2002 | 35 | SA | Female |
| **8** | 1968 | 3 | NSW | Male | **78** | 1984 | 18 | SA | Female | **148** | 1977 | 16 | SA | Female |
| **9** | 1988 | 21 | NSW | Female | **79** | 1985 | 37 | NSW | Male | **149** | 1991 | 21 | NSW | Male |
| **10** | 1994 | 22 | NSW | Female | **80** | 2018 | 57 | Vic | Female | **150** | 2005 | 44 | Qld | Female |
| **11** | 1979 | 17 | SA | Male | **81** | 2009 | 4 | Vic | Female | **151** | 2005 | 30 | SA | Female |
| **12** | 1981 | 19 | NSW | Female | **82** | 2006 | 26 | NSW | Female | **152** | 1989 | 35 | NSW | Male |
| **13** | 1997 | 14 | Vic | Female | **83** | 1975 | 19 | Vic | Female | **153** | 2010 | 20 | NSW | Female |
| **14** | 1966 | 8 | SA | Female | **84** | 1999 | 16 | Qld | Female | **154** | 2010 | 2 | NSW | Female |
| **15** | 1966 | 5 | SA | Male | **85** | 1978 | 30 | Tas | Female | **155** | 1986 | 20 | Qld | Female |
| **16** | 1966 | 10 | SA | Female | **86** | 1989 | 21 | NSW | Male | **156** | 1988 | 81 | NSW | Female |
| **17** | 1983 | 10 | Vic | Female | **87** | 1995 | 27 | WA | Female | **157** | 1977 | 16 | SA | Female |
| **18** | 1999 | 19 | Qld | Female | **88** | 1990 | 65 | Qld | Male | **158** | 1982 | 10 | NSW | Male |
| **19** | 2009 | 27 | Vic | Female | **89** | 2001 | 53 | Qld | Female | **159** | 2014 | 27 | Qld | Female |
| **20** | 2009 | 31 | Qld | Female | **90** | 2010 | 32 | WA | Female | **160** | 2001 | 75 | WA | Male |
| **21** | 1989 | 10 | Vic | Male | **91** | 1991 | 20 | NSW | Female | **161** | 2000 | 45 | NSW | Male |
| **22** | 2017 | 27 | NSW | Female | **92** | 2020 | 74 | Vic | Male | **162** | 1998 | 58 | Tas | Female |
| **23** | 1957 | 43 | SA | Female | **93** | 2003 | 26 | Vic | Female | **163** | 2012 | 34 | Qld | Male |
| **24** | 1957 | 14 | SA | Female | **94** | 2000 | 51 | Qld | Male | **164** | 1992 | 43 | Vic | Female |
| **25** | 2001 | 81 | NSW | Female | **95** | 1977 | 9 | SA | Male | **165** | 1989 | 29 | NSW | Female |
| **26** | 1992 | 53 | Vic | Male | **96** | 2012 | 24 | WA | Male | **166** | 1992 | 20 | Vic | Female |
| **27** | 2000 | 34 | NSW | Female | **97** | 2022 | 53 | Qld | Female | **167** | 1995 | 23 | WA | Female |
| **28** | 1992 | 13 | Vic | Female | **98** | 2003 | 19 | NSW | Female | **168** | 2016 | 47 | Vic | Female |
| **29** | 2012 | 22 | Vic | Female | **99** | 1977 | 26 | SA | Female | **169** | 2006 | 8 | WA | Female |
| **30** | 2005 | 49 | NSW | Female | **100** | 2013 | 31 | NSW | male | **170** | 1997 | 11 | WA | Male |
| **31** | 2010 | 26 | WA | Female | **101** | 1977 | 16 | SA | Female | **171** | 2007 | 15 | SA | Female |
| **32** | 1983 | 18 | NT | Female | **102** | 1988 | 27 | NSW | Male | **172** | 1991 | 22 | NSW | Female |
| **33** | 2015 | 51 | ACT | Male | **103** | 1988 | 10 | NSW | Female | **173** | 1965 | 15 | NSW | Female |
| **34** | 1980 | 0 | NT | Female | **104** | 1983 | 15 | SA | Male | **174** | 2012 | 48 | Qld | Male |
| **35** | 1991 | 13 | Vic | Female | **105** | 2004 | 41 | Vic | Female | **175** | 2015 | 26 | NSW | Female |
| **36** | 2009 | 65 | Tas | Male | **106** | 2004 | 2 | Vic | Female | **176** | 1965 | 15 | NSW | Female |
| **37** | 2010 | 41 | Qld | Male | **107** | 2015 | 16 | Qld | Female | **177** | 1997 | 9 | Tas | Female |
| **38** | 1992 | 22 | NSW | Female | **108** | 1977 | 15 | SA | Female | **178** | 1997 | 12 | Tas | Female |
| **39** | 2013 | 33 | Qld | Male | **109** | 2002 | 75 | Vic | Male | **179** | 1997 | 14 | Tas | Female |
| **40** | 2020 | 73 | Vic | Female | **110** | 1987 | 12 | Qld | Female | **180** | 1997 | 18 | Tas | Female |
| **41** | 1986 | 27 | NSW | Female | **111** | 1986 | 9 | NSW | Female | **181** | 2009 | 46 | Qld | Female |
| **42** | 2018 | 35 | WA | Female | **112** | 1976 | 19 | SA | Female | **182** | 1992 | 9 | NSW | Female |
| **43** | 2018 | 12 | WA | Male | **113** | 1994 | 16 | NSW | Female | **183** | 1984 | 20 | Vic | Male |
| **44** | 2018 | 12 | WA | Male | **114** | 2003 | 78 | NSW | Male | **184** | 1995 | 18 | WA | Female |
| **45** | 2018 | 10 | WA | Female | **115** | 2003 | 79 | NSW | Female | **185** | 1999 | 9 | Qld | Female |
| **46** | 2018 | 8 | WA | Female | **116** | 2004 | 23 | NSW | Female | **186** | 1981 | 14 | SA | Male |
| **47** | 1997 | 16 | Vic | Female | **117** | 1977 | 20 | SA | Female | **187** | 2001 | 18 | Vic | Female |
| **48** | 2012 | 56 | WA | Male | **118** | 1996 | 0 | NSW | Female | **188** | 2023 | 14 | Tas | Female |
| **49** | 1985 | 10 | NSW | Female | **119** | 1982 | 18 | SA | Male | **189** | 1986 | 22 | Vic | Female |
| **50** | 1991 | 33 | SA | Female | **120** | 1987 | 21 | NSW | Female | **190** | 2015 | 15 | Qld | Female |
| **51** | 1970 | 35 | Vic | Female | **121** | 2021 | 31 | Qld | Female | **191** | 1960 | 9 | NSW | Male |
| **52** | 1970 | 12 | Vic | Female | **122** | 1936 | 49 | NSW | Male | **192** | 1921 | 12 | Vic | Female |
| **53** | 1970 | 8 | Vic | Male | **123** | 2016 | 2 | Qld | Male | **193** | 1998 | 20 | Qld | Female |
| **54** | 1970 | 6 | Vic | Female | **124** | 1997 | 1 | Vic | Male | **194** | 2014 | 3 | NSW | Male |
| **55** | 2017 | 83 | Vic | Male | **125** | 2007 | 20 | NSW | Male | **195** | 2003 | 18 | NSW | Female |
| **56** | 1902 | 27 | Qld | Male | **126** | 1991 | 25 | SA | Female | **196** | 2002 | 69 | Vic | Female |
| **57** | 2005 | 1 | WA | Female | **127** | 2012 | 55 | Qld | Female | **197** | 1983 | 33 | NSW | Female |
| **58** | 2005 | 4 | WA | Female | **128** | 2002 | 23 | SA | Female | **198** | 1992 | 22 | NSW | Female |
| **59** | 1997 | 21 | WA | Female | **129** | 1974 | 34 | Qld | Female | **199** | 1951 | 19 | NSW | Male |
| **60** | 2014 | 24 | WA | Male | **130** | 1974 | 11 | Qld | Female | **200** | 1951 | 19 | NSW | Female |
| **61** | 1995 | 74 | NSW | Female | **131** | 1974 | 13 | Qld | Female | **201** | 1989 | 34 | NSW | Male |
| **62** | 1995 | 27 | Vic | Female | **132** | 1999 | 35 | NSW | Female | **202** | 2011 | 2 | NSW | Female |
| **63** | 1982 | 34 | NSW | Female | **133** | 2008 | 81 | SA | Female | **203** | 1977 | 7 | SA | Male |
| **64** | 1972 | 33 | SA | Female | **134** | 1977 | 43 | NSW | Male | **204** | 1997 | 39 | NSW | Female |
| **65** | 1991 | 13 | Vic | Female | **135** | 1993 | 7 | WA | Female | **205** | 1957 | 22 | SA | Male |
| **66** | 1999 | 17 | WA | Female | **136** | 1993 | 16 | WA | Male | **206** | 2000 | 13 | NSW | Male |

| Victim | Year | Age | State | Gender | Victim | Year | Age | State | Gender | Victim | Year | Age | State | Gender |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **67** | 2000 | 42 | Qld | Male | **137** | 1993 | 31 | WA | Female | **207** | 1989 | 55 | ACT | Male |
| **68** | 1902 | 33 | Qld | Male | **138** | 1993 | 5 | WA | Female | **208** | 2016 | 56 | SA | Female |
| **69** | 1987 | 27 | WA | Female | **139** | 1967 | 21 | Qld | Female | **209** | 1976 | 8 | Vic | Female |
| **70** | 1990 | 30 | Qld | Female | **140** | 2012 | 29 | Vic | Female | **210** | 2008 | 18 | NSW | Female |

## 9.11 Appendix 11: Journal of Search and Rescue article

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# How well do we search for missing people in Queensland, Australia?

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**Abstract**

Most countries, states or counties have an organised Search and Rescue (SAR) response to reported missing people, whether it is by statutory authorities such as the police or by volunteer groups. The success or otherwise of the ensuing searches is often dependent on the training of the coordination team and the adherence to known and proven search strategies. It would be realistic to assert that the chances of a successful search are reduced if the coordinator cannot put those searchers in the right location. This paper examines the functionality of the SAR system in Queensland, looking at the coordination structure, the strategies utilised in determining search areas and whether they are still fit for purpose. The response to SAR is a police responsibility with the assistance of volunteer groups such as the State Emergency Service, and to this end a significant effort is undertaken to train both police coordinators and volunteer searchers.

