IN THE CORONERS COURT

OF VICTORIA

AT MELBOURNE

Court Reference: COR 2018 5656

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 60(2)

Section 67 of the Coroners Act 2008 (Vic)

I, AUDREY JAMIESON, Coroner having investigated the death of YARA STURAK MIGNON

without holding an inquest:

find that the identity of the deceased was YARA STURAK MIGNON

born 6 October 1983

and the death occurred on 11 November 2018

at St Vincent's Hospital, 41 Victoria Parade, Fitzroy, Victoria 3065

from:

1 (a) HYPOXIC BRAIN INJURY COMPLICATING CARDIAC ARREST IN THE SETTING OF COMBINED HEROIN, ALCOHOL AND DOXYLAMINE TOXICITY

Pursuant to section 67(1) of the **Coroners Act 2008**, I make findings with respect to **the following circumstances**:

1. Yara Sturak Mignon was 35 years of age at the time of his death. He resided alone in North Fitzroy. Mr Mignon was the eldest of three children. His parents separated when he was 18 years of age. Mr Mignon was a gifted student and was offered two full scholarships to High School.

2. The investigation has identified that Mr Mignon began using illicit drugs at an early age and continued throughout adolescence. In adulthood, Mr Mignon regularly used heroin.

3. On 4 November 2018, Mr Mignon met a friend at the Queen Victoria Markets where they shopped for groceries. Subsequently, the pair went to a public bar and had some drinks together. At approximately 3.00pm, Mr Mignon informed his friend that he was going to his sister's home to make dinner and he caught a taxi. Subsequently, he telephoned his sister to inform her that he would make soup at his home, freeze it and bring it to her at a later time. Mr Mignon also contacted another friend to say that he could come and visit Mr Mignon's that evening.

4. At approximately 5.30pm, staff of a restaurant located on Victoria Street in Richmond found Mr Mignon in the bathroom of the facility. He was unconscious and surrounded by drug paraphernalia. The staff members contacted emergency services and the Metropolitan Fire Brigade (MFB) and Ambulance Victoria paramedics attended. Upon examination, paramedics found Mr Mignon to be cardiac arrest and in a pulseless electrical activity rhythm. Mobile Intensive Care Ambulance (MICA) paramedics attended and provided cardiopulmonary resuscitation (CPR) for 22 minutes prior to return of spontaneous circulation. Subsequently, Mr Mignon was transported by Ambulance to St Vincent's Hospital.

5. At 8.34pm, Mr Mignon was admitted to the St Vincent's Hospital Intensive Care Unit (ICU). Despite medical treatment and support, Mr Mignon did not regain consciousness and required ventilation support throughout his stay in the ICU. Further investigation identified that Mr Mignon had suffered an irreversible hypoxic brain injury.

6. On 9 November 2018, Medical staff and Mr Mignon's family agreed to redirect the goals of his care to comfort and dignity. He received palliative care and was extubated at 11.12am on 11 November 2018. Mr Mignon died at 11.32am.

INVESTIGATIONS

Forensic pathology investigation

7. Dr Gregory Young, Forensic Pathologist at the Victorian Institute of Forensic Medicine (VIFM), performed an external examination upon the body of Yara Mignon, reviewed a post mortem computed tomography (CT) scan and referred to the Victoria Police Report of Death, Form 83. There was no evidence of injury or naturally occurring disease that may have caused or contributed to the death.

8. Toxicological analysis of ante mortem blood and urine identified multiple drugs: ethanol,[1] morphine,[2] fentanyl,[3] midazolam,[4] levetiracetam,[5] metoclopramide,[6] paracetamol[7] and doxylamine.[8] Dr Young interpreted the results in conjunction with the medical notes from St Vincent's Hospital:

    a. *Morphine, codeine, doxylamine and ethanol detected in ante mortem blood are likely due to consumption of heroin, doxylamine and ethanol prior to paramedic attendance at the scene. Whilst morphine was administered upon arrival to hospital, this was after the ante mortem blood sample had been taken.*

    b. *Whilst 6-MAM[9] was not detected in ante mortem blood, this sample was taken over an hour after* (Mr Mignon) *was found at the scene. 6-MAM is only present in the blood following injection of heroin for a short time.*

    c. *Given the ante mortem urine sample was taken 3 days after admission to hospital, the results are less useful and likely reflect hospital administration of*

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1 Alcohol is a word commonly used in place of ethanol.

