



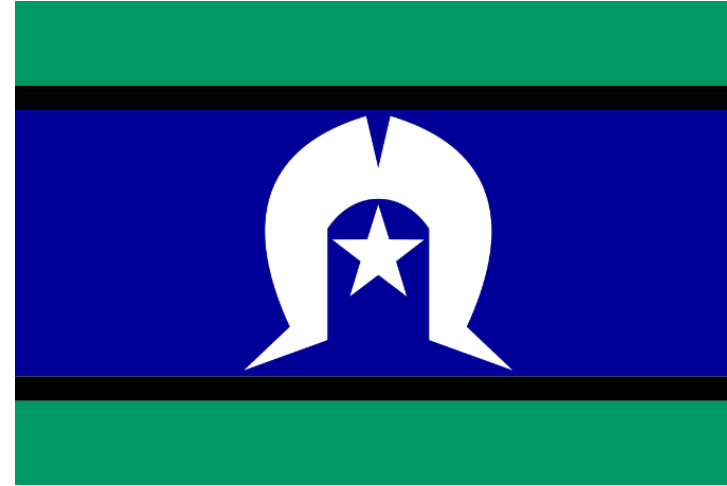
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Medical Research. Practical Action.

OPPORTUNITY FOR TARGETED HEPATITIS C HEALTH MESSAGING FOR SUB-POPULATIONS OF PEOPLE WHO INJECT DRUGS IN MELBOURNE: A LATENT CLASS ANALYSIS