**KEY WORDS:** *Search, Rescue, Theoretical, Statistical, Subjective, Deductive*

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### Introduction

The aim of this study is to provide an analysis of a single jurisdictions use of search techniques in searching for missing persons in a land environment, and the success thereof. The focus of this paper is on the state of Queensland, Australia, and is the first known study that encompasses an entire policing jurisdiction. At 1.8 million km² Queensland represents 23% of Australia's landmass (Roberts, 2007) and has 34% of the nationally reported missing people (National SAR Council, 2022). Missing people in Queensland have an excellent chance of being found and recovered due to the continual refinement of the search and rescue (SAR) system and associated technology, including mobile telephone location systems, night vision and thermal imaging devices (Queensland Police Service, 2021). The collection of data on SAR commenced in 1976 and identifies that police in Queensland have coordinated an

average of one land search daily (Queensland Police Service, 2021). This has resulted in approximately 17,300 missing people being located and recovered and a further 481 who have never been found (Queensland Police Service, 2021).

Search methods are similar across all Australian police jurisdictions; however, Queensland's SAR system is unique compared to other states/territories. It has four levels of SAR Coordination based on the level of training undertaken by each officer as contained in Table 1. At the apex is the State SAR Coordinator, who has the responsibility of managing the state for all SAR incidents including reviews of operations and presenting evidence at coronial inquests where people were not found or found deceased. This position also provides the other three levels of SAR training. Additionally, the position represents the state in the national SAR forum.

Table 1 *SAR Coordinator level and roles*

| SAR Coordinator Level | Title | Role | Qualification |
|---|---|---|---|
| 1 | State Search and Rescue Coordinator & Training Officer (SSARCTO) | Managing SAR System and providing training | Advanced Diploma of Police Search and Rescue Management Certificate IV – Training and Assessment |
| 2 | Senior Search and Rescue Officer (Sen SARO) | Marine, Aviation and Land SAR (SAR Management) | Advanced Diploma of Police Search and Rescue Management |
| 3 | Search and Rescue Officer (SARO) | Marine, Aviation and Land SAR (Coordination) | Diploma of Police Search and Rescue Coordination |
| 4 | Field Search Coordinator (FSC) | Land SAR only | Internal Police SAR Course |

The first three tiers require officers to complete formal nationally recognised qualifications in SAR, while the FSC role is an internal course. This role was developed to provide a SAR capacity in those areas away from the coastline and in the more remote parts of the state. A flow chart of the system is shown in Figure 1.

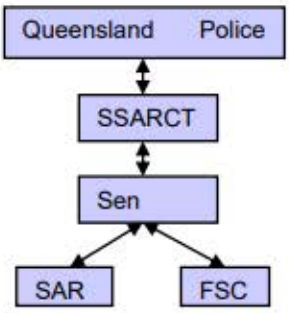


**Figure 1** *Flow chart of Queensland SAR Structure*

The National SAR Manual (Whitehead, 2021) is the standard reference document for use by all search and rescue authorities and organisations that provide search and rescue services to Australia. It is an open-source document and represents the collective SAR knowledge of Australia and is continually being updated through incident debriefs and coronial findings, an example being the Inquest into the death of Darrell Simon and the necessity to electronically record all search efforts (Lock, 2018). The manual provides the methods, options, working papers and data for all Australian SAR operatives. It is sponsored by the National SAR Council and maintained within the Australian Maritime Safety Authority (AMSA). While the International Aeronautical and Maritime Search and Rescue Manual (IMO. & ICAO., 2016) provides a broad overarching international manual for SAR, the National SAR Manual is only one of three that covers an entire country, and in Australia's case, a continent.

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**Aim:**

This paper is an overview of the search and rescue (SAR) methods and strategies used by the Queensland Police in the search for missing people within that state. The paper will discuss the various search strategies as outlined within the National SAR Manual, with a view to determining the efficacy of their use, the results of these searches and the necessity for any changes to operational procedures. This is the first known state-wide study into a single jurisdiction SAR system

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**Overview:**

There has been a significant body of work devoted to search and rescue (Koester, 2008; NASAR, 2018; Stoffel, 2006; Syrotuck, 2000) but no single jurisdiction study of how SAR is undertaken. The dictionary definition of lost is not knowing ones whereabouts or able to find a way out, whereas missing is absent from a place and in an unknown location (Gwynn & Laugesen, 2020). The National SAR Manual refers to targets of the SAR system as missing (Whitehead, 2021). This study will use the term 'missing' to refer to both missing and lost people as the same search strategies are used for both types. Organised searching for these persons is based on two contingent steps, a reflex search, and if unsuccessful, a formal search (Whitehead, 2021). A reflex search provides a rapid response with minimal planning. As an aid it is based on a bicycle wheel where the hub represents the last known point of the missing person, or if this is not known, an initial planning point based on the intelligence gathered as shown in Figure 2.

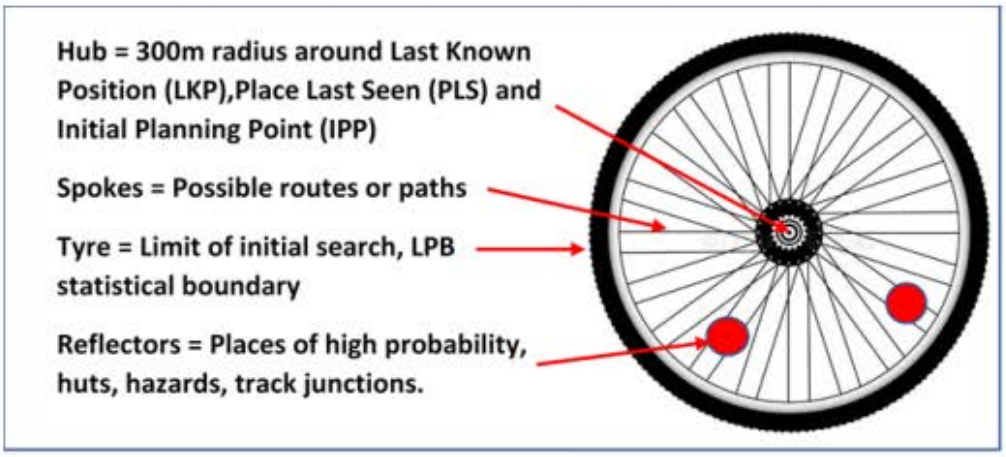


**Figure 2.** *Reflex search. Note: Sourced from Koester (2008)*

The spokes represent the options of travel available to the missing person, in some locations there may only be one direction of travel possible so the wheel would have only one spoke, while at other locations there may be dozens of possible routes with an associated number of spokes. The hub is the inner boundary of the search and may be as close as 300-600 metres from the last known location depending on the terrain and vegetation. The boundary radius determined by the coordinator through experience and available data. The tyre represents the Missing Person Behaviour (LPB) statistical boundary, which is the furthest distance a person in any particular category could statistically travel. Any points or places of interest are represented by the wheel reflectors.

The 19% of missing people not found by the reflex search require a more extensive process of search area determination (Queensland Police Service, 2021). This extensive process is called the Formal Search(Whitehead, 2021). The Formal Search comprises four separate, but mutually inclusive search strategies; theoretical, statistical, subjective and deductive. The strategies are layered to provide the best possible area in which to put the search resources.

## Search Strategies

The Theoretical search strategy was initially derived by Scotsman William Naismith, in 1892 (Thompson, 2010). Naismith escorted the wealthy gentry on walks through the Scottish Highlands and developed his rule as a means of working out how long it would be expected to take for each particular walk (Thompson, 2010). Although it has been used since 1892 for walking and hiking activities it appeared in official print for the first time in 1996, however it was not referred to as the Theoretical search strategy (UK Statutory Instruments, 1996). This rule is used in reverse for SAR, seeking to identify a maximum distance that could be travelled in a particular time period, and was first named as Naismith's Rule in Australia in the 2008 National Land Search Operations Manual (Whitehead, 2008). While there are incidents where this strategy will be of little use, such as shoreline incidents and locating flood victims and physically impaired dementia patients, it is one of the four formal strategies. The major drawback with this strategy is its inflexibility. The strategy cannot easily be varied to consider the

missing person, experience and weather, often providing a very large diameter circle inside which the missing person will be found. Additionally, this rule also does not consider a person's fitness, weather, daylight or any other considerations. However, it does provide the largest possible initial search area based solely on a person's ability to walk in a straight line within a calculated time period.

The Statistical search strategy was initially based on the International Search and Rescue Incident Database (ISRID) (Koester, 2008). The ISRID is a statistical analysis of over 50,000 missing persons mainly from the USA, New Zealand, UK and Canada and where they were found. A similar Australian missing person study was undertaken between 2000 and 2006 (Twardy, 2006) with the results tabled at the National SAR Council. As this was the first study of this nature it was not comparable to anything but has since been validated by ISRID. The current Australian Missing Person Behaviour (LPB) Database has been collecting Australian data since 2010 (Whitehead, 2021) and forms the basis for Australian LPB as contained within appendix E-5 of the National SAR Manual. This model is continually being updated with data from the Australian Missing Person Behaviour Database and is based on the ISRID data (Koester, 2008), although not as detailed. Over the last two years sufficient data has been obtained to include two new categories of missing person, prospectors and children with ADD, ADHD, Asperger's and autism (Whitehead, 2021). A minimum of fifty incidents in a category has been the trigger point for analysis. Overall, this may be considered a small number of incidents, but it is the start point for the development of new categories. As more incidents are entered the LPB category is continually modified and as such more effective at finding missing people.

The third search strategy, 'Subjective', is based on a search coordinator's ability to interpret a map, their personal knowledge of the locality and experience to identify natural or man-made barriers (Whitehead, 2021). Identification of these barriers can provide areas that would either limit a missing person's options of travel or that would funnel or force them to move in a particular direction, such as being confined to a steep sided valley system. This strategy also includes decision points, locations where the missing person has an option of two or more directions of travel.

The final strategy is 'Deductive', which is looking at the facts of the situation, such as intentions and distance of the bush walk if that was the case, and from this, undertake an appreciation to determine potential routes and actions of the missing person (Whitehead, 2021). This is often more akin to making logical assumptions of the missing person's behaviour given the situation and can be very valuable when the person's intentions are not known, such as where they were going. The difference between subjective and deductive is that subjective is reliant on the topography of the search area to identify potential routes. Deductive is using the facts of the situation to determine what the missing person may have been attempting, ie a walk between A and B, to find a suitable location for photographs or if afflicted with dementia possibly a home lived at in the past. Table 2 highlights the benefits and detriments of the four strategies.