2 Morphine is a narcotic analgesic used for the treatment of moderate to severe pain.

3 Fentanyl is a narcotic (opioid analgesic) used as a perioperative analgesic and as an adjunct to surgical anesthesia.

4 Midazolam is a short acting benzodiazepine used intravenously in intensive care patients.

5 Levetiracetam is an antiepileptic used for the control of partial onset seizures.

6 Metoclopramide is an anti-emetic drug used for the treatment of nausea and vomiting.

7 Paracetamol is an analgesic drug available in many proprietary products.

8 Doxylamine is an antihistamine which has sedative and relaxant properties.

9 6-MAM or 6-Monoacetylmorphine is one of three active metabolites of heroin, the others being morphine and 3-monoacetylmorphine.

medications only. The lack of 6-MAM in the urine does not refute the possibility of heroin use.

d. *Similarly, the presence of drugs in the post mortem blood likely reflects hospital administration of medications.*

9. Dr Young commented that heroin, doxylamine and alcohol all cause depression of the central nervous system, which in combination, may lead to decreased respiratory drive, lack of airway protection, aspiration of gastric contents or vomitus, and cardiac arrest. Dr Young formulated the medical cause of Mr Mignon's death as hypoxic brain injury complicating cardiac arrest in the setting of combined heroin, alcohol and doxylamine toxicity.

Police investigation

10. Victoria Police were not called to attend the Victoria Street premises after Mr Mignon's overdose. Detective Senior Constable (DSC) Jacqueline Sadler commented that Victoria Police do not appear to have been notified of the incident. Subsequent to Mr Mignon's death, Victoria Police officers contacted the restaurant staff and established that Mr Mignon entered the facility alone, and only used the bathroom.

11. DSC Sadler was the nominated Coroner's investigator.[10] At my direction, DSC Sadler investigated the circumstances surrounding Mr Mignon's death, including the preparation of the coronial brief. The coronial brief contained, *inter alia*, statements made by Mr Mignon's mother, sister and a friend.

12. During the investigation, police learned that Mr Mignon had gone to school with a mark on his face after being struck by his father and the school had contacted the appropriate authorities. Upon investigation, Victoria Police determined that there were no concerns about the safety of the home and no further investigation was conducted in relation to the incident. Mr Mignon's sister commented that altercations between her father and elder brother became more violent as Mr Mignon grew older. She stated that her brother struggled with his fraught relationship with their father throughout his life.

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[10] A Coroner's Investigator is a police officer nominated by the Chief Commissioner of Police or any other person nominated by the Coroner to assist the coroner with his/her investigation into a reportable death. The Coroner's Investigator receives directions from a Coroner and carries out the role subject to those directions.

13. Mr Mignon began experimenting with cannabis when he was approximately 13 years of age. His mother commented that they had believed Mr Mignon's experimentation was simply a phase which he would outgrow. However, upon entering High School, Mr Mignon made friends with a group of boys and began experimenting with other drugs.

14. Mr Mignon did well in his university entrance examinations and began his tertiary studies, commencing several subjects before deciding to study Social Work. When he was approximately 26 years of age, Mr Mignon revealed to his sister that he was using heroin. She commented that he became more addicted over time and his addiction began to frighten him.

15. Mr Mignon's family stated that he was able to refrain from using heroin entirely whilst on a scholarship for further studies in Malaysia. Upon his return to Melbourne, Victoria, he recommenced using the drug. Mr Mignon subsequently enrolled himself into a detoxification centre in the Yarra Valley, Victoria. However, circumstances did not enable him to complete the course.

16. Mr Mignon initially continued in his effort to refrain from heroin use after he left the detoxification facility. Mr Mignon subsequently returned to the Fitzroy to be close to Victoria Street, Abbotsford. His friend said that Mr Mignon:

> *...had a sort of romanticisation of Victoria Street, he would buy his heroin from there, he would never have a regular person he would buy it from, just whomever was on the street.*[11]

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11 Coronial Brief, *Signed Statement of Anthony White*, dated 26 March 2019, p 17.

Coroners Prevention Unit investigation[12]

Analysis of heroin-involved overdose deaths in City of Yarra

17. Since at least the late 1990s, Victoria Street at the border of Richmond and Abbotsford in the City of Yarra - and particularly the section between Hoddle Street and Church Street, extending back a few blocks south into the area, colloquially referred to as 'North Richmond' - has been an area where the sale and use of heroin is particularly concentrated along with associated harms including fatal overdose.

18. In 2016, Coroner Jacqui Hawkins examined the elevated frequency of heroin-involved overdose deaths occurring in the City of Yarra and noted that a disproportionate number of the deaths: (a) occurred in streets, parks, alleyways, restaurants and other non-residential locations; and (b) involved people who had travelled from other parts of Melbourne and wider Victoria specifically to purchase and use heroin there. Coroner Hawkins held an inquest to explore what could be done to reduce these harms and, in her 20 February 2017 finding, recommended on the basis of expert evidence that a supervised injecting facility trial be established in North Richmond.[13]

19. I and several other Victorian Coroners supported this recommendation,[14] contributing to the broader public health and political debate occurring at the time, which culminated in the Medically Supervised Injecting Room (MSIR) opening at North Richmond on 30 June 2018.