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ACKNOWLEDGEMENT OF COUNTRY

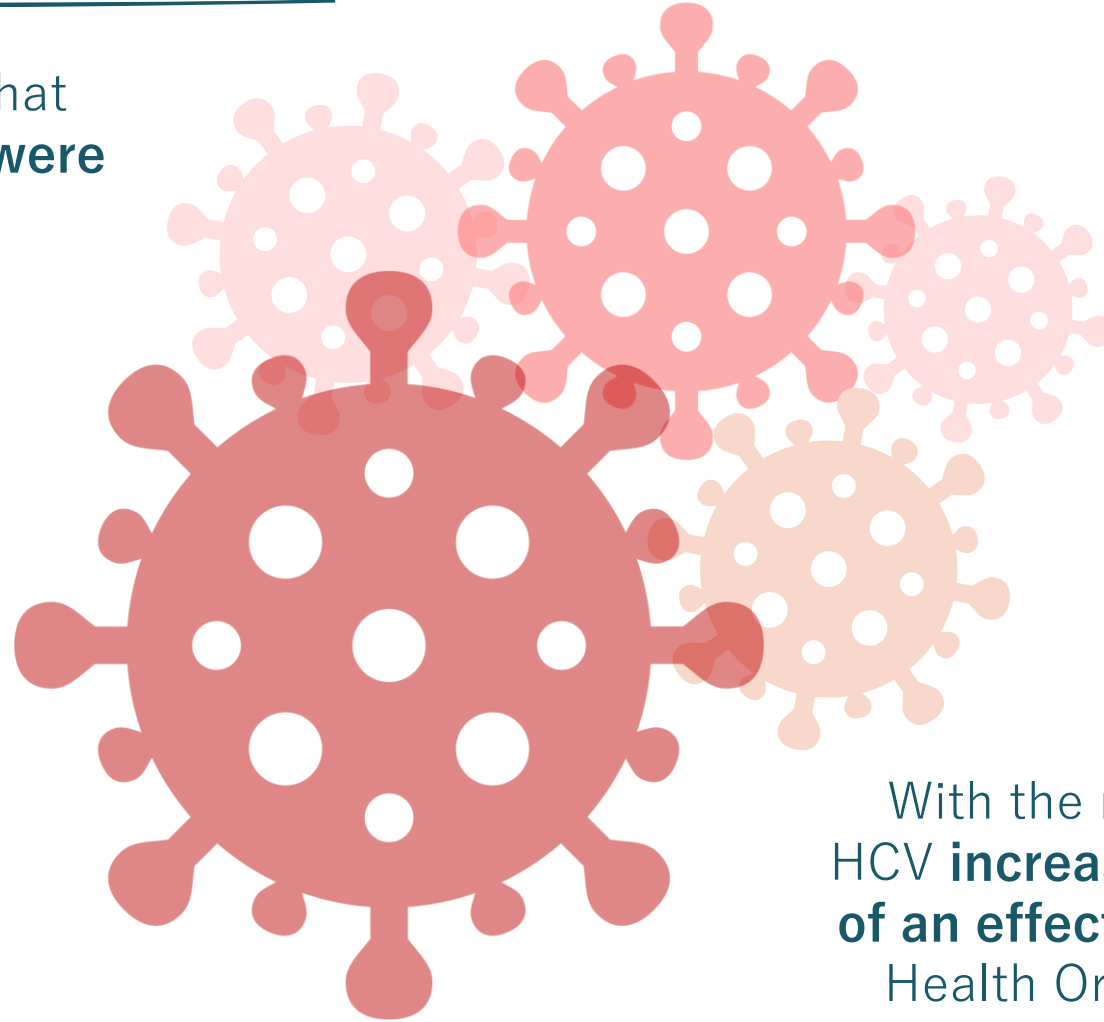


I would like to acknowledge the traditional custodians of the lands on which I am presenting from today, the lands on which this study takes place in Victoria, and the traditional custodians of the lands on which others may be joining from, and I would like to pay my respects to the Elders past and present.

HEPATITIS C VIRUS (HCV)



In 2016, it was estimated that
~**130–150 million people** were
living with chronic HCV
globally.¹



With the number of people living with HCV **increasing, despite the existence of an effective cure, in 2016** the World Health Organization released the first *Global Strategy on Viral Hepatitis*.¹

HCV GLOBAL 2030 TARGETS

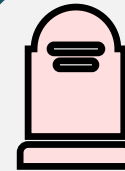


GOAL

Eliminate viral hepatitis as a major public health threat by 2030.¹



90% reduction in the incidence of chronic HCV cases.



65% reduction in deaths caused by HCV



90% of cases of HCV are diagnosed



80% of eligible persons with chronic HCV infection treated

HCV IN AUSTRALIA



People who inject drugs experience the **highest incidence of HCV in Australia** and accordingly are a priority population for reducing HCV transmission and acquisition.²

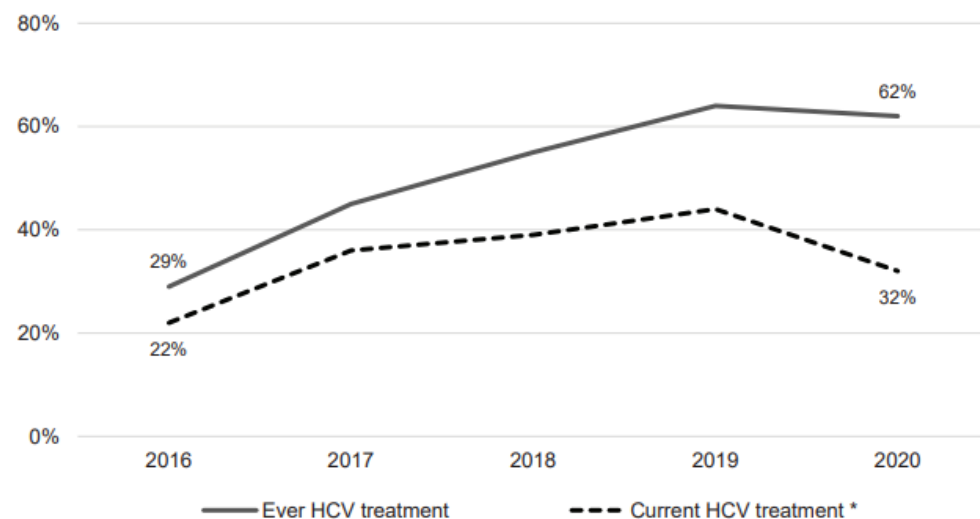


Australia introduced **universal access to direct-acting antivirals for the treatment of HCV in 2016**, which refocused efforts towards HCV elimination.³

HCV TREATMENT UPTAKE



Since universal access to DAAs was initiated in 2016, recent studies have demonstrated a marked increase in HCV treatment uptake among people who inject drugs, however, **gaps in treatment uptake remain among people who inject drugs.**⁴⁻⁶



* The denominator for recent HCV treatment excludes those who reported prior HCV treatment induced clearance.

