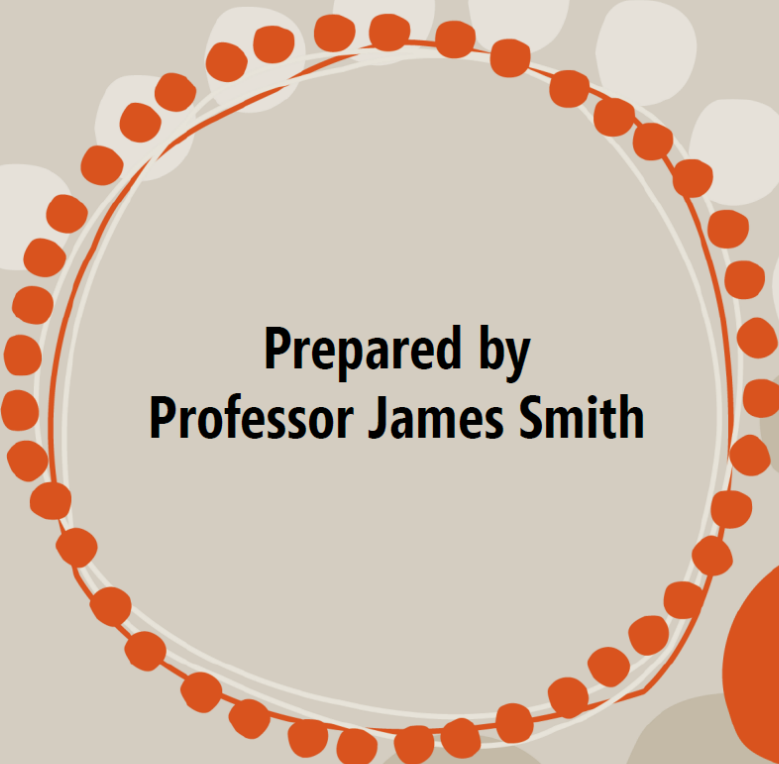


Twelve-month Evaluation of the Banned Drinker Register in the Northern Territory

Part 1 - Descriptive Analysis of Administrative Data

December 2018

A decorative circular border composed of small red dots, surrounding the text.

**Prepared by
Professor James Smith**

Contents

ACKNOWLEDGEMENTS.....	11
1 EXECUTIVE SUMMARY	12
1.1 Key Messages.....	14
1.2 Recommendations:	15
2 BACKGROUND	16
2.1 Alcohol context in the NT.....	16
2.2 Alcohol Harm Minimisation in the Northern Territory	16
2.3 What is the Banned Drinker Register?.....	17
2.4 Ministerial Commitment to Evaluation.....	22
2.5 Aim of the Evaluation.....	22
2.6 Impact Evaluation Approach.....	22
3 DESCRIPTIVE ANALYSIS OF THE BDR	24
3.1 Aims and methods of descriptive analysis.....	24
3.2 Evaluation question 1: What has happened in the first year of implementation?	26
3.2.1 BDR summary statistics.....	26
3.2.2 BDR self-referral activity	27
3.2.3 BDR transactions	27
3.2.4 Comparison with the previous BDR	28
3.2.5 Types of Individuals on the BDR.....	30
3.3 Evaluation question 3: Has the BDR reduced the frequency of banned drinkers' contacts with the justice system?	45
3.3.1 Frequency of contact	45
3.3.2 Long-term Expected Outcomes	52
3.3.3 Sobering Up Shelter (SUS) Admissions.....	59
3.4 Evaluation question 4: Has the use of specialist therapeutic services changed under the current BDR?	63
3.4.1 Episodes of care in the AOD Non-Government Organisation sector.....	63
3.4.2 Episodes of care in the NT Government (NTG) sector	67
4 DISCUSSION.....	70
4.1 Impact of the BDR on alcohol-related issues in the justice system	70
4.1.1 Alcohol-related contact with the justice system is the major reason for people being on the Banned Drinker Register.....	70
4.1.2 Some individuals have no further alcohol-related contact with the justice system after going on the BDR.....	70
4.1.3 The main impact of the BDR may be on individuals who have relatively frequent alcohol-related contact with the justice system.....	70

4.1.4	The impact of the BDR on those having frequent contact with the justice system is likely to be gradual rather than immediate	71
4.2	Impact of the BDR on alcohol-related issues in the health system	71
4.2.1	There are limitations in assessing the direct impact of the BDR on health behaviour change	71
4.2.2	NGO alcohol treatment commencements have increased since the commencement of the BDR	71
4.2.3	Requirements to self-identify BDR status mean that it is difficult to ascertain the level of assessment and therapeutic interventions undertaken by NT Government alcohol treatment services	72
4.2.4	The relationship between BDR registration and admission to SUS is unclear	72
4.2.5	There is considerable regional variation in alcohol-related NT Emergency Department presentations since the introduction of the BDR	72
5.	CONCLUSION	73
	REFERENCES	75
6.	APPENDICES	77
6.2	Appendix 1: Latent Class Analysis	77
6.3	Appendix 2: Interrupted time series analysis	82
6.4	Appendix 3: Regional administrative data	83
6.4.2	Palmerston	89
6.4.3	Alice Springs	95
6.4.4	Katherine	101
6.4.5	Tennant Creek	107
6.4.6	Nhulunbuy	114
6.4.7	NT Balance	120
6.5	Appendix 4: Additional health-service related tables and charts	126
6.5.2	Sobering Up Shelter additional tables	126
6.5.3	Sobering Up Shelter regional charts	132
6.5.4	Emergency Department presentation table	135
6.5.5	Emergency Department presentation regional charts	136
6.6	Appendix 5: Definitions for the NGO treatment sector	139
6.7	Appendix 6: Notes on alcohol-attributable conditions in Emergency Department presentations	140