20. In advocating for the supervised injecting facility trial, Coroner Hawkins - along with public health experts, drug and alcohol workers, politicians, community members, drug user advocacy groups and many others - expressed hope that it would contribute to

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12 The Coroners Prevention Unit (CPU) was established in 2008 to strengthen the prevention role of the Coroner. The unit assists the Coroner with research in matters related to public health and safety and in relation to the formulation of prevention recommendations, as well as assisting in monitoring and evaluating the effectiveness of the recommendations. The CPU comprises a team with training in medicine, nursing, law, public health and the social sciences.

13 Hawkins J, Finding with Inquest in death of Ms A, Coroners Court of Victoria, COR 2016 2418, delivered 20 February 2017.

14 Spanos P, Finding without Inquest in death of Robert Allender, Coroners Court of Victoria, COR 2015 6042, delivered 26 April 2017; Jamieson A, Finding without Inquest in death of David Chapman, Coroners Court of Victoria, COR 2016 2722, delivered 8 May 2017; Hawkins J, Finding without Inquest in death of Skye Turner, Coroners Court of Victoria, COR 2017 1152, delivered 16 October 2017; Olle J, Finding without Inquest in death of Daniel Gough, Coroners Court of Victoria, COR 2016 2014, delivered 30 April 2018.

reducing drug-related harms in the City of Yarra, particularly among people who used heroin in non-residential locations. Yara Mignon's fatal overdose in such a location on Victoria Street in November 2018, four months after the MSIR trial commenced (and moreover during the MSIR's usual operating hours), therefore raised for me the question of what impact the MSIR has had on heroin-involved mortality. I also note that Mr Mignon's mother commented that he occasionally attended the MSIR in North Richmond. She stated that she was surprised by this as she believed his heroin use was a solitary practice. She commented that the community would be better served if the facility was open 7 days a week for 24 hours a day.

21. In light of the issues raised during the investigation, I requested that the Coroners Prevention Unit (CPU) examine Victorian heroin-involved overdose deaths through to the end of 2018 with a particular focus on deaths in the City of Yarra during the first six months of the MSIR trial. The CPU prepared a report (**Attachment A**) which showed *inter alia*:

    a. In 2018, following six years of steady increases, the frequency of Victorian heroin-involved overdose deaths declined by approximately 10%, from 220 to 201 deaths;

    b. In contrast to this general decline, the frequency of heroin-involved overdose deaths in the City of Yarra increased from 16 (2017) to 25 (2018). The City of Yarra maintained its position as the local government area (LGA) with the highest frequency and rate of such deaths in Victoria, and

    c. The number of heroin-involved overdose deaths in the six months after the MSIR trial commenced (12 deaths) was practically the same as in the six months leading up to the trial (13 deaths). Moreover, the trial commencement was not followed by any notable change in the proportion of heroin-involved overdose deaths occurring in non-residential locations, nor the proportion involving people who had travelled to use heroin in Yarra from other parts of Melbourne and wider Victoria.

22. The CPU report made clear that Yara Mignon's death was, unfortunately, not an isolated occurrence: heroin-involved overdose deaths continue to occur in public locations in North Richmond following the MSIR implementation.

COMMENTS

Pursuant to section 67(3) of the *Coroners Act 2008* (Vic), I make the following comments connected with the death:

1. The death of Yara Mignon, considered in the context of the continuing elevated level of heroin-involved mortality in the City of Yarra, might at first glance suggest that the MSIR is failing to address heroin-involved harms in the way its supporters and advocates hoped. However, I do not believe this is a fair assessment.

2. While the frequency of heroin-involved overdose deaths was elevated in the City of Yarra in 2018, the proportion of Victorian heroin-involved overdose deaths that occurred in the City of Yarra in 2018 was broadly consistent with other recent years. Specifically, 12.4% of Victorian heroin-involved overdose deaths (25 of 201) occurred in the City of Yarra in 2018, which was not much higher than the proportion in 2015 (19 of 171, 11.1%) or 2016 (20 of 190, 10.5%). While the City of Yarra was the site of a much lower proportion of heroin-involved overdose deaths in 2017 (16 of 220, 7.2%), this (rather than 2018) appears to be the anomaly.

3. The fact that the frequency of heroin-involved overdose deaths in the City of Yarra remained high in 2018 when there was an overall decline in these deaths across both Metropolitan Melbourne and Regional Victoria, raised the possibility that a so-called 'honeypot effect' might be occurring, whereby the MSIR attracts more (and more risky) heroin users to the area. However, if this were the case, the proportion of Victorian heroin-involved deaths occurring in the City of Yarra would be expected to be higher than what was actually observed; and additionally, there would be expected to be more deaths in the second half of 2018 (after the MSIR implementation) than before.