**Table 2** *Benefits and Detriments of formal strategies.*

| Strategy | Benefits | Detriments |
|---|---|---|
| **Theoretical** | Relatively simple mathematical calculation. Provides largest search area possible under circumstances. | Does not take into account target ability, weather, daylight/darkness, topography or vegetation. |
| **Statistical** | Based on what most targets in similar situations do. Relatively easy to calculate search radii using tables. | Relies on ongoing accurate data input. |
| **Subjective** | With experience can be done through map interpretation quickly. | Relies on a coordinators map reading and interpretation abilities. |
| **Deductive** | Looks at the situation facts to determine options for target. Can be enhanced through judicious questioning of family, friends etc. | Does require some skill in identifying facts and making rational interpretations. |

No single strategy should be used in isolation as all four strategies act in a layered formation. Using all four strategies together it is possible to determine the area of highest probability, which becomes the basis for being able to sub-divide the search into smaller, searchable areas and tasking to search teams (Whitehead, 2021).

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## Methodology

This study is part of a much larger project based around the disposal of homicide victims and how to better search for them. In order to do so, an understanding of current SAR methods was necessary to determine if the same search approaches could be modified to locate disposed homicide victims. A fourteen-question survey was developed using a combination of Likert type data (Boone & Boone, 2012), binary and a single free text open-ended question (Loc Phuoc & Ngamnij, 2013). This survey was electronically distributed to all police officers (n = 310) who undertake a SAR coordination role in Queensland. At the conclusion, grouping was undertaken to reduce responses to yes/no to simplify tabulation. The survey sought to answer questions such as SAR role, experience, use of the five SAR strategies, success rate of the strategies and use of the National SAR Manual. Examination included univariate and chi squared analysis using IBM SPSS ™ Version 27.

There are 310 SAR trained police throughout the state of Queensland, and the response rate was 77%, of which 73 (30.4%) respondents noted that they had not coordinated a search and rescue incident and could not respond to the remaining questions. These responses have been removed from the analysis

leaving 167 responses. The survey response rate was very high for both FSC's and Senior SARO's, 95% and 97% respectively. It is unknown why the SARO response rate is lower, although the overall response rate is acceptable according to Hendra (2019).

The free text data was cleansed though data grouping of like subjects and removing syntax differences. There was also coding and data grouping of the five questions relating to strategy usage to enable improved analysis. This involved grouping the terms '*All of the time, Most of the time and Some of the time'* into a single 'yes' grouping for the strategy usage analysis.

## Results

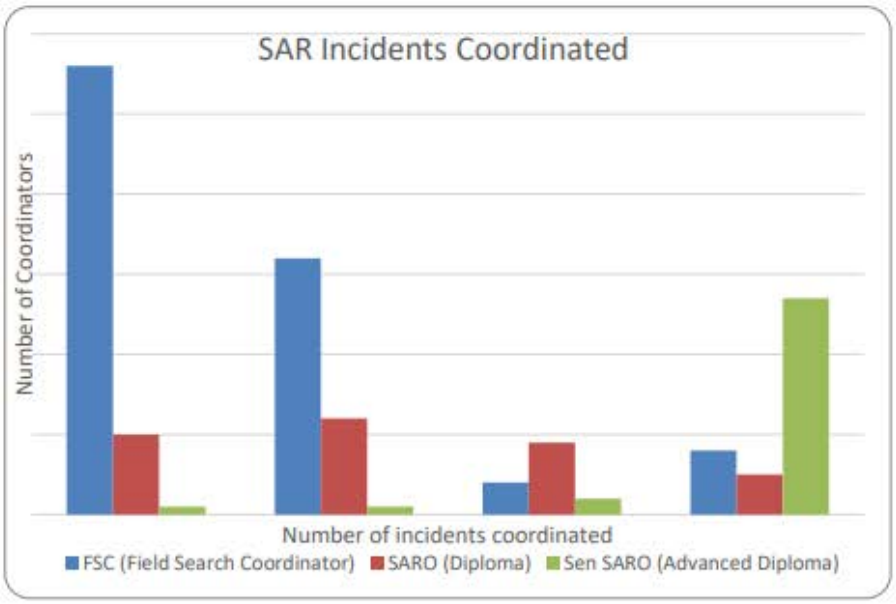
Of the 167 SAR Coordinators who had coordinated at least one incident, 36 (21.6%) have a SARO diploma, and 31 (18.6%) have an advanced diploma. (Table 3)

**Table 3** *SAR Coordinator Composition and education levels.*

| | Current SAR level | | | |
|---|---|---|---|---|
| | **FSC** | **SARO** | **Sen SARO** | **Total** |
| **Number of SAR People** | 165 | 113 | 32 | 310 |
| **Number of responses (+1 SAR incidents)** | 100 | 36 | 31 | 167 |
| **Number of responses (Nil SAR incidents)** | 56 | 17 | 0 | 73 |
| **% of Responses** | 95% | 47% | 97% | 77% |

Sen SARO's are more likely ($X^2$=103.16; $p < .01$) to have undertaken 'more than 50 SAR incidents'. Diametrically, FSC's have the highest number of those with 1-10 incidents, again aligning with their relative juniority within SAR. Several anomalies are evident, two Sen SARO's with less than 30 incidents and 8 FSC's with over 50 incidents to their credit (Figure 3).

**Figure 3** *SAR incidents coordinated.*




There were no SAR members who had only coordinated marine and aviation SAR incidents. Predominately (61%) Sen SARO's have undertaken all three disciplines. Among all levels of training two thirds (67%) of respondents had only coordinated land SAR incidents, including air crashes (Table 4). FSC's are more likely to undertake land searches ($X^2 = 1.0408$; $p < .05$).

**Table 4** *SAR incidents coordinated.*

| | | Current SAR level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| What type of SAR incidents have you coordinated ? | Land | 94 | 13 | 5 | 112 (67%) |
| | Land and aviation | 6 | 1 | 1 | 8 (5%) |
| | Land and marine | 0 | 19 | 6 | 25 (15%) |
| | Land, marine and aviation | 0 | 3 | 19 | 22 (13%) |
| Total | | 100 | 36 | 31 | 167 |

All search strategies are used in the majority (91-98%) of instances, with very few instances where they have not been used (2-9%). The Reflex search is the first option, utilising the initial search teams and providing a rapid response to the situation, and historically, this has been successful 81% of the time (QPS 2021) ($X^2 = 2.4316$; $p < .05$). Table 5 shows that FSC's are less likely to use all four strategies ($X^2 = 8.326$; $p < .05$). An average of 94.5% usage rate for all strategies combined is significant to the success of SAR in Queensland.

**Table 5** *Comparison of Search Strategies used by SAR skill level*

| | | SAR level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| Have you used the Reflex/Initial Search Strategy? | Yes | 91 | 35 | 31 | 157 (94%) |
| | No | 9 | 1 | 0 | 10 (6%) |
| Total | | 100 | 36 | 31 | 167 |
| Have you used the Theoretical Search Strategy? | Yes | 96 | 33 | 30 | 159 (95%) |
| | No | 4 | 3 | 1 | 8 (5%) |
| Total | | 100 | 36 | 31 | 167 |
| Have you used the Statistical Search Strategy? | Yes | 94 | 36 | 31 | 163 (98%) |
| | No | 6 | 0 | 0 | 6 (2%) |
| Total | | 100 | 36 | 31 | 167 |
| Have you used the Subjective / Decision Point Search Strategy? | Yes | 92 | 35 | 31 | 158 (95%) |
| | No | 8 | 1 | 0 | 9 (5%) |
| Total | | 100 | 36 | 31 | 167 |
| Have you used the Deductive Search Strategy? | Yes | 87 | 35 | 30 | 152 (91%) |
| | No | 13 | 1 | 1 | 15 (9%) |
| Total | | 100 | 36 | 31 | 167 |

With respect to the use of the National SAR Manual the respondents indicated that it had been useful in the majority of instances, with only a small percentage (13%) of coordinators either having never used it or found it not useful ($X^2 = 0.5127$; $p < .05$), (Table 6). There is no obvious explanation why more FSC's are not using the manual compared to the other SAR levels, except that they may be using the old National Land Search Operations Manual, although this was merged with the National SAR Manual in 2017.

**Table 6** *Use of National SAR Manual*

| | | Current SAR level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| Has the National Search and Rescue Manual been useful in assisting with the development of search areas? | Never used it | 16 | 3 | 0 | 19 (11%) |
| | No | 2 | 1 | 0 | 3 (2%) |
| | Yes | 82 | 32 | 31 | 145 (87%) |
| Total | | 100 | 36 | 31 | 167 |

Most missing people are found within the areas of the respective search strategies ($X^2 = 41.79$; $p < .05$). There are several identified anomalies within the responses, particularly with the theoretical and statistical responses, which will be discussed later. Coordinators with the most experience, SARO's and Sen SARO's, developed search areas that were more appropriate as shown by the small number of missing people found outside the individual strategies. (Table 7)

Table 8 shows the additional methods that have been suggested by a small percentage (16%) of the respondents. The majority, 84% (n=140) identified that they could offer no further suggestions for search tactics.