Table 1: Self-referral applications to the BDR, September 2017-August 2018	27
Table 2: Count of admissions to NT SUS by source of referral, selected months.....	60
Table 3: Admissions to NT SUS, selected months, summary demographic characteristics.	62
Table 4: Treatment episode commencements, completion and length of stay, September 2017 to August 2018.	64
Table 5: Frequency of multiple treatment episodes by people on the BDR.....	65
Table 6: Treatment episodes by age, Aboriginal status and sex.....	65
Table 7: Count of assessment and treatment clients commenced who self-identify as on the BDR in NTG services.....	67
Table 8. Count of alcohol attributable presentations to NT EDs, selected months	68
Table 9. Frequency distribution for alcohol-related event indicators (behaviour the BDR)	78
Table 10. Frequency distribution for alcohol-related event indicators (after the BDR).....	78
Table 11. Comparison of baseline models (before the BDR).....	79
Table 12. Comparison of baseline models (after the BDR).....	79
Table 13. Item response probabilities for the four-group model (before the BDR).....	80
Table 14. Item response probabilities for the four-group model (after the BDR).....	81
Table 15. Parameter estimates, standard errors and p-values segmented regression model.....	82
Table 16: Count of admissions to NT SUS by year, month and region.	126
Table 17: Count and proportions of admissions to NT SUS by source of referral by region, selected months.	129
Table 18: Count and proportions of admissions to NT SUS by sex by region, selected months.	130
Table 19: Count and proportions of admissions to NT SUS by Indigenous status by region, selected months.	131
Table 20: Count of selected alcohol-attributable presentations to NT hospital Emergency Departments	135
Table 21: Emergency department wholly and partially alcohol-related conditions as principal diagnosis.	140

Figure 1. Key actions areas outlined in the NT Alcohol Harm Minimisation Action Plan	17
Figure 2. Authorised person referral pathway.....	19
Figure 3. BDR triggers and ban breaches.....	20
Figure 4. Program logic model for the Banned Drinker Register	25
Figure 5. Number of people on the BDR by most recently issued ban (end of month snapshots)	26
Figure 6. Number of monthly alcohol transactions and percentage refusals due to a person being on the BDR	27
Figure 7. Number of people on previous BDR by most recently issued ban (end of month snapshots)	28
Figure 8. Persons on the new and old BDR by sex and Aboriginal status.....	29
Figure 9. Number of transactions per 100 adults by calendar month.....	29
Figure 10. Percentage of monthly transactions refused due to a person being on the BDR	30
Figure 11. Mean frequency of events before going on the BDR – four group model	32
Figure 12. Sociodemographic profiles of the four groups of banned drinkers before BDR, including mean age and standard deviation	32
Figure 13. Mean frequency of events after going on the BDR – four group model	33
Figure 14. Sociodemographic profiles of the four groups of banned drinkers, including mean age and standard deviation	34
Figure 15. Relationships between banned drinkers’ patterns of alcohol-related events in the periods before and after the BDR.....	34
Figure 16. Profile of a person with predominantly non-criminal justice contacts before and after going on the BDR	35
Figure 17. Profile of a person with predominantly non-criminal justice contacts before going on the BDR, and no further contact afterwards.....	36
Figure 18. Profile of a person with mixed criminal and non-criminal contact before going on the BDR, and no contact afterwards.....	36
Figure 19. Profile of a person with mixed criminal and non-criminal contacts before and after going on the BDR	37
Figure 20. Profile of a person with no alcohol-related events in the year before or after going on the BDR.....	37
Figure 21. Profile of a person with no alcohol-related contacts in the year before going on the BDR and some criminal contact afterwards	38
Figure 22. Profile of a person with a single apprehension event in the year before going on the BDR and no events afterwards	38
Figure 23. Profile of a person with a single apprehension event in the year before going on the BDR and a few criminal events afterwards	39
Figure 24. Percentage of adults apprehended for an alcohol-related offence who were on the BDR at the time.....	40
Figure 25. Profile of a person whose first ban was triggered by an alcohol-related apprehension in June 2018.....	41
Figure 26. Profile of a person apprehended for an alcohol-related offence who had completed a previous ban	41
Figure 27. Percentage of adults taken into protective custody who were on the BDR at the time....	42
Figure 28. Percentage of adults issued with an alcohol-related infringement who were on the BDR at the time.....	43
Figure 29. Percentage of persons going on the BDR for a Police-issued ban who were on their first ban	44
Figure 30. Sample size by month and type of first active ban	46