4. While the data suggests that the level of heroin-involved overdose deaths in the City of Yarra during 2018 reflected a continuation of the longer-term well-established trend in the area (rather than a new escalation in harms), those who have long advocated for an MSIR might understandably be disappointed that deaths did not decline after 1 June 2018. In response to such disappointment I would note the following:

    a. The data presented here pertains only to the first six months of the MSIR's operation. Introducing an MSIR as a harm reduction intervention to an area where

heroin use and related harms have long been concentrated, must surely have a range of impacts and ramifications that take time to manifest. Six months is not long enough to judge the effect of the MSIR on heroin-related harms in North Richmond and the City of Yarra.

b. Heroin-involved overdose death is only one type of heroin-related harm and is relatively rare compared to other types of harm such as non-fatal overdose requiring ambulance attendance and/or emergency department treatment. Any analysis of the MSIR's impact needs to consider the broad range of heroin-related harms that might be occurring in the area.

c. Focusing on harms without also focusing on benefits is misleading. The MSIR has created valuable opportunities for clinicians to engage with a vulnerable group of people and link them with medical treatment and social services and other supports they may otherwise not have accessed.

5. As Coroner Hawkins noted in her finding in the death of Ms A, an MSIR by itself is not a "silver bullet" for heroin-involved harms in the City of Yarra. This was why Coroner Hawkins recommended for other interventions - particularly an expansion in the availability of naloxone and a review of services to support the health and wellbeing of people who inject drugs in the City of Yarra - to be put in place to support the MSIR. Given the continuing elevated frequency of heroin-involved overdose deaths in the City of Yarra during the first six months the MSIR was operational, it may be timely to examine how these other services are performing and review what else might be needed to ensure that the benefits of the MSIR for the City of Yarra community are fully realised.

6. I support the MSIR trial and I believe the MSIR is an essential intervention to address drug-related harms in the City of Yarra and Victoria. I have included the attached data to assist those running the trial, and I have directed the Coroners Prevention Unit to continue their close monitoring of heroin-related mortality in the City of Yarra.

FINDINGS

The investigation has identified that Mr Mignon had a long history of using illicit drugs and that he had used heroin for approximately 10 years at the time of his death. The investigation has also identified that Mr Mignon attempted to rid himself of his addiction. It is evident that being in Melbourne, and particularly near Victoria Street, Abbotsford, was a precipitating factor to his use and abuse of illicit drugs.

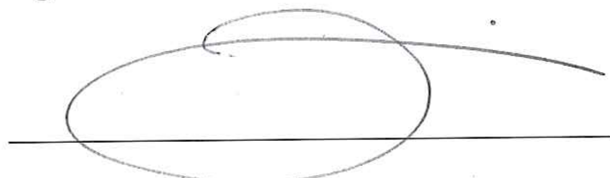
I accept and adopt the cause of death formulated by Dr Gregory Young and I find that Yara Sturak Mignon died from hypoxic brain injury complicating cardiac arrest in the setting of combined heroin, alcohol and doxylamine toxicity. I further find that Yara Sturak Mignon's death was the unintentional consequence of his use and abuse of illicit drugs.

Pursuant to section 73(1A) of the *Coroners Act 2008* (Vic), I order that this Finding be published on the internet.

I direct that a copy of this finding be provided to the following:

The Senior Next of Kin
Sam Biondo, Executive Officer, Victorian Alcohol and Drug Association
Kym Peake, Secretary, Department of Health and Human Services
Dr Nico Clark, Medical Director MSIR, North Richmond Community Health
Detective Senior Constable Jacqueline Sadler

Signature:



AUDREY JAMIESON
CORONER
Date: **18 June 2019**

Coroners Court of Victoria

CORONERS COURT OF VICTORIA

YARA STURAK MIGNON

COR 2018 5656

ATTACHMENT A

Heroin-involved overdose death in Victoria, 2014-2018, and the medically supervised injecting room

Coroners Court of Victoria
65 Kavanagh Street
SOUTHBANK VIC 3006
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Coroners Court of Victoria

Heroin-involved overdose death in Victoria, 2014-2018, and the medically supervised injecting room

Date: 13 June 2019

Prepare by: Coroners Prevention Unit

Executive summary

(a) This location-based analysis of heroin-involved overdose deaths investigated by Victorian coroners during the period 2014-2018, included a focus on deaths in the Yarra local government area (LGA) before and after the medically supervised injecting room (MSIR) trial commenced on 30 June 2018.

(b) Between 2014 and 2017 the annual frequency of Victorian heroin-involved overdose deaths rose steadily from 136 to 220 deaths, before dropping back to 201 deaths in 2018.

(c) Across the period, Yarra was the LGA with the highest frequency and average annual rate of heroin-involved overdose deaths in Victoria.

(d) Yarra was also the only LGA where the majority of fatal incidents occurred at non-residential locations. Most people who suffered fatal heroin-involved overdose in Yarra, had travelled there from other LGAs in Metropolitan Melbourne and Regional Victoria.

(e) In 2018 there were 25 heroin-involved overdose deaths in Yarra, which was a higher frequency than in any of the preceding four years. Approximately half of these deaths occurred after the MSIR trial commenced.