Figure 1 Proportion of respondents (%) reporting lifetime and recent* HCV treatment among HCV antibody positive respondents who did not report spontaneous clearance by survey year

⁷ Heard, S., Iversen, J., Geddes, L., & Maher, L. (2020). Australian NSP survey: Prevalence of HIV, HCV and injecting and sexual behaviour among NSP attendees, 25-year National Data Report 1995-2019. The Kirby Institute, UNSW Sydney. https://kirby.unsw.edu.au/sites/default/files/kirby/report/ANSPS_25-Year-National-Data-Report-1995-2019.pdf

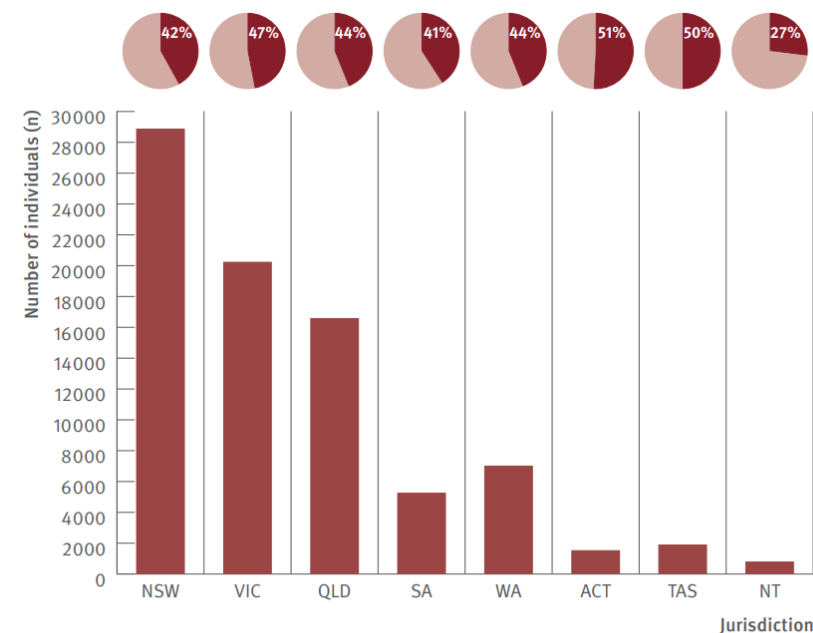


Figure 2 Estimated number of individuals initiating DAA treatment and the proportion of individuals living with chronic hepatitis C who initiated DAA treatment, 10% random sample of the PBS database, by jurisdiction, March 2016–December 2019

⁸ Burnet Institute and Kirby Institute. (2020). Australia's progress towards hepatitis C elimination: annual report 2020. Burnet Institute. https://www.burnet.edu.au/system/publication/file/5870/2019_Australia_s_progress_on_hepatitis_C_elimination.pdf

HCV TREATMENT UPTAKE



Health promotion is an important component of public health. **Promoting the availability of HCV testing and treatment to increase uptake among priority populations**, such as people who inject drugs, could help in the effort to eliminate HCV.



However, it **cannot be assumed that people who inject drugs are a homogenous group.**

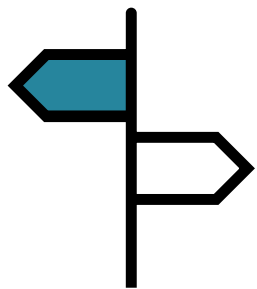
Understanding sub populations of people who inject drugs could help to tailoring health promotion messages.

AIM



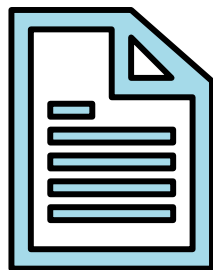
This research aims to understand sub-populations of people who inject drugs to inform tailoring of HCV testing and treatment health promotion messaging.

THE MELBOURNE INJECTING DRUG USE COHORT STUDY 'SUPERMIX'⁹



AIM

To improve understanding outcomes associated with injecting drug use



DESIGN

Prospective cohort of younger, mostly out-of-treatment PWID



RECRUITMENT

Street outreach, Respondent Driven Sampling (RDS)



COHORT

Annual structured interview and blood bio samples, and record linkage

SITES: CBD, North Richmond, Collingwood, Dandenong, Frankston, St Kilda, Footscray, Geelong

MIX 2008–2010
(n=688)



NETWORKS II 2011
(n=112)



SuperMIX 2017–2021
(n=528)



N=1328

METHODOLOGY



Latent class analysis:

- Used to identify sub-groups within a sample
- Assesses the probabilities of having a pattern of answers to a set of (categorical) questions is used to identify sub-groups;
- Labels can be given to sub-groups to aid in interpreting the data