Figure 31. Sample size by month of first ban, gender and Aboriginal status	46
Figure 32. Event days per 100 opportunity days and population size, relative to the date of first going on the BDR (t0).....	47
Figure 33. Individual profile: reduced contact with the justice system (1)	48
Figure 34. Individual profile: reduced contact with the justice system (2)	49
Figure 35. Individual profile: reduced contact with justice system (3).....	49
Figure 36. Individual profile: cessation of contact with the justice system	50
Figure 37. Individual profile: continued alcohol-related contact with the justice system	50
Figure 38. Number of alcohol-related assault offences and 12-month rolling average, Northern Territory	52
Figure 39. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Northern Territory	53
Figure 40. Monthly domestic violence applications and 12-month rolling averages, Northern Territory	53
Figure 41. Monthly victims of alcohol-related assault by demographic group, Northern Territory, 12-month rolling averages	54
Figure 42. Monthly victims of alcohol-related assault by age group, Northern Territory, 12-month rolling averages.....	54
Figure 43. Number of drink-driving offences and 12-month rolling average, Northern Territory	55
Figure 44. Number of drink-driving offences by type, Northern Territory, 12-month rolling averages	55
Figure 45. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Northern Territory	56
Figure 46. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Northern Territory	57
Figure 47. Monthly adult alcohol-related apprehensions and 12-month rolling average, Northern Territory	57
Figure 48. Number of alcohol-related infringement notices and 12-month rolling average, Northern Territory	58
Figure 49. Number of alcohol-related protective custody episodes and 12-month rolling average, Northern Territory	58
Figure 50: Count of admissions to NT Sobering Up Shelters by month with 12 month moving average, January 2009 - August 2018.....	59
Figure 51: Count of admissions to NT SUS by day of the week by selected months, % in day.	61
Figure 52: Count of admissions to NT SUS by hour of the day by selected months, % in hour.	61
Figure 53: Count of alcohol-related episodes of care in NGO agencies, September 2013-August 2018.	63
Figure 54: Proportion of alcohol-related episodes of care in NGO agencies BDR status, September 2013-August 2018 (%)......	64
Figure 55: Count of episodes by year and month for people self-identifying as being on the BDR after September 2017.....	66
Figure 56: Count of alcohol-related episodes of care in NTG agencies, January 2016 – August 2018.	67
Figure 57: Count of selected alcohol attributable presentations to NT EDs, January 2016 - February 2018.	68
Figure 58. Number of alcohol-related assault offences and 12-month rolling average, Darwin	83
Figure 59. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Darwin.....	83
Figure 60. Monthly domestic violence applications and 12-month rolling averages, Darwin court... ..	84

Figure 61. Monthly victims of alcohol-related assault by demographic group, Darwin, 12-month rolling averages	84
Figure 62. Monthly victims of alcohol-related assault by age group, Darwin, 12-month rolling averages	85
Figure 63. Number of drink-driving offences and 12-month rolling average, Darwin	85
Figure 64. Number of drink-driving offences by type, Darwin, 12-month rolling averages	86
Figure 65. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Darwin.....	86
Figure 66. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Darwin.....	87
Figure 67. Monthly adult alcohol-related apprehensions and 12-month rolling average, Darwin	87
Figure 68. Number of alcohol-related infringement notices and 12-month rolling average, Darwin.....	88
Figure 69. Number of alcohol-related protective custody episodes and 12-month rolling average, Darwin.....	88
Figure 70. Number of alcohol-related assault offences and 12-month rolling average, Palmerston	89
Figure 71. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Palmerston.....	89
Figure 72. Monthly victims of alcohol-related assault by demographic group, Palmerston, 12-month rolling averages	90
Figure 73. Monthly victims of alcohol-related assault by age group, Palmerston, 12-month rolling averages	90
Figure 74. Number of drink-driving offences and 12-month rolling average, Palmerston.....	91
Figure 75. Number of drink-driving offences by type, Palmerston, 12-month rolling averages	91
Figure 76. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Palmerston	92
Figure 77. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Palmerston.....	92
Figure 78. Monthly adult alcohol-related apprehensions and 12-month rolling average, Palmerston	93
Figure 79. Number of alcohol-related infringement notices and 12-month rolling average, Palmerston.....	93
Figure 80. Number of alcohol-related protective custody episodes and 12-month rolling average, Palmerston	94
Figure 81. Number of alcohol-related assault offences and 12-month rolling average, Alice Springs.....	95
Figure 82. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Alice Springs.....	95
Figure 83. Monthly domestic violence applications and 12-month rolling averages, Alice Springs court.....	96
Figure 84. Monthly victims of alcohol-related assault by demographic group, Alice Springs, 12-month rolling averages	96
Figure 85. Monthly victims of alcohol-related assault by age group, Alice Springs, 12-month rolling averages	97
Figure 86. Number of drink-driving offences and 12-month rolling average, Alice Springs.....	97
Figure 87. Number of drink-driving offences by type, Alice Springs, 12-month rolling averages	98
Figure 88. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Alice Springs	98
Figure 89. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Alice Springs.....	99