(f) There was no discernible difference between heroin-involved overdose deaths in Yarra before and after the MSIR trial commenced, with respect to the proportion of people who travelled from other LGAs, or the proportion of fatal incidents that occurred in non-residential locations. However, six months is not a sufficient time period to establish whether the MSIR trial has had an impact on heroin-related harms in the area.

1. Background

While heroin use and its associated harms including overdose death occur all across Metropolitan Melbourne and regional Victoria, they have been concentrated in the City of Yarra – and particularly the area known as North Richmond[1] - since the 'heroin glut' of the late 1990s.[2]

In 2016 Coroner Jacqui Hawkins consulted widely about what could be done to reduce the disproportionate number of heroin-involved overdoses in the City of Yarra. Coroner Hawkins held an inquest to explore this issue and, in her 20 February 2017 finding, recommended on the basis of expert evidence that a supervised injecting facility trial be established in North Richmond.[3]

Coroner Hawkins' recommendation coincided with broader public discussion about the need for supervised injecting, and Parliamentary consideration of legislation to create a legal framework for a supervised injecting facility trial. This culminated in the *Drugs, Poisons and Controlled Substances Amendment (Medically Supervised Injecting Centre) Act 2017* (Vic) passing into law, with the Medically Supervised Injecting Room (MSIR) commencing operation at North Richmond Community Health on 30 June 2018.

Victorian Coroners contributed to this process by giving evidence at the Parliamentary Inquiry; and by delivering further findings that highlighted the urgent need to address heroin-related harms in the City of Yarra and across Victoria more generally.[4] The findings included overdose data spanning 2012 to 2017 which confirmed not only the disproportionate burden of fatal heroin-involved overdose in the City of Yarra, but also the distinctive features of overdose deaths in the City of Yarra compared to other local government areas (LGAs) in Metropolitan Melbourne and regional Victoria.[5]

This summary updates the heroin-involved overdose deaths data to the end of 2018, which period includes the first six months of the MSIR's operation. While six months is insufficient to evaluate the impact of a complex initiative such as the MSIR, it is hoped the data may assist those involved in developing and implementing the drug harm reduction strategies of which the MSIR is a part. This data summary focuses particularly on the period 2014 to 2018, because earlier data is already available in Victorian Coronial findings cited above.

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1 With reference to heroin-related harms, 'North Richmond' as a geographic designation usually refers to the area around Victoria Street between Hoddle Street and Church Street, extending north approximately two blocks into Abbotsford and south towards Highett Street.

2 Dietze P, Jolley D and Cvetkovski S, "Patterns and Characteristics of Ambulance Attendance at Heroin Overdose at a Local-Area Level in Melbourne, Australia: Implications for Service Provision", *Journal of Urban Health*, vol 80, no 2, 2003 pp.248-260; Dietze P, et al, "The Context, Management and Prevention of Heroin Overdose in Victoria, Australia: The Promise of a Diverse Approach", *Addiction Research and Theory*, vol 9, no 5, 2001, pp.437-458.

3 Hawkins J, Finding with Inquest in death of Ms A, Coroners Court of Victoria, COR 2016 2418, delivered 20 February 2017.

4 Spanos P, Finding without Inquest in death of Robert Allender, Coroners Court of Victoria, COR 2015 6042, delivered 26 April 2017; Jamieson A, Finding without Inquest in death of David Chapman, Coroners Court of Victoria, COR 2016 2722, delivered 8 May 2017; Hawkins J, Finding without Inquest in death of Skye Turner, Coroners Court of Victoria, COR 2017 1152, delivered 16 October 2017; Olle J, Finding without Inquest in death of Daniel Gough, Coroners Court of Victoria, COR 2016 2014, delivered 30 April 2018.

5 In addition to findings already mentioned see also Jamieson A, Finding without Inquest in death of Samuel Morrison, Coroners Court of Victoria, COR 2016 2730, delivered 6 August 2018.

Additionally, this data summary focuses primarily on location-based features of the deaths because its purposes include to describe what happened to heroin-involved overdose deaths after a location-specific intervention (the MSIR) was implemented.

2. Data source and method

The data source for this summary was the CCOV's Overdose Deaths Register ('the Register'), which is maintained by the Coroners Prevention Unit. The Register design, definitions, case inclusion criteria and coding rules are described in detail elsewhere.[6]

Data was extracted from the Register to prepare this summary on 27 May 2019. Please note that the contents of the Register are regularly revised and updated as coronial investigations progress, and also as the Coroners Prevention Unit's understanding of how to interpret toxicological and forensic evidence evolves. Therefore the data presented here may differ from reports based on Register data extracted at other points in time.

3. Heroin-involved overdose deaths across Victoria

Table 1 shows the annual frequency of heroin-involved overdose deaths in Victorian for the period 2014-2018, as well as the frequency and proportion of those deaths occurring in Metropolitan Melbourne and regional Victoria.

Table 1: Annual frequency and proportion of heroin-involved overdose deaths where fatal incident occurred in Metropolitan Melbourne and Regional Victoria, 2014-2018.