**Table 7** *Validation of the five search strategies.*

| | | Current SAR Level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| Was the target found within the Reflex Search Strategy area? | Yes | 67 | 25 | 25 | 117 (70%) |
| | No | 33 | 11 | 6 | 50 (30%) |
| Total | | 100 | 36 | 31 | 167 |
| Was the target found within the Theoretical Search Strategy area? | Yes | 73 | 33 | 29 | 135 (81%) |
| | No | 27 | 3 | 2 | 32 (19%) |
| Total | | 100 | 36 | 31 | 167 |
| Was the target found within the Statistical Search Strategy area? | Yes | 94 | 36 | 31 | 161 (96%) |
| | No | 6 | 0 | 0 | 6 (4%) |
| Total | | 100 | 36 | 31 | 167 |
| Was the target found within the Subjective / Decision Point Search area? | Yes | 81 | 36 | 31 | 148 (89%) |
| | No | 19 | 0 | 0 | 19 (11%) |
| Total | | 100 | 36 | 31 | 167 |
| Was the target found within the Deductive Search area? | Yes | 71 | 33 | 31 | 135 (81%) |
| | No | 29 | 3 | 0 | 32 (19%) |
| Total | | 100 | 36 | 31 | 167 |

**Table 8** *Additional SAR methods identified.*

| | | Current SAR Level | | | |
|---|---|---|---|---|---|
| | | **FSC** | **SARO** | **Sen SARO** | **Total** |
| Have you identified additional methods of determining a land search area? | No | 81 | 36 | 23 | 140 |
| | Combined SAR practices | 6 | 0 | 3 | 9 |
| | Improved local knowledge | 8 | 0 | 1 | 9 |
| | Increased use of SAR Technology | 4 | 0 | 3 | 7 |
| | Social Media | 1 | 0 | 1 | 2 |
| Total | | 100 | 36 | 31 | 167 |

## Discussion

SAR coordinators are actively using the search strategies as contained within the National SAR Manual to good effect, with a 96.9% success rate in finding missing people in land situations within Queensland (Queensland Police Service, 2021). This success rate is comparable with New Zealand at 98.1% (Ferner et al., 2022) and more so with Queensland being 6.9 times larger, has a greater population and approximately the same number of active SAR coordinators (Ferner et al., 2022). There are no other comparable country SAR rates known. This demonstrates that the current search strategies, when used, are providing a sound basis for locating missing people. Respondents identified few other search strategies beyond those described in the National SAR Manual (Whitehead, 2021). The larger number of FSC's reflects the vastness of Queensland and the necessity to have trained police in as many locations as possible.

## Coordination

The number of incidents coordinated provides a broad overall picture of the experience among SAR coordinators. While the coordination is undertaken by police, the actual searching is done with a combination of police (General duties, dog handlers, helicopter crew, divers and off-road motorcycle riders) and volunteers from the State Emergency Service, and on very rare occasions by the general public, depending on the location. As training of SAR members is consistent and in accordance with the National SAR Manual, this ensures a common outcome and where lessons are learnt they can easily be distributed across the network. The benefit of this system is the seamless ability for a SAR incident to be managed anywhere throughout the state. A study by Ferguson (2021) identified that respondents to their SAR training survey came from 17 different departments across three regions of Canada. The respondents for this paper all came from the same jurisdiction.

## Strategic usage

The reflex search strategy, (Whitehead, 2021), was designed as a quick way to initiate a search with limited resources and information. Its use by the majority (89%) indicates that it is a well-tested strategy that provides an immediate response to a SAR situation. While more prolific with the younger SAR members than older ones its usage is validated through the finding of 81% of missing people without the need to resort to a more formal search (Queensland Police Service, 2021). A version of this strategy has been around for many years, although it never had a particular name until 2015 and was solely used by land searchers as there is no equivalent marine version (Whitehead, 2021).

Theoretical strategy (Whitehead, 2021), was used by almost all land SAR coordinators (95%) and was the backbone of SAR for many years. At first glance this strategy could easily be dispensed with but there are a few occasions when this strategy is likely to provide a smaller search area than that of the Statistical strategy, mostly when the time elapsed by the missing person is relatively short (Whitehead,

2021). If there has been no intervention with the missing person by others then the theoretical calculations should represent the greatest distance, and therefore area, that the missing person could travel in the time they have been missing. FSC's are the largest grouping where this strategy has not worked, and while there is no obvious reason for it several possibilities arise; the calculations were incorrect in that insufficient weight was given to speed of travel or time elapsed or that the initial LKP was incorrectly determined.

The statistical strategy is the most used of the four formal strategies (98%) and as it relies less on calculations, appreciations or deductions is possibly the easiest to initiate. The area resulting from the application of the statistical strategy is commonly smaller than that of the theoretical, providing a search area that is reasonably able to be searched quickly. The high rate of usage reflects its importance within SAR, notwithstanding that it is one of four interdependent strategies. References to the statistical strategy are easy to locate within the National SAR Manual and a significant period of training is devoted to it, again, reflected in the usage rate. Only 4% of missing people were located outside the statistical search area, and given that it is based on what most missing people have done in the past this is a remarkable achievement. Entry of this data into the database ensures that the statistics relied on to develop the strategy are as up to date as possible.

The subjective strategy was used by 159 (95%) responding coordinators. Initial and refresher training has identified that map reading skills are becoming less prevalent among SAR coordinators, and possibly younger people in general (Whitehead, 2020b). Evident through training courses and real-time incidents is that newer SAR Coordinators rely heavily on electronic aids such as Google Earth and GPS devices (Queensland Police Service, 2021). While it is necessary to have an appropriate level of technical or computer skill, SAR is heavily reliant on the ability of a coordinator to identify land topography and features when developing a search area (Whitehead, 2021). The depreciation of this skill is reflected in the 11% of missing people who were found outside of this strategy. As a result of this, map reading and the skills to do so have become a larger part of training and is included in the biannual skills competency workbooks completed by all QPS SAR Coordinators (Whitehead, 2020a).

Utilising the known facts to make judgement-based assessments on the possible movements of the missing person is the basis for the Deductive Strategy (Whitehead, 2021). In doing so it is possible to narrow down the travel and intention options to a small number of possible courses of action by the missing person (Whitehead, 2021). This allows the often-limited resources available to a coordinator to be used to better effect on a smaller number of search areas. Undertaking a deductive analysis is a skill that needs to be learned, in the way a detective needs to look at the facts, and this survey identified that 19% of incidents resulted in the missing person being in a location other than what was deduced. More work in this space will need to be planned for.

It is encouraging to note that the majority of search coordinators are using all five strategies, and this may be a significant contributing factor to the 96.9% success rate in finding missing people in Queensland (Queensland Police Service, 2021).

**Success**

In theory, more people should be found outside of the statistical search area, than the theoretical search area, however this survey indicated that more people were found outside the theoretical search area (19%) when compared to the statistical (4%). It is impossible for more missing people to be outside a generally larger circle than a smaller circle within the larger circle. This would perhaps indicate the poor wording of the question, which should have asked how many people were found outside each strategy search area rather than a yes or no answer.

The statistical strategy, while being well used, does have some inherent problems. Being a statistics-based strategy, it is very much dependent on the information from SAR incidents being inputted by SAR coordinators, and there can never be a guarantee that all incidents are captured. There have been a small number of incidents where the missing person was found outside this area. While the 80% statistical distance ring is the most often used search distance (Whitehead, 2021), the LPB categories also include greater distances out to 95%. As not all land SAR incidents are entered onto the Australian Missing Person Behaviour Database it is not possible to determine the entirety of distances that missing people are found at (Whitehead, 2019). Further investigation into these figures will determine if greater statistical distances are being used.

A small number of targets were found outside the subjective and deductive search areas, 11% and 19% respectively. These figures underlie the need for a SAR coordinator to practice map reading and intelligence gathering skills in order to make valid assessments of the terrain and intentions (Whitehead, 2020b). In several of these instances where the missing person was found outside of the search area there is doubt about the initial starting point, which itself is often based on limited intelligence gathering, and this was frequently confirmed with follow-up interviews with the missing people after the incident (Whitehead, 2021).

From the data available, it is possible to develop search area determination, which is a combination of all strategies, noting that time has an impact. The chances of a missing person being outside a search area decrease as each strategy is applied, and when all four formal ones are used concurrently the highest probability search area should be apparent (Whitehead, 2021). In a perfect world no missing person should be outside a theoretical search area if it has been applied properly, and a small number outside a statistical search area as the LPB is reliant on what most missing people have done in the past. The fact that some missing people are never found suggests that they have done something out of the ordinary. The aim of these strategies is to develop a search area that has the highest probability of finding the missing person and can withstand coronial and community scrutiny in the event the missing person is not found. This survey indicates that most SAR Coordinators use all available strategies at their disposal.

### SAR Manual

The information contained in the National SAR Manual was found to be useful by 87% with the remainder indicating that it either wasn't or they had not used it. The National SAR Manual is the single point of reference for all SAR within Australia, and is a guide with many alternative methods to assist in gaining a successful conclusion to an incident (Whitehead, 2021).

### Other strategies

Respondents were asked to provide information on other strategies that they had found useful during SAR incidents via an open-ended free text question. A negative response was provided by 140 (84%) while the rest were grouped into four areas. The use of combined search practices based on circumstances and search asset availability was identified by 9 (5%) respondents, and this appears to relate to the use of all available strategies taking into account the individual SAR circumstances, and, as identified, is a standard SAR tactic. A further 9 (5%) suggested using improved local knowledge, and from experience this would include landowners, National Park Rangers, State Emergency Service members and civilians who have previously searched in that location. The increased use of SAR technology had a response rate of 7 (4%). Two responses quoted 'Technology and IT mapping/triangulation programs' and 'GPS tracks and telephone pings'.'Technology such as drones, electronic mapping, telephone triangulation and increased use of GPS devices has been addressed over the period since the survey was taken as a result of Coronial recommendations (Queensland Treasury, 2021). The final suggestion was the use of social media, made by 2 respondents. This area of SAR is continually improving as methods of accessing the social media accounts of missing people are developed, often requiring specialist electronics knowledge.

### Survey limitations

Several limitations were identified with this survey, which has the potential to affect the results. The response rate was only 70% of eligible coordinators who had coordinated at least one search from a potential pool of 238 (72 had not coordinated a SAR at the time of this survey). Although, as identified in Hendra and Hill (2019) it is not believed that this will cause any significant bias to the results. The second limitation was the wording for several questions, allowing only for a yes/no response, leaving little ability to investigate anomalies further. This situation will be addressed in a future survey.

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## Conclusion

The usage of all five land search strategies has been relatively high across all SAR coordinators and the results, locating missing people, have been commensurate with this. The search strategies were not designed to be used alone, working far better when done concurrently to produce a valid search area that can withstand scrutiny and provides a high probability of success.

This survey has been beneficial in several ways. It has provided valuable data into the usage of the current search strategies, and perhaps the need for continual ongoing training of coordinators on the value of using these strategies. Also, it has identified that the current methods of searching are producing the results expected from coordinators by the community, although, as in most endeavours involving people, the human factor can make it difficult.

The National Search and Rescue Manual provides all SAR coordinators with the strategies to resolve a SAR incident and to achieve the best possible outcome and is based on the collective experiences of coordinators. This survey, while restricted to Queensland, shows that the current methods of land search are valid and are being actively used. The strategies are guiding principles and when augmented with the experience of a SAR coordinator provide the missing person with the greatest chance of being located and rescued.