Figure 90. Monthly adult alcohol-related apprehensions and 12-month rolling average, Alice Springs	99
Figure 91. Number of alcohol-related infringement notices and 12-month rolling average, Alice Springs.....	100
Figure 92. Number of alcohol-related protective custody episodes and 12-month rolling average, Alice Springs	100
Figure 93. Number of alcohol-related assault offences and 12-month rolling average, Katherine ..	101
Figure 94. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Katherine	101
Figure 95. Monthly domestic violence applications and 12-month rolling averages, Katherine court	102
Figure 96. Monthly victims of alcohol-related assault by demographic group, Katherine, 12-month rolling averages.....	102
Figure 97. Monthly victims of alcohol-related assault by age group, Katherine, 12-month rolling averages	103
Figure 98. Number of drink-driving offences and 12-month rolling average, Katherine	103
Figure 99. Number of drink-driving offences by type, Katherine, 12-month rolling averages	104
Figure 100. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Katherine	104
Figure 101. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Katherine	105
Figure 102. Monthly adult alcohol-related apprehensions and 12-month rolling average, Katherine	105
Figure 103. Number of alcohol-related infringement notices and 12-month rolling average, Katherine.....	106
Figure 104. Number of alcohol-related protective custody episodes and 12-month rolling average, Katherine.....	106
Figure 105. Number of alcohol-related assault offences and 12-month rolling average, Tennant Creek	107
Figure 106. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Tennant Creek	108
Figure 107. Monthly domestic violence applications and 12-month rolling averages, Tennant Creek court.....	108
Figure 108. Monthly victims of alcohol-related assault by demographic group, Tennant Creek, 12-month rolling averages	109
Figure 109. Monthly victims of alcohol-related assault by age group, Tennant Creek, 12-month rolling averages	109
Figure 110. Number of drink-driving offences and 12-month rolling average, Tennant Creek	110
Figure 111. Number of drink-driving offences by type, Tennant Creek, 12-month rolling averages	110
Figure 112. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Tennant Creek	111
Figure 113. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Tennant Creek.....	111
Figure 114. Monthly adult alcohol-related apprehensions and 12-month rolling average, Tennant Creek.....	112
Figure 115. Number of alcohol-related infringement notices and 12-month rolling average, Tennant Creek	112

Figure 116. Number of alcohol-related protective custody episodes and 12-month rolling average, Tennant Creek.....	113
Figure 117. Number of alcohol-related assault offences and 12-month rolling average, Nhulunbuy	114
Figure 118. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Nhulunbuy	114
Figure 119. Monthly domestic violence applications and 12-month rolling averages, Nhulunbuy court.....	115
Figure 120. Monthly victims of alcohol-related assault by demographic group, Nhulunbuy, 12-month rolling averages.....	115
Figure 121. Monthly victims of alcohol-related assault by age group, Nhulunbuy, 12-month rolling averages	116
Figure 122. Number of drink-driving offences and 12-month rolling average, Nhulunbuy	116
Figure 123. Number of drink-driving offences by type, Nhulunbuy, 12-month rolling averages.....	117
Figure 124. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Nhulunbuy	117
Figure 125. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Nhulunbuy	118
Figure 126. Monthly adult alcohol-related apprehensions and 12-month rolling average, Nhulunbuy	118
Figure 127. Number of alcohol-related infringement notices and 12-month rolling average, Nhulunbuy.....	119
Figure 128. Number of alcohol-related protective custody episodes and 12-month rolling average, Nhulunbuy.....	119
Figure 129. Number of alcohol-related assault offences and 12-month rolling average, NT Balance	120
Figure 130. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, NT Balance	120
Figure 131. Monthly domestic violence applications and 12-month rolling averages, NT Balance courts	121
Figure 132. Monthly victims of alcohol-related assault by demographic group, NT Balance, 12-month rolling averages.....	121
Figure 133. Monthly victims of alcohol-related assault by age group, NT Balance, 12-month rolling averages	122
Figure 134. Number of drink-driving offences and 12-month rolling average, NT Balance	122
Figure 135. Number of drink-driving offences by type, NT Balance, 12-month rolling averages	123
Figure 136. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, NT Balance	123
Figure 137. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, NT Balance	124
Figure 138. Monthly adult alcohol-related apprehensions and 12-month rolling average, NT Balance	124
Figure 139. Number of alcohol-related infringement notices and 12-month rolling average, NT Balance.....	125
Figure 140. Number of alcohol-related protective custody episodes and 12-month rolling average, NT Balance	125
Figure 141: Count of admissions to Alice Springs Sobering Up Shelter by year and month, 12 month prior moving average.....	132

Figure 142: Count of admissions to Darwin Sobering Up Shelter by year and month, 12 month prior moving average.....	132
Figure 143: Count of admissions to Katherine Sobering Up Shelter by year and month, 12 month prior moving average.	133
Figure 144: Count of admissions to Nhulunbuy Sobering Up Shelter by year and month, 12 month prior moving average.	133
Figure 145: Count of admissions to Tennant Creek Sobering Up Shelter by year and month, 12 month prior moving average.	134
Figure 146: Count of selected alcohol-attributable presentations to Alice Springs hospital emergency department.	136
Figure 147: Count of selected alcohol-attributable presentations to Royal Darwin hospital emergency department.	136
Figure 148: Count of selected alcohol-attributable presentations to Katherine hospital emergency department.	137
Figure 149: Count of selected alcohol-attributable presentations to Tennant Creek hospital emergency department.	137
Figure 150: Count of selected alcohol-attributable presentations to Gove District hospital emergency department.	138

ACKNOWLEDGEMENTS

This evaluation report represents Part 1 of a two part 12-month evaluation process.