Location where fatal overdose occurred	2014	2015	2016	2017	2018	Total
Annual frequency	**136**	**171**	**190**	**220**	**201**	**918**
Metropolitan Melbourne	119	150	159	185	173	786
Regional Victoria	17	21	30	34	28	130
Unknown	-	-	1	1	-	2
Annual proportion	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
Metropolitan Melbourne	87.5	87.7	83.7	84.1	86.1	85.6
Regional Victoria	12.5	12.3	15.8	15.5	13.9	14.2
Unknown	0.0	0.0	0.5	0.5	0.0	0.2

In 2018 the annual frequency of heroin-involved overdose deaths declined nearly 10%, from 220 deaths to 201 deaths. This followed four years of steady year-on-year increase.[7] The annual proportion of the deaths occurring in Metropolitan Melbourne remained consistent over time at approximately 85%.

Table 2a shows the annual frequency of heroin-involved overdose deaths in Metropolitan Melbourne by LGA, together with the 2016 population of each LGA according to the Australian Bureau of Statistics (catalogue 3218.0 released 30 March 2016) and the average

6 Dwyer J, Millar C, Bassed R, Bugeja L, *Overdose death locations, Victoria 2012-2017*, Southbank: Coroners Court of Victoria and Victorian Institute of Forensic Medicine, 12 September 2018.

7 Going further back in time, there were 107 Victorian heroin-involved overdose deaths in 2012 and 128 deaths in 2013, meaning this year-on-year increase in fact spanned six years.

annual rate (AAR) of deaths per 100,000 LGA residents.[8] LGAs are tabulated in descending order of overall frequency of heroin-involved overdose deaths. Table 2b shows this data for Regional Victoria.

Table 2a: Annual frequency of heroin-involved overdose deaths by LGA of fatal incident, with LGA population and average annual rate (AAR) of heroin-involved overdose deaths, Metropolitan Melbourne 2014-2018.

LGA where fatal overdose occurred	2014	2015	2016	2017	2018	Total	Pop.	AAR
Metropolitan	**119**	**150**	**159**	**185**	**173**	**786**	**4,642,177**	**3.4**
Yarra	11	19	20	16	25	91	92,894	19.6
Melbourne	16	12	7	15	12	62	146,096	8.5
Port Phillip	10	9	11	9	18	57	108,627	10.5
Brimbank	7	5	13	19	9	53	204,190	5.2
Greater Dandenong	4	11	11	11	10	47	160,222	5.9
Darebin	6	8	9	9	8	40	155,126	5.2
Maribyrnong	7	9	5	9	7	37	86,942	8.5
Frankston	8	8	3	6	8	33	139,502	4.7
Moreland	3	5	4	8	9	29	172,294	3.4
Whitehorse	4	8	6	6	3	27	169,641	3.2
Knox	1	7	4	6	6	24	160,353	3.0
Wyndham	3	5	5	6	5	24	227,008	2.1
Moonee Valley	5	2	6	6	2	21	122,871	3.4
Monash	2	1	10	4	3	20	192,625	2.1
Hume	2	5	3	3	5	18	207,041	1.7
Yarra Ranges	1	2	4	4	7	18	155,226	2.3
Maroondah	1	1	7	4	4	17	114,800	3.0
Stonnington	1	2	2	5	7	17	111,003	3.1
Banyule	4	4	3	5	-	16	127,447	2.5
Boroondara	1	5	2	5	3	16	177,276	1.8
Casey	3	3	-	6	4	16	312,789	1.0
Whittlesea	4	4	3	2	1	14	207,058	1.4
Kingston	2	1	2	7	1	13	158,941	1.6
Hobsons Bay	4	2	3	1	2	12	93,445	2.6
Manningham	-	6	3	2	1	12	122,570	2.0
Mornington Peninsula	-	3	4	1	3	11	161,528	1.4
Melton	2	1	1	4	2	10	141,420	1.4
Bayside	2	-	1	2	4	9	102,912	1.7
Cardinia	2	-	3	2	2	9	97,573	1.8
Glen Eira	2	2	1	2	2	9	148,583	1.2
Nillumbik	1	-	3	-	-	4	64,174	1.2

8 The AAR is calculated by dividing the total frequency of deaths by the LGA population, multiplying this by 100,000 (to derive the five-year rate per 100,000 LGA residents) then dividing the result by 5.

Table 2b: Annual frequency of heroin-involved overdose deaths by LGA of fatal incident, with LGA population and average annual rate (AAR) of heroin-involved overdose deaths, Regional Victoria[9] 2014-2018.