Why latent class analysis:

- Useful in reducing many categorical variables into a few sub-groups
- Exploratory analysis to identify and quantify groups of people who inject drugs based on
 - socio-demographics
 - injecting drug use characteristics
 - criminal justice involvement
 - health-care attendance

METHODOLOGY



Independent variables included in the latent class analysis:

- education
- employment
- accommodation
- living circumstances
- type of drug injected (grouped)
- frequency of injecting
- injecting alone more than 80% of time
- current opiate agonist therapy (OAT)
- arrested since last seen
- imprisoned since last seen
- visited a IDU specific primary health centre
- visited a GP for non-OAT reason

Explored models with 1 to 10 classes and selected number based on model fit (lowest AIC/BIC) and interpretability.

RESULTS

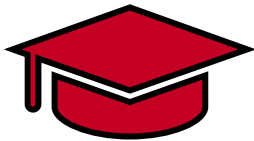


Sample:

1328 SuperMIX participants

811 completed a follow-up survey between 2015–2021

Mean age at interview = 39 years (SD=7.1)



24%
completed <10
years of education



84%
unemployed



15%
homeless;
34% are living
alone



32%
injecting multiple
substances

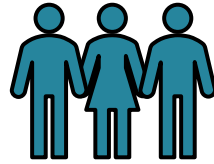
RESULTS



Selected model identified 4 classes (N=811):



45%
Class 1



25%
Class 2



20%
Class 3



10%
Class 4

Class 1

Class 2

Class 3

Class 4

Accommodation

Main drug type

Injecting frequency

Current OAT

GP attendance (non-OAT)

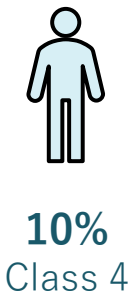
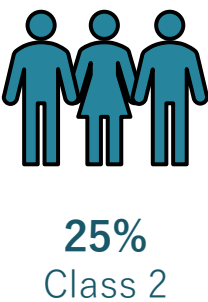
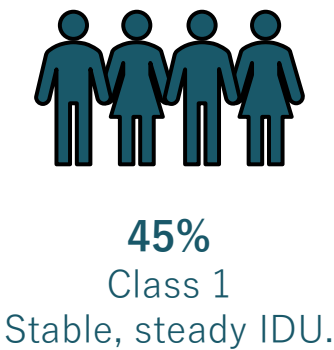
Arrested since last interview

Prison since last interview

RESULTS



Selected model identified 4 classes (N=811):

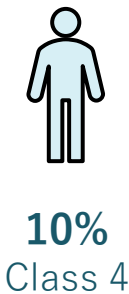
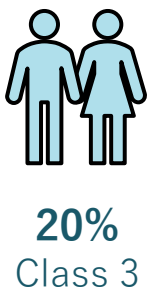
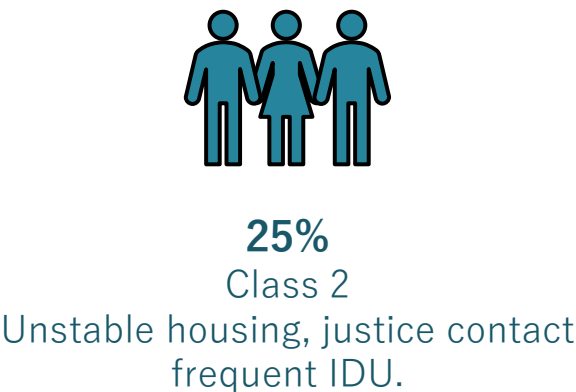
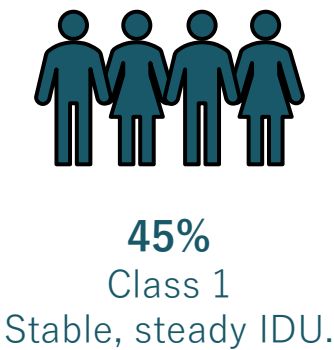


	Class 1	Class 2	Class 3	Class 4
Accommodation	Owner-occupied, private/public rental (0.60)			
Main drug type	Heroin only (0.41)			
Injecting frequency	1-6 times/week (0.53)			
Current OAT	0.53			
GP attendance (non-OAT)	0.61			
Arrested since last interview	0.13			
Prison since last interview	0.02			

RESULTS



Selected model identified 4 classes (N=811):