Part 1 involves a descriptive analysis of administrative data held by the Northern Territory Government (NTG). It was released in December 2018. Part 2 will involve an independent analysis of key stakeholder perspectives about the impact of the BDR in the first 12 months of its implementation. This will be released in June 2019.

Representatives from the NTG prepared the descriptive analysis of administrative data presented in this report. Professor James Smith from Menzies School of Health Research reviewed this work and provided additional commentary during the final stages of its development. Professor Smith will also provide independent oversight and leadership during Part 2 of the evaluation process.

It is appropriate to acknowledge the contribution made by NTG personnel in preparing this report. This included:

- Carolyn Whyte, Department of the Attorney-General & Justice
- Alana Cook, Department of the Attorney-General & Justice
- Chris Moon, Department of Health
- Cecelia Gore, Department of Health
- Andy Lai, Department of Health
- Foster Lau, Department of the Attorney-General & Justice

We thank them for the work they have completed.

Suggested Citation

Smith, J. (2018). *Twelve-month evaluation of the Banned Drinker Register in the Northern Territory: Part 1 – Descriptive analysis of administrative data*. Darwin, Menzies School of Health Research.

1 EXECUTIVE SUMMARY

The harmful use of alcohol in the Northern Territory is a public health concern. This was emphasised through the findings of the *Alcohol Policies and Legislation Review Final Report*, which resulted in the Northern Territory Government (NTG) developing and implementing the *Alcohol Harm Minimisation Action Plan 2018-2019* (AHMAP). The Banned Drinker Register (BDR) is one of the strategies outlined in the AHMAP.

The BDR is a policy initiative which aims to improve community health and safety by reducing alcohol-related harms. It is an explicit alcohol supply reduction measure that involves placing people that consume alcohol at harmful levels, to themselves or others, onto a register which prohibits the consumption, possession or purchase of alcohol. In its current format, the limitation of purchasing is enacted through take-away alcohol outlets. The length of time an individual is on the BDR may differ from three, six or 12 months. Participation in voluntary therapeutic services aimed at reducing the harms of alcohol consumption can reduce the length of time an individual is on the BDR.

The BDR was officially reintroduced in the NT on 1 September 2017. The Minister for Health made a commitment that the BDR would be evaluated regularly. A six-month evaluation report was released by Menzies School of Health Research (Menzies) in June 2018 (Smith & Adamson 2018). It outlined 23 recommendations and seven key messages, which have been incrementally addressed by the NTG since the release of the report.

A further six months has passed, and a 12-month evaluation of the BDR is now possible. Menzies School of Health Research has been engaged by NTG to provide independent oversight of the 12-month evaluation process. Four overarching evaluation questions have underpinned this approach:

1. What has happened in the first year of implementation of the BDR?
2. Does the BDR adequately target people misusing alcohol?
3. Has the BDR reduced the frequency of banned drinkers' contact with the justice system?
4. Has the use of specialist therapeutic services changed under the current BDR?

A phased two-part mixed-methods evaluation process has been negotiated between NTG and Menzies. Part 1 is quantitative and prepared by NTG. It involves a *descriptive analysis of relevant administrative data* held by the NTG. The quantitative analysis is the primary focus of this report. We provide information about:

- comparisons with the previous BDR (2011-2012);
- the characteristics of individuals and groups on the BDR;
- individual contacts with the justice system pre and post BDR;

- pathways onto the BDR – including alcohol-related offences and protective custody orders; and
- the use of sobering up shelters and other treatment services by those on the BDR.

This report provides an in-depth account of the intersection between the BDR and the justice system. This includes a latent class analysis examining shared characteristics noted among particular groups of people on the BDR in relation to their engagement with the justice system. Additionally, selected information is also provided about the intersection between the BDR and the health system, specifically alcohol-related emergency department presentations, and the use of sobering up shelters and alcohol treatment services. This evaluation has not looked at the intersections between health and justice data. It is proposed that future BDR evaluations examine these intersections in more detail.

Part 2 of the evaluation is qualitative. It will involve an independent analysis of key stakeholder perspectives - such as service providers, licensees, youth, tourists, and community members - about the impact of the BDR in the first 12 months of implementation. This work will be presented in a second report to be finalised for public release in June 2019.

We have made some initial recommendations and key messages based on the preliminary quantitative analysis presented in this report. However, a combined analysis of the quantitative and qualitative evaluation findings, from both Parts 1 and 2, will provide additional contextual information. This is likely to result in more pertinent recommendations for (a) improving the policy integrity and fidelity of the BDR over the mid to longer-term; and (b) informing the direction of future impact and outcome evaluations of the BDR.