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## 9.12 Appendix 12: Forensic Science International: Synergy article

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# Where are homicide victims disposed? A study of disposed homicide victims in Queensland

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ABSTRACT

Not finding a murder victim poses challenges for homicide investigators in solving crime, including determining where to search for the deceased's body. Existing literature focuses on locating offenders through criminal profiling; however, this is largely based on identification through forensic evidence found at the murder site or where the victim was located. This paper considered the challenge of locating a deceased victim from the perspective of search coordinators assisting homicide investigations. Could reference to previous homicide cases provide patterns and trends that may assist in locating disposed victims quicker, thus aiding in preserving vital physical evidence and providing expedient closure for the community?

*Methods:* Through generation of a dataset utilising all Queensland Police recorded homicides from 2004 to 2020 inclusive, statistical analysis was conducted using SPSS™ software to identify common trends and characteristics of victim disposal. These identified commonalities were used to develop the Disposed Homicide Victim Matrix (DHVM), and Search Coordinator Principles, as tools to assist search coordinators in future relevant cases.

*Results:* The study identified four (4) key commonalities observed in the dataset, (1) East is the predominant direction for victim disposal; (2) The offender's vehicle was the most common method of victim transport followed by carrying/dragging; (3) concealment with leaf litter and local debris was the norm, followed by no attempt at concealment; and (4) victims were moved less than 50 m from a road or track after transport.

*Conclusion:* The DHVM can assist police search for these victims by narrowing down potential search locations. Finding a victim has implications throughout the community, providing evidence that could secure a conviction, allowing a measure of grief closure to the co-victims, and inspiring confidence in police.

## 1. Introduction

Locating the victim in a homicide was of paramount importance for two reasons. Firstly, for the greater human good, finding the victim allows closure and grieving processes to progress for co-victims [1,2]. Co-victims have identified that the unknown, where the victim has not been found, has a negative impact on grieving and does not allow for closure [3,4]. And secondly, locating the victim aids forensic examination of the victim and crime scene [5]. This may have a flow on effect of identifying further clues for investigators and support the successful conviction of an offender. Conversely, not having located the victim also posed many issues for investigators, not least of which was proving the offence of homicide without a body and identifying a suspect for the crime [2].

There was no formal definition of a no-body homicide but Dibiase [2] identified it as a homicide where the victim has been hidden or destroyed. An exploration of Australian no-body homicides by Ferguson et al [6,7] noted the difficulty for the prosecution to prove the offence elements and obtain a successful conviction when the victim had not been found. While much had been written on victim disposal after a homicide had occurred [8–15] those studies had been conducted on small homicide subsets, such as sexual serial killers, familial killings or rural murders, and did not focus on cases of victim disposal (no-body homicides).

In addition, the challenge of finding victims in a timely manner were encountered as many murder investigations often commence with the victim initially being reported as a missing person. When the victim is a missing adult, there can be a time lapse of hours or days before a homicide is suspected or confirmed by police. This meant searching in homicide incidents often did not commence for several days as other inquiries were initially required by undertaken by investigators. In this lapsed time the opportunity to collect vital forensic evidence can be

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damaged or lost.

Literature on no-body homicides can be broken down into five themes: sexual serial killers; serial killers; once-only killers; offender forensic awareness and disposal patterns. One Australian based article was at the focus of this research, Ferguson et al [7] explored no-body homicide convictions and found that homicide investigation was stymied without the main source of evidence, the victim. While a conviction for a no-body homicide was not impossible the article did emphasise that there was a higher chance of the incident not being brought to a successful conclusion because the victim had not been located. This conclusion was also reached by Dibiase [2] who similarly explored no-body homicide convictions in the USA. Neither article attempted to suggest methods of victim location.

Four articles aimed at disposal patterns and linkages to offender profiling within sexual serial killings in the USA and Canada were located ([5,8,11]; Snook et al., 2005). These were based on the finding of a victim and subsequent analysis of the crime scene to identify possible offenders. The articles did not reference distances travelled, methods of disposal and concealment except in the broadest terms. In all instances the victim was located, but the articles did provide evidence of commonality within victim disposal, but no suggestion as to whether the method of homicide had a bearing or influence on victim disposal.

Sea and Beauregard [5] explored 57 South Korean homicide incidents, resulting in a comparison of disposal sites, distances and relationships with respect to victim disposal. The strength of this paper was the conclusion that there were similarities in disposal choices and distances travel to the disposal site. The major limitation was the small sample size compared to the overall homicide numbers in South Korea. The authors also identified that disposal methods appear to underpin a level of forensic awareness by the offender.

The literature review identified no studies focusing on homicide victim disposal from a single policing jurisdiction. There was also no known literature that identified the percentage of homicide victims that had been disposed compared to the total number of homicides for any Australian policing jurisdiction. Therefore it is not known if Queensland, with 147 disposed victims, 19.6 % of the total homicides for the study period, represented the wider Australian population. It has to be noted that some cases may still be recorded as missing persons rather than homicides due to a body not being found.

As search and rescue coordinators were often called to help find homicide victims, there was a need for guidelines. A gap in knowledge of victim disposal, around any trends or commonalities in the moving of a victim from where they were killed to a secondary location has been identified [16].

This study examined all homicide victim disposal incidents in a single policing jurisdiction to describe common victim disposal actions. The information from the victim disposal analysis was the basis for the Disposed Homicide Victim Matrix (DHVM), developed to help find victims more often and faster. This would have the flow on effect of reducing no-body homicides, preserving forensic evidence, increasing opportunity for successful prosecution of offenders and hastening subsequent processes closure for families and the wider community.

## 2. Methodology

Homicide records sourced for this study were obtained with the permission of the [17] (QPS) Research Committee and under James Cook University Ethics Approval H7197. Homicide records from the QPS were stored in a consolidated electronic repository called the Queensland Police Records and Information Management Exchange (QPRIME). The QPS adopted QPRIME in 2004, replacing multiple older intelligence systems, and was the sole repository of all crime data for that jurisdiction. QPRIME adoption dates determined the start of data collection and the final year, 2020, was determined by those homicides that had been solved and/or finalised through the court system. Access to the data contained within QPRIME was undertaken for the sole purpose of this study, and was completed during the period 2018 to 2022. Incidents were accessed using the keyword offence term of 'homicide' and 'manslaughter'.

While there was a significant amount of data contained in QPRIME, the system functionality limits search ability to a few fields, such as incident type classification, offence date, offender and/or victim, location address and similar. As identified by Ferguson et al [6], QPRIME access was not afforded to other researchers in this field and thus the dataset provided a unique perspective on homicides in this jurisdiction.

Within each QPRIME homicide entry was all the information and intelligence collected throughout the investigation, including case summaries, witness statements, forensic analysis, search efforts and victim/offender biometrics. It was from these case files that the data for this study was collected.

Coding of the homicide data was required and the codes used can be found in Table 1. The coding categorised like data together when there were a range of differences within a small data set. An example of this occurred in strangulation as a murder method, which had belts, rope, wire, ties and stockings used as the actual tool involved. This type of coding was required as many of the data sub sets had small numbers involved.

The dataset was also categorised based on the relationship between the victim and offender. In this study, the offender and victim relationship in those instances where the victim was disposed have been

**Table 1**
Homicide data coding.

| Demographic | Code | |
|---|---|---|
| Offender/victim sex | F = Female<br>M = Male | U = Unknown |
| How was the victim located? | M = Medical response<br>N = Never located<br>O = Organised search<br>OF = Offender identified location | P = Police response<br>R = Randomly found (Bushwalker, farmer etc)<br>W = Witness |
| What was the method of homicide? | B = Blade weapon (Knife, machete, axe etc)<br>BL = Blunt trauma weapon (Hammer, metal pipe etc)<br>C = Chemical (Poison, acid, medication, intravenous substance etc) D = Drowning<br>E = Electrical<br>EX = Explosives<br>F = Fail to provide necessities of life (Starvation, dehydration, deprivation of liberty etc) | FA = Fall (Pushed off cliff, building, bridge, aircraft etc)<br>FI = Firearm (Hand gun, rifle, shot gun etc)<br>FO = Firearm other (Hand-made gun, single use gun)<br>I = Immolation<br>M = Motor vehicle<br>P = Physical assault (Beating, one punch etc)<br>ST = Strangulation (Rope, belt, wire etc)<br>SU = Suffocation (Pillow, plastic bag, gag etc)<br>U = Unknown |
| How was the victim disposed? | C = Concealed Insitu (Not moved and covered by objects at incident location, carpet, plastic sheet, furniture)<br>CG = Concealed on ground (Moved from scene and covered in leaf litter, soil, branches, wood, tin, debris etc)<br>CO = Concealed other (Moved from scene and placed in wheelie bin, industrial bin etc)<br>CR = Cremation<br>D = Dismemberment | I = Interment (Burial at depth, purpose dug grave)<br>N = Never located<br>NI=No concealment insitu (Not moved and left uncovered at incident location)<br>NM = No concealment (Moved from scene and left on open ground, paddock, roadside etc)<br>S = Shallow grave<br>WS = Waterside (Beach, river/creek bank, dam wall etc)<br>WW = Waterways (In ocean/sea, river, creek, pond, dam, drain etc) |
| Method of victim transport? | N = Not moved<br>C = Carried/dragged<br>M = Motor vehicle (Off/victim) | O = Other motor vehicle<br>U = Unknown<br>V = Vessel |

classified into three (3) categories, (1) Acquaintances, (2) Familial relationships and (3) No known relationship. The description of the relationship types within the three broad categories are shown in Table 2. The No known relationship category was not as a result of missing data but that there could be no relationship established between the victim and offender, a totally random homicide.

It was determined that the start point for any analysis of transport and distances was the site of the murder. While this was not always an exact location such as a house address, there was sufficient information within the case files to identify the scene if in a rural location. No murder site was used more than once during the period of this study, but what was identified as important was distance and direction that a victim was disposed from that site. It was in the direction and distance that any patterns or trends would be found in victim disposal. The distance and directional measurements between the homicide site and the victim disposal site were plotted on Google Earth Pro™ and entered into the Excel™ spreadsheet. The direction of victim disposal was reduced to the eight major compass directions (north, north-east, east, south-east, south, south-west, west, north-west) rather than degrees.