LGA where fatal overdose occurred	2014	2015	2016	2017	2018	Total	Pop.	AAR
Regional Victoria	**17**	**21**	**30**	**34**	**28**	**130**	**1,530,103**	**1.7**
Greater Geelong	6	4	12	6	10	38	239,529	3.2
Greater Bendigo	1	2	3	9	3	18	112,267	3.2
Ballarat	2	1	1	4	2	10	103,500	1.9
Latrobe	2	1	2	2	1	8	74,622	2.1
Wellington	1	3	2	-	1	7	43,530	3.2
Mildura	1	1	-	1	2	5	54,658	1.8
Wangaratta	-	-	2	2	-	4	28,592	2.8
Benalla	-	1	1	1	-	3	13,982	4.3
Glenelg	-	1	1	1	-	3	19,759	3.0
Hepburn	-	1	-	1	1	3	15,525	3.9
Bass Coast	-	1	1	-	-	2	33,464	1.2
Baw Baw	-	1	1	-	-	2	49,296	0.8
Greater Shepparton	1	1	-	-	-	2	65,072	0.6
Loddon	1	1	-	-	-	2	7,558	5.3
Macedon Ranges	-	-	1	-	1	2	47,480	0.8
Mitchell	1	-	-	1	-	2	41,795	1.0
Moira	-	-	-	2	-	2	29,486	1.4
Moorabool	-	-	-	-	2	2	32,672	1.2
Wodonga	-	-	1	-	1	2	40,100	1.0
Ararat	-	-	-	1	-	1	11,745	1.7
Campaspe	-	1	-	-	-	1	37,595	0.5
Central Goldfields	-	-	-	1	-	1	13,087	1.5
Corangamite	-	-	-	-	1	1	16,243	1.2
East Gippsland	-	-	1	-	-	1	45,600	0.4
Golden Plains	-	-	-	-	1	1	22,016	0.9
Horsham	-	-	-	1	-	1	19,884	1.0
Mansfield	-	-	-	-	1	1	8,674	2.3
Mount Alexander	-	-	1	-	-	1	19,097	1.0
Murrindindi	-	1	-	-	-	1	14,052	1.4
Pyrenees	1	-	-	-	-	1	7,316	2.7
Surf Coast	-	-	-	-	1	1	30,465	0.7
Swan Hill	-	-	-	1	-	1	20,896	1.0

9 There were no heroin-involved overdose deaths in the following Regional Victorian LGAs during the period 2014-2018, which were omitted from table 2b: Alpine; Buloke; Colac Otway; Gannawarra; Hindmarsh; Indigo; Moyne; Northern Grampians; Queenscliffe; South Gippsland; Southern Grampians; Strathbogie; Towong; Warrnambool; West Wimmera; and Yarriambiack.

Yarra was the LGA with the highest frequency of heroin-involved overdose deaths across all Victoria: 91 deaths. The next-highest frequency of deaths, in Melbourne (62), was a third less than in Yarra. Among the 20 LGAs with the highest frequencies of heroin-involved overdose deaths during 2014-2018, there were only two Regional Victorian LGAs, being Greater Geelong (38 deaths) and Greater Bendigo (18 deaths).

The AAR of heroin-involved overdose death in Metropolitan Melbourne (3.4 deaths per 100,000 population per year) was double that of Regional Victoria (1.7 deaths). Along with having the highest frequency, Yarra also had the highest AAR at 19.6 heroin-involved overdose deaths per 100,000 population per year. This was nearly double the LGA with the second-highest AAR (Port Philip, 10.5). Some LGAs in Regional Victoria had very low absolute frequencies of heroin-involved overdose deaths but also relatively low populations (for example Loddon, Benalla and Hepburn), meaning the AAR was higher than average; this demonstrates how AAR can be an unreliable measure of the burden of harm.

Table 3: Frequency of heroin-involved overdose deaths by LGA of fatal incident and type of location where fatal incident occurred, selected Victorian LGAs 2014-2018.

LGA where fatal overdose occurred	Own home		Another's home		Non-residential		Unknown location		Total	
	N	%	N	%	N	%	N	%	N	%
Yarra	23	25.3	16	17.6	52	57.1	-	0.0	91	100.0
Melbourne	31	50.0	5	8.1	26	41.9	-	0.0	62	100.0
Port Phillip	34	59.6	12	21.1	11	19.3	-	0.0	57	100.0
Brimbank	28	52.8	11	20.8	14	26.4	-	0.0	53	100.0
Great. Dandenong	31	66.0	10	21.3	6	12.8	-	0.0	47	100.0
Darebin	34	85.0	5	12.5	1	2.5	-	0.0	40	100.0
Greater Geelong	27	71.1	6	15.8	4	10.5	1	2.6	38	100.0
Maribyrnong	27	73.0	4	10.8	6	16.2	-	0.0	37	100.0
Frankston	21	63.6	6	18.2	6	18.2	-	0.0	33	100.0
Moreland	24	82.8	4	13.8	1	3.4	-	0.0	29	100.0
Whitehorse	22	81.5	2	7.4	3	11.1	-	0.0	27	100.0
Knox	20	83.3	3	12.5	1	4.2	-	0.0	24	100.0
Wyndham	14	58.3	3	12.5	7	29.2	-	0.0	24	100.0
Moonee Valley	13	61.9	7	33.3	1	4.8	-	0.0	21	100.0
Monash	16	80.0	3	15.0	1	5.0	-	0.0	20	100.0
Greater Bendigo	16	88.9	1	5.6	1	5.6	-	0.0	18	100.0
Hume	13	72.2	2	11.1	3	16.7	-	0.0	18	100.0
Yarra Ranges	15	83.3	2	11.1	1	5.6	-	0.0	18	100.0
Maroondah	10	58.8	3	17.6	4	23.5	-	0.0	17	100.0
Stonnington	11	64.7	3	17.6	3	17.6	-	0.0	17	100.0