1.1 Key Messages

1. BDR is one of many alcohol harm minimisation policy initiatives, it does not work in isolation. It forms part of the contribution in achieving a healthier and safer community by reducing alcohol-related harms.
2. The influences, impacts and outcomes of the BDR need to be understood in the context of other alcohol harm minimisation policy reforms and initiatives underway in the NT (such as those outlined in the *Alcohol Harm Minimisation Action Plan 2018-19*).
3. The effectiveness of the BDR is best understood longitudinally. The results of this impact evaluation should be used as an initial baseline. Impacts on health behaviour change will become more evident once the 24-month evaluation is completed and throughout subsequent evaluation processes.
4. There is potential to strengthen support for people on the BDR by examining their parallel engagement with health and justice systems more closely. This will require increased investment in data-linkage capacity.
5. The BDR provides a unique opportunity to engage in more assertive alcohol-related community development health promotion activities at a population level.
6. An increased focus on both service provider and public perceptions of the effectiveness of BDR is warranted, and should be incorporated into Part 2 of the 12-month evaluation. This will provide additional context to tailor parallel alcohol intervention strategies.

1.2 Recommendations:

1. During Part 2 of the 12-month evaluation, explore the impacts of the BDR on amenity around takeaway liquor outlets.
2. That increased resourcing is invested into linking health, justice and social issues data for people on the BDR prior to undertaking the 24-month BDR evaluation. This will require a formal data agreement between the Department of Health and the Department of the Attorney-General and Justice. This will better enable data-matching for the identification and assessment of health system involvement by people on the BDR.
3. That BDR registration is captured in all Department of Health corporate client systems, including those relating to Sobering Up Shelters (SUS) and other alcohol treatment services. This will enable data-matching between SUS and other alcohol treatment systems.
4. Continue to monitor hospital emergency department and Sobering-Up Shelter presentations of people suffering alcohol-related injuries and harms across the NT on a longitudinal basis.
5. Continue to monitor alcohol-related offending and domestic violence incidents across the NT on a longitudinal basis.
6. Undertake a comprehensive stratified household survey of the attitudes and behaviours of alcohol use in the NT, with an intentional over-sampling of Aboriginal and Torres Strait Islander people. This will provide a baseline for understanding community awareness about risky drinking practices.
7. Strengthen efforts to encourage Aboriginal and Torres Strait Islander identification as a means to provide more targeted support for this client group.
8. Mandate the reporting of BDR status on all individual health records, particularly for individuals using alcohol treatment services. This will increase the potential for data-linkage and the subsequent tailoring and targeting of therapeutic interventions.
9. Collect more detailed socio-economic data about people on the BDR to enhance the potential to reduce health and social inequities they face.
10. Increase the ban length to a minimum of six months for people who have been apprehended for an alcohol-related offence, issued an alcohol-related infringement, or taken into protective custody within 12 months of exiting the BDR.
11. Continue to expand alcohol-related community development and health promotion interventions to reduce harmful drinking patterns at a population level.
12. Encourage increased referrals to BDR Registrar from Sobering-Up Shelters, particularly among frequent attenders.

2 BACKGROUND

2.1 Alcohol context in the NT

The Northern Territory (NT) population has a unique association with alcohol. Most people living in the NT drink alcohol at levels that cause few adverse effects, and do so as a means of enjoying the unique cultural and social environment that the NT has to offer (Riley et al 2017). However, a substantial proportion of people continue to drink at levels that increase the risk of alcohol-related harm, ultimately causing ill health and hardship (Whetton et al 2009; Skov et al 2010; Symons et al 2012; Riley et al 2017). It is well established that the NT has the highest per capita consumption of alcohol in Australia; the highest rate of risky alcohol consumption in Australia; the nation's highest rates of alcohol-related hospitalisations; and high rates of road trauma and mortality involving illegal blood alcohol concentration levels (Whetton et al 2009; Symons et al 2012; Riley et al 2017). This creates significant costs for the NT economy. As highlighted in the recent NT Alcohol Policies and Legislation Review Final Report,

There can be no doubt the people of the Northern Territory of Australia have a problem with alcohol. Whilst it can be readily accepted that many people in the Northern Territory do not drink alcohol at all and most of those who do drink alcohol do so responsibly, the fact remains that we have a strong, entrenched and harmful drinking culture. We have a problem that must be addressed (Riley 2017, p1)

The need to change the NT's relationship with alcohol is evident and urgent action is required. In March 2017, the NT Government (NTG) commissioned the abovementioned independent review into alcohol policies and legislation in the NT. The review process involved community and key stakeholder consultation and resulted in 220 recommendations being presented back to the NTG on 19 October 2017. The NTG responded to the recommendations on 27 February 2018, indicating its support for 186 recommendations and in-principle support for a further 33 recommendations (NTG 2018a). Only one recommendation was not supported (NTG 2018a). This has marked a significant change in responding to the harms of alcohol experienced in the NT. Indeed, it is acknowledged that the NT is now showing national leadership in relation to innovative alcohol policy and legislative design and implementation (Smith et al, 2019).