Only empirical data was collected from QPRIME, such as dates, locations and relationships. It was considered that the motivation for victim disposal would be relevant to this study but as there was no need of the prosecution to prove motivation or rationale to secure a conviction this was not always included within the case files. Further research may identify the nexus between motivation and disposal.

A cleanse of the QPRIME data was conducted applying inclusion and exclusion criteria. The four inclusion criteria for the dataset was (1) that the offence was a homicide or manslaughter initially to ensure totality of the data (2) that the victim had to have been disposed (i.e. moved from the scene); in some means; (3) the incident occurred between 2004 and 2020; and (4) the incident occurred in Queensland as this was a single jurisdictional study. The three exclusion criteria for the dataset were (1) that no mass killings were included; (2) no serial killings were included; and (3) homicides where the victim was not moved from the crime murder site. Serial and mass killings were identified as often having a clustering effect, that the victims were disposed in the same or similar locations depending on the offender's [8]. The QPRIME incident number for each homicide was used in the data cleaning process to ensure no duplication of incidents. A total of 147 homicide incidents met the criteria to form the dataset for this study.

## 3. Findings

The dataset contained 147 instances where the victim's body was moved after a homicide, of which 130 had been located, 88.4 %, the remaining victims had not been found at the time of this study.

### 3.1. Finding victims

Of those victims located, the majority were found during a police response, such as welfare checks or through organised searching of a location, 60.5 %. The second method of locating a victim was through a 'random find', for example, location by bushwalkers or farmers working in their fields at 15 %. The offender's themselves had provided information as to the disposal site in 6.8 % of cases, and witness information accounted for 6.1 % of cases.

**Table 2**
Relationship description.

| Category | Description | N (%) |
|---|---|---|
| Acquaintance | Acquaintance, Co-worker, Employee/Employer, Employer/Employee, Friend, Neighbour, | 71 (48.3 %) |
| Familial | Boyfriend/Girlfriend, Daughter/Father, Daughter/Mother, De-facto, Engaged, Father/Daughter, Father/Son, Mother/Daughter, Mother/Son, Other relative, Same sex relationship, Sibling, Son/Father, Son/Mother, Spousal (Estranged), Spousal (Married) | 54 (36.7 %) |
| No known relationship | No known relationship | 22 (15 %) |
| Total cases | | 147 |

### 3.2. Victim disposal directions

Fig. 1 depicts the disposal directions for each homicide case in the dataset. East had the largest number of victims disposed 25.4 %, with north and south 15.4 %, west and north-west 11.5 %, south-west 7.7 %, south-east 6.9 % and north-east 6.2 %. There were a further seventeen victims that have never been located, making it impossible to determine their direction of disposal. The victim disposal directions for the three relationship categories can also be found in Fig. 1.

While east was predominant disposal direction in familial and acquaintance relationships, south-west being the most frequent direction of disposal at 27.3 % in those cases of no known relationship.

A theory by Bond [18] was that modern humans had evolved from being home centric, being able to walk home from any location such as First Nation people on walkabout, to being north centric based on the compass. This meant that in most cases it was east or north, based on our ability to identify either through sunrise direction or compass bearing. This process may impact on the direction chosen by an offender when disposing of their victim.

### 3.3. Victim relationships and disposal distances

Victim disposal transportation distances from the initial murder site ranged from 50 m up to 730 km. The median and average with a 95 % CI at which the most number of victims were disposed of was up to 100 m. This was followed by 110 m–500 m, 15.4 %, 1–5 km 12.3 %, 11–15 km 10.7 % and 6–10 km 8.5 %. For disposal distances of 15 km and under there were no instances where there was a sole victim. Transported distances above 15 km at which two victims were disposed was 6.9 %, with three and four victims at 3.1 %. There were seven distances over 100 km, each with a single victim.

The most frequent distance a victim was moved from a road/track after transport to the disposal site was 10 m (42.2 % overall, 43.7 % for acquaintances, 35.2 % for familial and 54.5 % for no known relationship), which is basically moving a victim from a vehicle to the side of the roadway. The next two frequent distances were 20 m 22.4 % and 30 m 11.6 %. The longer distances, over 30 m, were used rarely 5.5 %. The average distance a moved victim was located from a road or track is 17.37 m 95 % CI.

The acquaintance relationship category had the highest number of victims removed from the incident site 48.3 %, and also the largest range of the movement options at four, although there were a small number

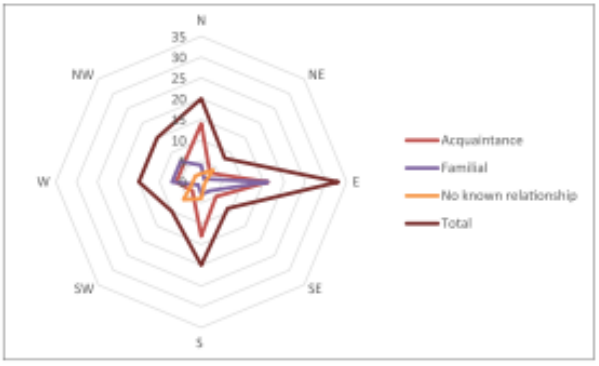


**Fig. 1.** Victim disposal directions by relationship.

where the method was unknown, Table 3. Almost half of acquaintances, 49.2 %, used their own motor vehicle to dispose of their victims compared to 42.6 % of familial and 41 % of no known relationship. Carrying or dragging the victim was higher within the no known relationship category, followed by familial and acquaintance, 54.5 %, 37 % and 35.2 % respectively. Victim movement in the no known relationship category was limited to carrying/dragging and offender or other persons vehicle, while the familial category had the most instances where the movement method was unknown, 20.4 %.

### 3.4. Demographics of homicide offenders

Males represent the greatest proportion of offenders who moved their victim at 86.4 %, and also the largest percentage of victims, 55.1 %. Females account for only 7.4 % of offenders and 44.9 % of the victims. Unknown offenders represent 6.1 % of the total number. Males were the most frequent movers of victim's bodies, moving 65 male and 62 female victims. Females only moved three female and eight male victims. In nine cases it was unknown who moved the victims.

### 3.5. Concealment in disposal

The most frequent concealment method was simply covering the victim with whatever was proximate to the disposal location, such as leaf litter, branches and debris with 51 victims, 34.7 %, and was most frequent within acquaintance and familial relationships. The next grouping, 14.3 %, was to leave the victim with no attempt at concealment. Most of these victims appeared to have been removed from a vehicle and left on the side of a road or track.

Where there was no known relationship, concealment was almost evenly split between the above two methods. In seven instances, 4.7 %, the victims were disposed in a wheelie bin, industrial bin, and on one occasion each a large tool box and a 44 gallon drum. Shallow graves, where the victim was put into a man-made or natural hollow in the ground, accounted for 12.2 % of victims, with a further 4.1 % being interred at a significant depth. Cremation or attempted cremation occurred on 6 occasions, 3 in the acquaintance category, 2 in the familial category and the last victim was in the no known relationship category. The single dismemberment was from an acquaintance relationship, Table 4.

### 3.6. Homicide type

Bladed weapons, blunt trauma weapons and physical assault accounted for half, 52.3 %, of all homicides. Eighteen offenders chose strangulation, while firearms were used on 8.1 % occasions. A cause of death was unable to be determined for 19.7 % of victims, as this also included those that had never been located. Further analysis identified that bladed and blunt trauma weapons were favoured by females, 28.8 %, followed by physical assault, 19.7 %, and suffocation, 18.2 %. The physical assault was against babies and young children, with suffocation equal between children and spouses. Firearm usage by males, females and unknown is nine, two and one respectively in instances where the victim was moved. Men more commonly used blunt force trauma weapons, 19.6 %, bladed weapons, 18.5 %, physical assault, 17.3 % and strangulation, 12.3 %.

The murder occurred in the offender's residence on 34.7 % occasions and the victim's residence a further 31.3 % occasions. The remaining 50 incidents occurred at locations such as parks, wilderness, and work places or are simply unknown.

**Table 3**
Method of victim transport by relationship.

| Method of transport | Acquaintance | Familial | No known relationship |
|---|---|---|---|
| Carried or dragged | 35.2 % | 37.0 % | 54.5 % |
| Motor vehicle (Offender's, victim's) | 49.3 % | 42.6 % | 41 % |
| Motor vehicle (Other persons, not co-offender's) | 7 % | 0 % | 4.5 % |
| Unknown | 7 % | 20.4 % | 0 % |
| Vessel | 1.5 % | 0 % | 0 % |
| Total | 100 % | 100 % | 100 % |

**Table 4**
Victim concealment method by relationship.

| Concealment method | Acquaintance | Familial | No known relationship |
|---|---|---|---|
| Concealed on ground (Moved from scene and covered in leaf litter, soil, branches, wood, tin, debris etc) | 36.6 % | 35.2 % | 27.3 % |
| Concealed other (Moved from scene and placed in wheelie bin, industrial bin etc) | 9.9 % | 5.6 % | 9.1 % |
| Interment (Burial at depth, purpose dug grave) | 4.2 % | 5.6 % | 0 % |
| No concealment (Moved from scene and left on open ground, paddock, roadside etc) | 12.7 % | 9.3 % | 31.8 % |
| Shallow grave (Buried in man-made/natural shallow excavation) | 14.1 % | 11.1 % | 9.1 % |
| Waterways (In ocean/sea, river, creek, pond, dam, drain etc) | 9.9 % | 7.3 % | 18.2 % |
| Other | 5.6 % | 3.7 % | 4.5 % |
| Never located | 7 % | 22.2 % | 0 % |
| Total | 100 % | 100 % | 100 % |

## 4. Discussion

This was the first known study into the disposal of homicide victims within Australia, and although limited to Queensland accounts for approximately 24 % of Australian homicide incidents in the period of this study, 2004–2020 [19]. Based on the information gathered, a

**Table 5**
Disposed homicide victim matrix (DHVM).

| | Acquaintance | Familial | No known relationship | Average (All homicides) |
|---|---|---|---|---|
| **Distance from homicide site km** | | | | |
| Mean (All murders) | 22.76 | 30.90 | 4.67 | 19.44 |
| Std. Deviation | 62.47 | 114.72 | 6.27 | 61.15 |
| 95 % | 147.7 | 260.34 | 17.21 | 141.8 |
| Mean (<100 km) | 8.13 | 5.82 | 4.67 | 6.21 |
| Std. Deviation | 16.33 | 11.62 | 6.27 | 11.41 |
| 95 % | 40.79 | 29.06 | 17.16 | 29.0 |
| Mean (<51 km) | 3.7 | 4.48 | 4.67 | 4.28 |
| Std. Deviation | 6.28 | 8.36 | 6.27 | 6.97 |
| 95 % | 16.26 | 21.2 | 17.16 | 18.2 |
| **Method of transport (Most common)** | | | | |
| Motor vehicle | 49 % | 49 % | 41 % | 46 % |
| Dragged/carried | 35 % | 43 % | 55 % | 44 % |
| **Method of concealment** | | | | |
| On ground, covered with leaf litter, branches and/or debris | 37 % | 35 % | 27 % | 33 % |
| Shallow grave | 14 % | 11 % | 9 % | 11.3 % |
| Concealed other | 10 % | 6 % | 9 % | 8.3 % |
| No concealment | 13 % | 9 % | 32 % | 18 % |
| Never located | 14 % | 22 % | 0 % | 12 % |
| **Average distance moved from transport** | | | | |
| Distance (m) | 17 m | 17 m | 17 m | 17 m |
| **Direction taken to dispose of victim** | | | | |
| Most common three directions | East<br>North<br>South | East<br>North<br>West | South<br>South-west<br>North-west | East<br>North<br>South |

Disposed Homicide Victim Matrix (DHVM), Table 5, had been developed. This matrix provided information on which a search strategy could be formed, resulting in the development of statistically viable search areas where the victim was likely to be located.