For the 20 Victorian LGAs where the highest frequencies of heroin-involved overdose occurred during 2014-2018, table 3 shows the types of locations where the fatal incidents took place: the deceased's own home, another person's home, a non-residential location (for example park, restaurant, public toilet), or an unknown location. Yarra was the only LGA where the majority of heroin-involved overdoses (57.1%) occurred at non-residential locations; in all other LGAs most fatal incidents occurred in the deceased's home.

4. Heroin-involved overdose deaths in Yarra

Between 2014 and 2018, Yarra was the LGA with the highest frequency and average annual rate of heroin-involved overdose deaths in Victoria. It was also the only LGA where the majority of the deaths occurred at locations other than the deceased's usual place of residence. Of particular interest, in 2018 – the year when the North Richmond MSIR commenced operation – there was no notable decline in heroin-involved overdose death in Yarra. Rather, a five-year peak of 25 such overdose deaths was reached across Yarra. The present section explores this finding in more detail.

The North Richmond MSIR commenced operation on 30 June 2018. Therefore, for the purposes of analysis in this section, the frequency of Yarra heroin-involved overdose deaths for the year 2018 was split into deaths occurring in the first half of the year (January-June) before the MSIR commencement, and deaths occurring in the second half of the year (July-December) while the MSIR was in operation. The overdose deaths frequencies for 2014-2017 were also split into half-year groups.

Table 4 shows the results of this analysis. There were 13 heroin-involved overdose deaths in the first half of 2018, then 12 deaths – almost the same number - in the second half while the MSIR was in operation. These were the two highest half-year frequencies in the five years examined here.

Table 4: Frequency of heroin-involved overdose deaths during first half (1H) and second half (2H) of the year, Yarra 2014-2018.

Heroin-involved overdose deaths	2014		2015		2016		2017		2018	
	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H
Frequency	8	3	10	9	11	9	9	7	13	12

As discussed above, Yarra was the only Victorian LGA during the period 2014-2018 where the majority of fatal incidents occurred in non-residential locations (52 deaths, 57.1%) rather than the deceased's usual residence (23 deaths, 25.3%) or another person's residence (16 deaths, 17.6%). There are two potential explanations for this finding: that people travelled to Yarra from other locations and fatally overdosed; or that people who lived in Yarra more frequently used heroin outside their homes.

To test these two scenarios, the 91 heroin-involved overdose deaths that occurred in Yarra between 2014-2018 were classified into four mutually exclusive groups based on the LGA where each deceased usually resided:

- Different LGA, if the LGA where the deceased usually resided was different to the LGA where the fatal overdose occurred.
- Same LGA, if the LGA where the deceased usually resided was the same as the LGA where the fatal overdose occurred.
- Outside Victoria, if the deceased usually resided interstate or overseas and had been in Victoria for less than seven days when the death occurred.
- Unknown, if the LGA where the deceased usually resided was not able to be established, or if the deceased had no fixed address proximal to the death.

Table 5: Frequency of heroin-involved overdose deaths during first half (1H) and second half (2H) of the year by LGA of usual residence, Yarra 2014-2018.

LGA of usual residence	2014		2015		2016		2017		2018	
	1H	2H	1H	2H	1H	2H	1H	2H	1H	2H
Total	**8**	**3**	**10**	**9**	**11**	**9**	**9**	**7**	**13**	**12**
Different LGA	5	3	7	6	7	6	6	5	5	8
Same LGA	2	-	3	3	3	2	2	2	6	3
Outside Victoria	1	-	-	-	1	-	-	-	-	-
Unknown	-	-	-	-	-	1	1	-	2	1

Summing across the rows, table 5 shows that 58 (63.7%) of the 91 people who died from heroin-involved overdose in Yarra resided in LGAs outside Yarra. This supports the former of the two explanations posed above: that a substantial number of people are travelling from other parts of Melbourne (and wider Victoria) to use heroin in Yarra. Furthermore, this travel from other LGAs to fatally overdose in Yarra occurred both before the MSIR was commissioned and in the first six months after it commenced operation.

5. Discussion

The frequency and nature of heroin-involved overdose death in Yarra does not appear to have changed following the MSIR trial commencement in the second half of 2018. However, six months is not enough time to establish what the impact of the trial may be; and deaths are only one measure of harms associated with heroin in the Yarra LGA.