2.2 Alcohol Harm Minimisation in the Northern Territory

The response to the *NT Alcohol Policies and Legislation Review* was accompanied by the release of the *Alcohol Harm Minimisation Action Plan 2018-2019* (NTG 2018b). The aim of the action plan is to

significantly reduce alcohol-related harms for Territorians. The action plan acknowledges that harm minimisation is a term which underpins effective action consistent with national and international drug policy (NTG 2018b). It includes reducing the demand for alcohol; reducing the supply of alcohol; and reducing the harm caused to individuals, families and the community from alcohol (NTG 2018b). It is a sensible balance of responses across these three pillars that is required. To achieve this focus the NTG has identified four key action areas in its action plan. These are depicted in Figure 1 below.

Figure 1. Key actions areas outlined in the NT Alcohol Harm Minimisation Action Plan



Source: NTG 2018b, p3

A key element of action area two, which relates to effective liquor regulation, clearly highlights that the establishment and enforcement of the BDR is a key priority of the NTG. The Department of Health (DoH) has been tasked with leading this policy initiative.

2.3 What is the Banned Drinker Register?

The BDR is a major alcohol harm reduction initiative for the NT. As outlined above, the BDR is one of a number of initiatives included in the *Alcohol Harm Minimisation Action Plan (AHMAP)* that are collectively intended to improve community health and safety through reducing the harm caused by risky drinking behaviour in the NT.

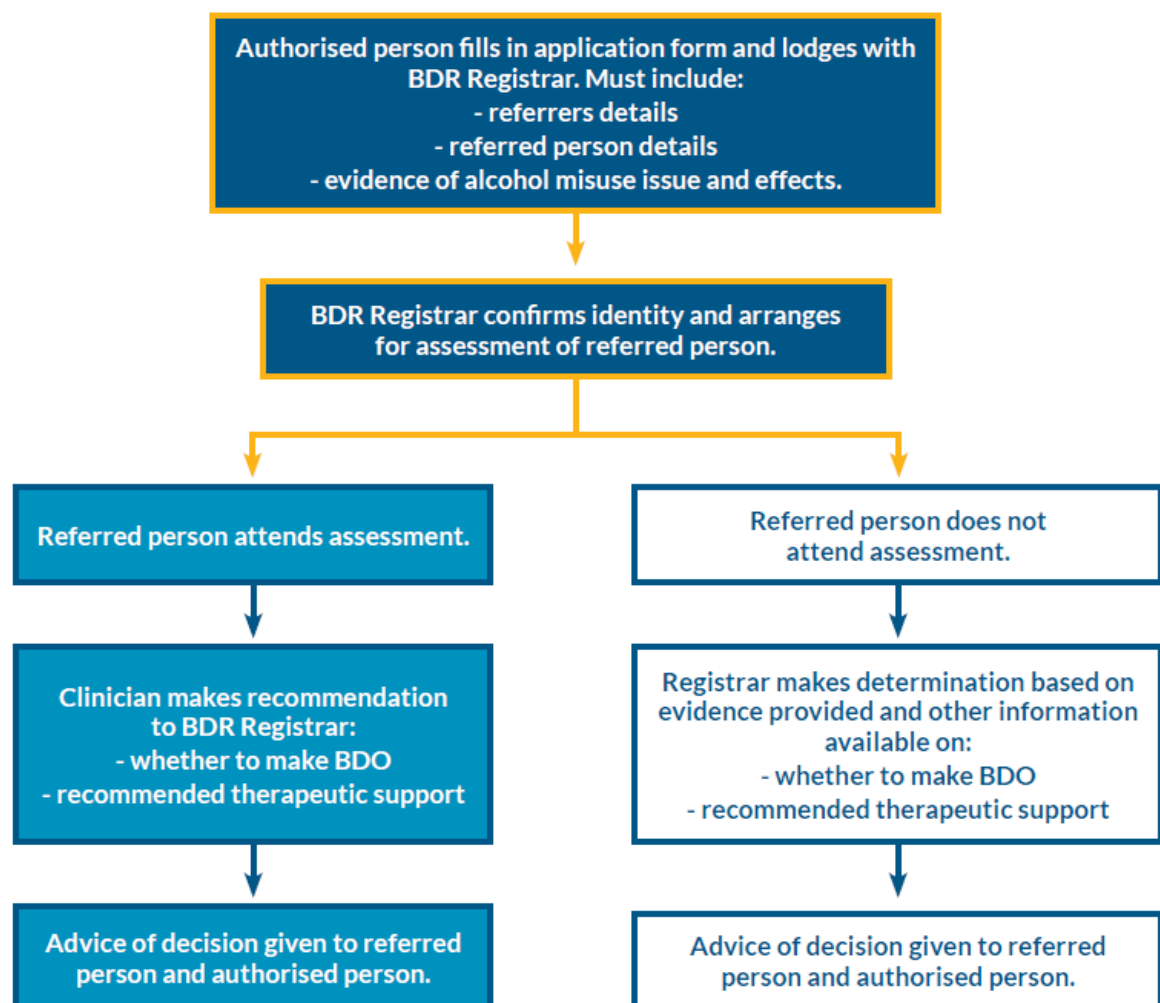
The BDR had initially been introduced in 2011-2012 under the former Labor Government. It was decommissioned swiftly by the incoming Country Liberal Party Government shortly thereafter, without any formal evaluation of the planning and implementation processes, or subsequent impacts or outcomes. It was replaced with a new policy measure known as the Alcohol Mandatory Treatment (AMT) program.