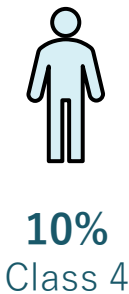
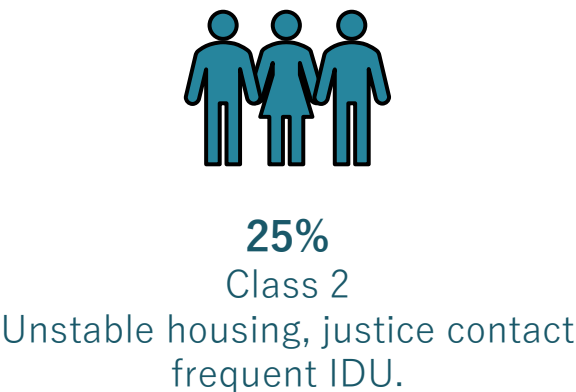
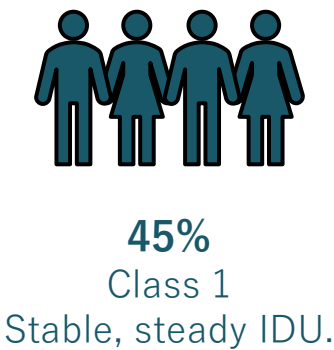
	Class 1	Class 2	Class 3	Class 4
Accommodation	Owner-occupied, private/public rental (0.60)	Homeless, community housing (0.29)		
Main drug type	Heroin only (0.41)	Heroin, methamphetamine, and other drugs (0.65)		
Injecting frequency	1-6 times/week (0.53)	14 or more times/week (0.58)		
Current OAT	0.53	0.32		
GP attendance (non-OAT)	0.61	0.47		
Arrested since last interview	0.13	0.95		
Prison since last interview	0.02	0.77		



RESULTS



Selected model identified 4 classes (N=811):




	Class 1	Class 2	Class 3	Class 4
Accommodation	Owner-occupied, private/public rental (0.60)	Homeless, community housing (0.29)	Owner-occupied, private/public rental (0.68)	
Main drug type	Heroin only (0.41)	Heroin, methamphetamine, and other drugs (0.65)	No injecting drug use (0.80)	
Injecting frequency	1-6 times/week (0.53)	14 or more times/week (0.58)	No injecting (1.00)	
Current OAT	0.53	0.32	0.50	
GP attendance (non-OAT)	0.61	0.47	0.80	
Arrested since last interview	0.13	0.95	0.08	
Prison since last interview	0.02	0.77	0.02	



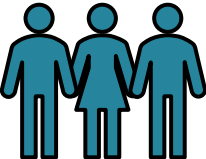
RESULTS



Selected model identified 4 classes (N=811):




45%
Class 1
Stable, steady IDU.



25%
Class 2
Unstable housing, justice contact
frequent IDU.



20%
Class 3
No IDU.



10%
Class 4
Mixed IDU, housing mixed, and
criminal justice-involvement.

	Class 1	Class 2	Class 3	Class 4
Accommodation	Owner-occupied, private/public rental (0.60)	Homeless, community housing (0.29)	Owner-occupied, private/public rental (0.68)	Owner-occupied, private/public rental (0.44)
Main drug type	Heroin only (0.41)	Heroin, methamphetamine, and other drugs (0.65)	No injecting drug use (0.80)	No injecting drug use (0.47)
Injecting frequency	1-6 times/week (0.53)	14 or more times/week (0.58)	No injecting (1.00)	No injecting (0.75)
Current OAT	0.53	0.32	0.50	0.53
GP attendance (non-OAT)	0.61	0.47	0.80	0.55
Arrested since last interview	0.13	0.95	0.08	0.94
Prison since last interview	0.02	0.77	0.02	0.85



DISCUSSION



- People who inject drugs in the SuperMIX cohort are not a homogenous population in relation to sociodemographics, drug use, healthcare engagement, and criminal justice involvement
- Distinguishing sub-groups allows for more targeted health promotion of HCV testing and treatment

DISCUSSION



Limitations:

- LCA is a classification method, not inferential statistics.

Future work:

- Further discussion on three or four classes
- Plans to explore covariates to predict class membership, which allows for inferential statistics
- Cross-validation and split sample by halves, or split sample by time periods (e.g., 2015-2017 vs. 2018-2021) to check whether we get the same number of classes

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