The DHVM could be used by a search coordinator to define an initial search area based on the relationship between the offender and victim. In the case of an acquaintance relationship a circle of 16.26 km radius could be drawn around the murder site, representing 95 % of all disposed victims in that category, and 92 % of all disposed victims overall. Within this circle roads going the three prominent directions of east, north and south could be identified as a motor vehicle was the most common form of victim disposal transport. Areas that were not often frequented by other people could be subsequently identified adjacent to these roads, including conservation parks, forests and the like. The data suggested that victims were moved an average of 17 m from a road/track but no more than 60 m, negating the necessity to initially search large forest or farmland areas. Victim concealment, in the form of covering with ground litter, formed the basis of a searcher briefing. While not providing an exact victim location, the DHVM did provide viable search areas that could be refined by intelligence gathering techniques.

### 4.1. Method of homicide

There were a number of different homicide methods identified within the dataset, with most being with weapons of opportunity such as bladed and blunt force trauma items close at hand. This corroborates that most homicides were being committed in the heat of the moment and were unplanned [1]. Access to firearms was strictly limited within Queensland, and the firearm legislation restrictions were reflected in the relatively small number of homicides using this method, 8.2 %. At odds with Lee et al [11], strangulation was not the most prolific murder method of those victims that were disposed. Within the individual relationship categories, blade weapons had the highest usage rate among acquaintances which may possibly equate to the increased carrying of bladed weapons within the community [20]. While it was possible that some of the murders within the dataset were premeditated Brookman [1] and DiBiase [2] suggest that there was a very fine line between threatening behaviour and actual killing, and that in the heat of the moment this could be crossed without any conscious knowledge that it had been. The information contained within the dataset did not provide any evidence of significant planning in the murder and disposal of any victim.

### 4.2. Victim concealment

Human bodies are difficult to dispose, representing a literal dead weight if deceased or unconscious that is awkward to move alone. A body is difficult to dissect or dismember without some medical knowledge and it takes an industrial furnace at 800–1000 °C to cremate properly [21]. Those difficulties explain in part why homicide victims were often not moved from where they were killed. As identified by Brookman [1], limited planning accompanies a murder, and this was borne out in the dataset, with 57 % of disposed victims either being left on the ground where they were transported to or placed into waste receptacles. For those left on the ground concealment was limited to covering with locally available material such as vegetation, sticks or logs, sheet metal or rubbish. Disposal in this manner allowed access to the victim by predatory animals, often resulting in the scattering of remains over time. It further aided searchers, in that the victims could be better identified as they differed in shape, form and colour from the background [16]. Time and location could affect victim concealment to the extent of leaving the victim on the side of a remote or rural road, a task that could be completed in minutes. While bushfires can exceed 1600 °C in extreme conditions a small fire created around a disposed victim would generate insufficient heat to cremate a human body [21], and as a result all disposed victims where cremation was attempted were located relatively intact and recognisably human as opposed to an ash mound.

There were two aspects of victim concealment identified in the literature that impact on locating disposed victims; forensic awareness of the offender and concealment of the body by the offender. Forensic awareness had been described as an offender modifying their actions when committing a crime to limit the transfer of evidence and reduce the chances of being caught [22]. Forensic awareness had been suggested as contributing to victim disposal, both from an association avoidance technique and a means of forestalling any investigation perspective [22–25]. Within this study there was no evidence that offenders exhibited any forensic awareness apart from moving the victim from where they were killed. Other forensic awareness actions could have included wearing disposable clothing, not using their own identifiable property to wrap or conceal the victim and to limit DNA transfer through using gloves, masks and hair nets, none of which were evident in the police reports. The majority of homicide and transportation methods used offered the potential for forensic testing to be successful, such as leaving evidence at the initial site, inside a vehicle, at the disposal site and on those involved [23,26].

### 4.3. Victim location

Six out of 10 victims were located through a police response, such as a welfare check, missing person inquiry or organised search. This aligned with Ferguson et al [7] who identified that no-body homicides often started as missing person reports and initial investigations are often left with Search Coordinators or general duties police for follow-up. Physical searching had been the major contributing factor to locating disposed victims, often conducted sometime after the actual homicide and at the instigation of the investigator. Searching had been based around intelligence gathered during the investigation and from witnesses. It was a very laborious process as precise locations were rarely identified and any remains may be impacted by environmental conditions, predatory animals and other interference [16]. Under the 'no body, no parole' laws some offenders have led police to the disposal site ("[27]," 2006) many years after the murder.

### 4.4. Victim disposal directions

A map of Queensland identifies that the majority of the formed roadways run basically north-south or east west. The major highway system follows the coast the entire length of the state with other highways branching off westwards. The major connecting roads then link these highways in an approximate north-south direction. Due to the infrequency of victims being transported great distances, such as over 50 km, it would be reasonable to utilise the average distances in the initial stages of a search for a missing homicide victim, and refine the area as further intelligence and information became available. With a motor vehicle being identified as the most common method of victim transport this allowed strategies to be immediately implemented to narrow down the travel options through the use of Automatic Number Plate Recognition (ANPR) and Traffic Monitoring Cameras (TMC).

Field and Beauregard [28] had identified that most homicide offenders tended to adhere to known locations or routes. Given that the majority of Queenslanders reside on or near to the east coast it seemed logical that an offender would head in that direction to dispose of a victim. This would also apply to going north or south. There is no obvious causal factor restricting offenders going north-east or south-east as identified, except perhaps the limited number of roadways that go in those directions and/or the lack of knowledge of them. Notwithstanding this, it was possible for a determined offender to travel in any direction of their choosing although this had not been borne out by the research.

The Great Dividing Range, which generally parallels the eastern coast of Queensland, had been identified as a potential barrier to victim

transport directions. There were 5.5 % of the total victims killed on the western side of the Great Dividing Range, of which only 12.2 % were disposed. This represents less than the Queensland average, more than likely due to the sparseness of the population when compared to the more populated coastal areas. The topography west of the Great Dividing Range was generally flat, with limited sealed roadways but numerous secondary thoroughfares, potentially providing disposal routes in all directions. The DHVM suggests that an appropriate search radius around the murder site be identified and searching concentrated on the roadways going east and north initially, out to 60 m either side.

### 4.5. Victim disposal distances

Sea and Beauregard [5] studied 54 murders in South Korea, identifying distances from the first contact site, the offenders residential address and murder site to the disposal site, with 87 % of offenders disposing of their victims within 30 km of the murder site. A previous study by Häkkänen et al [10] on sexual serial killers found that they disposed of their victims up to 50 km from the murder site but also that they could be disposed beyond 200 m from an official roadway. The Queensland located disposed victims were taken distances ranging from 100 m to 730 km from the murder site. Those distances were measured in a straight line as in most cases the exact route of travel was not known or recorded. Interestingly, of the seven greatest distances four were acquaintances and three were estranged spousal relationships, representing total opposites of the relationship spectrum, differing with no known relationship, which have much shorter disposal distances. There may have been some long term animosity or hatred between the parties, prompting the offender to inflict further distress on the victim's families by moving them so far they would be unlikely to be found [29]. This may also correlate with the rational choice theory [30], that the offender rationally chooses the distance and location of their victim disposal to maximise self-interest, such as not being caught.

The most frequent distances a victim was carried or dragged from the crime scene were up to 100 m, this is about as far as an average person could drag or carry a deceased person according to McCluskey [31]. No victim was dragged or carried more than a kilometre from the murder site, and no motor vehicles were used for any distances less than 50 m. Within all three relationship categories, 84 % of disposed victims were located within 15 km of where they were killed. Depending on the location it could be less than 1 h of travel by motor vehicle.

Male offenders aged between 26 and 45 represent over half of all victim disposal, with an equal statistical spread throughout the four age groups involved. Without supporting evidence, it would be reasonable to attribute this to a males' most physically strongest years, giving them the most strength to move victims during the act of disposal. A similar situation exists among females, the highest incidence over the same age group, [32]. There was a distinct age bracket of 21–55 years, representing 75 % of all moved victims. This also correlated with the age bracket for the highest number of homicides victims. Male and female victims showed similar patterns of disposal in all age groupings and there was no identified statistical significance between any particular groups.

### 4.6. Distances moved from transport

Those victims dragged from the murder scene were either to a neighbouring property or away from the murder location on the same property, such as a garden or back yard and were almost always, 91 %, along a fence line or pathway. In all instances where a body moved from a vehicle to a disposal location it had been in a downward direction. There wre no recorded instances of a body having been taken up hill, and only one found outside the research [33].

The furthest distance a victim had been located from the nearest road or track was 60 m, this is inconsistent with Häkkänen et al [10] who suggested distances up to 500 m were possible from official roads. The differences may be an interpretation of what is an official road, as from the dataset it was the nearest road/track, not necessarily a formed official road. Keppel et al [34] also suggested that victims would be found within 15 m of a road or trail and the most common distance were between 10 m and 30 m, which was similar to the dataset findings. In the disposal areas there had generally been bushland edging the roadway, offering a measure of concealment and delaying the finding of the body. Estimating distances in a bushland setting was difficult, perhaps contributing to offenders believing they had gone considerably further than in reality [35]. The research indicates that victims were never disposed in the centre of large acreages or areas, always around the peripheries.

### 4.7. Concealment

Basic concealment of the victim on the ground and covering them with nearby materials was the predominant method of disposal. Although easier, making no concealment after disposal accounted for less than one seventh of all disposed victims, 14.2 %. Knowing the type of concealment would enable suitable search tactics, such as utilising both visual and electronic searching of potential areas of disposal, to be employed. The data indicated that most victims were left relatively close to roads and fences, and it appears that offenders relied heavily on choosing remote or less populated locations for victim disposal. The direction a victim was taken provided an indication of where to search, although it must be remembered that those are straight line directions between a murder site and a disposal site. By necessity, an offender may not be able to travel in a direct line, having to follow roads and tracks.

### 4.8. Challenges for investigators

There are a number of challenges facing investigators when looking for victims in no-body homicides, not least of which is where to search. If information was not forthcoming from the offender or the offender was unknown it was difficult to progress further. Both DiBaise [2] and Brookman [1] identified that the victim was paramount from both an evidentiary and closure point of view. Literature is scant on the actual search process but did provide tactics for investigators to gather intelligence that may contribute to developing a search area [1,2]. The data collected through disposed victim homicides where the victim had been subsequently located was the basis for the Disposed Homicide Victim Matrix. The challenge for investigators was to gather sufficient data about the incident to make using the matrix a viable option.

### 4.9. Guidance for search coordinators

The study had generated a DHVM, Table 5, which showed what actions offenders have taken in previous homicide cases involving victim disposal. Generally, in behavioural models, past behaviour was a good indicator of future behaviour [36]. It was therefore proposed that the DHVM could be used as a starting point for search coordinators when considering the most likely actions taken by an offender. From the findings of this study, a list of general principles had been formulated to provide guidance for search coordinators when considering the location of a disposed victim. The general search conclusions that could be drawn from Queensland disposed homicide victims are contained in Table 6.

A previous study on search strategies [37] identified that those used to locate lost and missing people could readily be adapted to the search for disposed homicide victims. The actual search patterns and type of searching undertaken is dependent on the terrain, topography, vegetation and time elapsed since the victim disposal, and can be found in the National Search and Rescue Manual [16].

### 4.10. Limitations

While all reported Queensland homicide incidents were collected as

**Table 6**
Search strategies principles for disposed victim homicides.

| | |
|---|---|
| 1 | The method of homicide is material in understanding the effects of decomposition on the victim and the type of searching required. |
| 2 | For those victims moved the most common method of disposal is dumping them on the ground with no effort in concealment, followed by concealment with items to hand such as logs, branches and leaves. Shallow graves in the form of small man-made or natural depressions and cremation are next in order of occurrence. |
| 3 | Searching by police, using current methods, is the most successful means of locating moved victims. |
| 4 | The victim has been disposed up to 12 km from the place of homicide in 75 % of all incidents, |
| 5 | The furthest a victim has been left from a road or track has been 60 m. |
| 6 | East is the most prominent direction for disposal overall, and for six of the fourteen relationship categories involved. |
| 7 | Weight disparity does not appear to have an influencing effect on victim disposal. |

part of the initial dataset, Mouzos (2002) suggested that this may not represent all cases. Murders not recorded as such could be missing people without evidence of murder, unrecognised murders attributed to a medical ailment, murders in aged care facilities and incidents involving gang type homicides. It could be argued, that at 19 % of all Australian homicides, any findings and conclusions may not be representative across the whole country. As identified by Hendra et al [38] a comparison of the respondent sample and full sample would produce a zero difference as the full sample was initially conducted, representing a nil impact bias.

The calculated distances used in the study were Euclidean, that is, a straight line between the murder site and the victim location site. The Manhattan distances, used in geographic analysis, is the sum of all the real straight line distances between both sites [39]. In reality there can be more than one Manhattan distance. The Euclidean distance was used as the route was not always recorded in the homicide case record. Further studies could focus on the Manhattan distances to enhance the matrix.

This scope of this study was delimited to Queensland. This research provided the basis for a larger study to identify if Queensland was representative of Australian homicide victim disposal or does the large size and multitude of land forms, cultural range, population densities and socio-economic situation make this state unique. While the number of homicide incidents was low, this study did utilise the entire available dataset and could only be enhanced by a full national study, which would be an opportunity for further research. This research has management implications for searching and could be used to determine areas that may maximise the locating of undiscovered victims.

### 4.11. Implications for theory

The results of the research support the contention that homicide offenders tend to dispose of their victims in line with the matrix, that is, within a range of parameters associated with their relationship to the victim.

The theory that the disposal of homicide victims has commonalities in methods, locations, distances and concealment has been borne out with the research. It has been shown that the demographics of victim movement and subsequent concealment can be grouped into relatively broad clusters that have few outliers. The results support the use of the Disposed Homicide Victim Matrix in planning for searches and the prediction of suitable search areas. The matrix demonstrated that while very broad, the existing literature around victim disposal is grounded. It also demonstrated that a state-wide examination of homicide victim movement data was possible as a means of confirming smaller data sets such as relationship types that ultimately impact on the victim disposal.

### 4.12. Implications for practice

The Disposed Homicide Victim Matrix provided a statistical reference in the search for unlocated victims. Being trend and commonality based it represented what the majority of killers had done with their victims previously, and while there were many similarities there were also individual traits that could not be accounted for. The matrix provided the biggest single leap forward in search planning for disposed homicide victims aside from the offender actually identifying the disposal site. At the time of writing, the matrix had been used on eight occasions, with six homicide victims being located.

The seven homicide victims, from six incidents, were located in four Australian states, Australian Capital Territory, Victoria, Tasmania and Queensland. Five of these homicides are still before the Courts and are sub-judice and therefore only basic details can be provided. The remaining case was the search for Victim 1 killed near Gatton.

#### 4.12.1. Victim 1

The search for Victim 1, a 15 year old female, was commenced several days after her disappearance. Using the last known location, information about the offender and the topography of the area a number of potential search areas were identified within a 17 km radius of Gatton, Queensland. The victim was located approximately 20 m off a lonely country road, covered with grass from recent hay making, thirteen days after her disappearance. She was south of the murder location. It has to be stressed that this search was based on a behavioural model theorised at the commencement of this project.

#### 4.12.2. Victim 2

Victim 2 was murdered in his home in suburban Canberra. A suspect had been identified through further investigations but had refused to cooperate with police. The Australian Federal Police requested assistance with possible search locations, and subsequently a number of parameters were provided that could be potential victim disposal sites. Acting on this information, police were initially unable to locate the victim after searching areas that fitted within the parameters. Based on what locations had been searched, a refinement was made and police were redirected to a forest area near the Mount Majura Nature Reserve were the body of the victim was located. The straight line distance was 9 km in a south by east direction with the victim being 10 m from the nearest track. There was no attempt at concealment. A period of fifteen days had elapsed since the murder. The initial location was incorrect based on information supplied, but was able to be corrected with a change to the relationship category.

#### 4.12.3. Victims 3

Husband and wife victims 3a and 3 b disappeared from a camping ground in north eastern Victoria. Investigations by the Victoria Police Missing Persons Unit uncovered evidence of ongoing arguments with a fellow camper. It was believed that the suspect had disposed of the victims in bushland and had returned at a later time to burn and scatter what human remains remained. A number of search areas were developed using the matrix and forwarded to Victoria Police. Subsequent searching by police and volunteers located the remains of both victims within one of the areas targeted, approximately 7 km east from the murder site and a short distance off a fire trail. Concealment was initially by covering with vegetation but after revisiting the site body parts and cremated remains were scattered in the vicinity.

#### 4.12.4. Victim 4

Female victim 4 was last seen walking across a bridge over a river in northern Tasmania. Initially reported as a missing person, police inquiries soon identified that she may have been the victim of homicide. Six weeks after the disappearance police sought assistance in the search. A number of potential search areas were identified around the disappearance site. Two weeks later police located the victim concealed under

two logs, approximately 7 m off a small track within a Forest Reserve to the east. The victim was located 100 m short of the average distance provided, within the 15 m from the road/track and concealed as predicted. The direction of disposal was slightly north of east.

#### 4.12.5. Victim 5

Female victim 5 disappeared from her north Queensland home under suspicious circumstances, and with her physical disabilities it was totally out of character. She was initially reported as a missing person, with a criminal investigation running parallel. Information was sought on possible locations if she had been murdered and a number of locations were identified for searching. Fifteen days after her disappearance, she was located in dense bushland within an identified search area, 4 km south-east of the murder site. There was no attempt at concealment, perhaps because of the remote location.

#### 4.12.6. Victim 6

Victim 6 disappeared from her home, which she shared with her killer. Investigations into the disappearance were initially undertaken by the Missing Persons Unit until it was suspected that foul play may have occurred. Assistance was sought with respect to potential search areas which were identified within the Glass House Mountains area. Prior to a formal search being conducted the victim's remains were located in a random find by four-wheel drivers in a forest, 21 km north-east of the murder site, less than 10 m from a four-wheel drive track. There was some charring of the body but it was otherwise unconcealed.

There were two other instances where the matrix was unsuccessful in locating a victim, but this may have been a combination poor search coordination or the disposal being outside the identified normal range of offender actions.

## 5. Conclusion

While the challenge of locating disposed homicide victims remains, this study had identified that there were commonalities with the disposal of victims. The relationship between the offender and victim was vital as it directly impacted the direction and distance of victim disposal. The study identified that east is the predominant victim disposal direction and that the average disposal distance for all homicides where the victim was disposed was 19 km. The average distance for the 89.2 % of victims who were disposed at less than 50 km was 4.28 km from the murder site. For those victims moved from a vehicle at the disposal site, 17 m was the average distance they had been taken from a road/track with no victim being found beyond 61 m.

The offender's motor vehicle was the most common method of victim transport, followed by carrying or dragging. Covering the victim on the ground with items close at hand was the most common method of concealment followed by no attempt at concealment at all. Those commonalities had been translated into the Disposed Homicide Victim Matrix which could assist police search coordinators determine statistically viable search areas based on what had happened previously. The Matrix also identified that all located victims had been found relatively close to roads or tracks, negating the necessity to search beyond 100 m from these in the first instance.

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