In the lead-up to the 2016 NTG election, a key election commitment of the incoming Labor Government was to reintroduce the BDR. There was a clear directive that the BDR would be reintroduced within the first 12 months of office. The BDR was subsequently reintroduced on 1st September 2017. Its reintroduction occurred mid-way through the NT Alcohol Policies and Legislation Review, and also preceded the release of the AHMAP by nearly six months.

The BDR is an explicit alcohol supply reduction measure that involves placing people that consume alcohol at harmful levels to themselves or others onto a register which prohibits the purchase of alcohol from take-away alcohol outlets. This involves all consumers having photo ID scanned at point of purchase. Those that are not on the BDR can purchase alcohol. Those that are on the BDR cannot.

There are multiple triggers and orders that result in someone becoming a banned drinker. It can involve prohibitions initiated by authorised officers that work in a range of different sectors, including police, justice, courts, child protection and health settings, which result in a person being placed on the BDR. The authorised person referral pathway is depicted below (see Figure 2).

Figure 2. Authorised person referral pathway

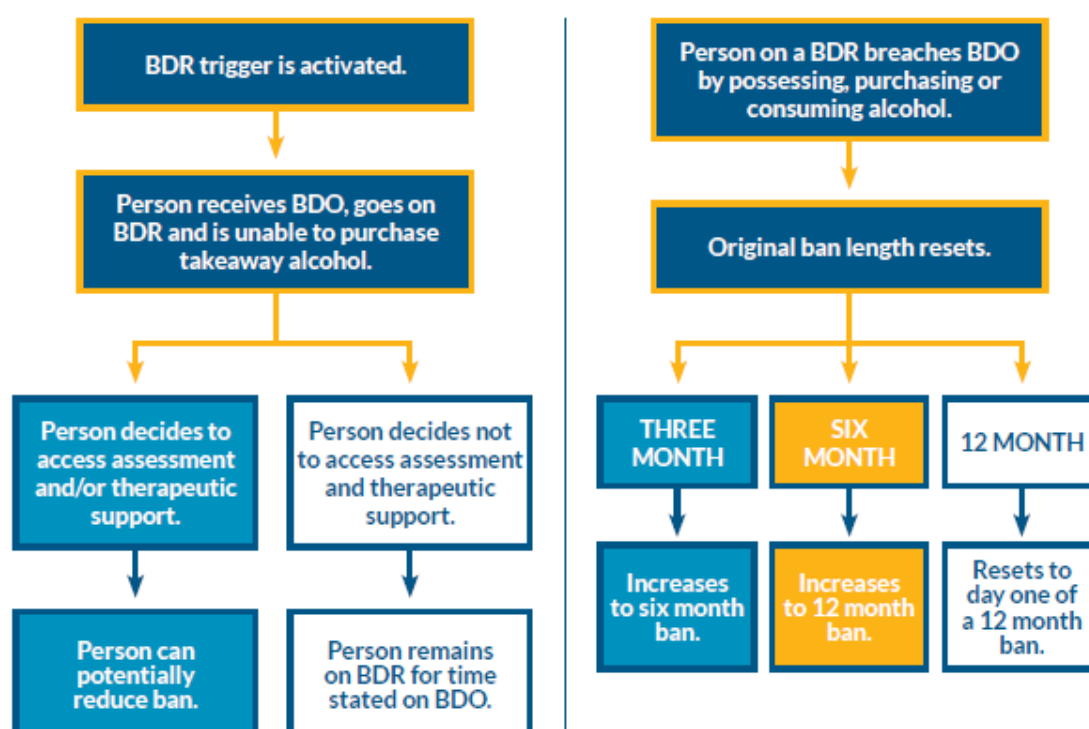


Source: NTG, 2017, 'Authorised Person Referral Pathway' (Fact Sheet)

Individuals can also opt to self-refer onto the BDR if they desire. These individuals may also choose to self-refer off the BDR at their discretion.

The length of time an individual is on the BDR may differ from three, six or 12 months. Participation in voluntary therapeutic services aimed at reducing the harms of alcohol consumption can reduce the length of time an individual is on the BDR. These triggers and associated durations on the BDR are depicted below (see Figure 3).

Figure 3. BDR triggers and ban breaches



Source: NTG, 2017, 'BDR Triggers and Bans' (Fact Sheet)

The overarching goal of the current BDR is **to improve community health and safety by reducing alcohol-related harms.**

The current objectives include:

1. To reduce the supply of alcohol to people who misuse alcohol;
2. To reduce alcohol-related offending and domestic violence;
3. To reduce the frequency and/or severity of alcohol-related health conditions;
4. To increase the uptake of therapeutic support by people misusing alcohol;
5. To ensure the Alcohol and Other Drug workforce is culturally competent and skilled in the assessment and care of Aboriginal clients;
6. To ensure that ongoing, evidence-based therapeutic support is available in a timely, effective and accessible manner; and
7. To ensure that Territorians, visitors and licensees understand that the BDR is a health-based intervention to make communities safer and healthier, and comply with the new photo ID system requirement.

Importantly, the BDR system is a project within a broader DoH-led program to establish a health-centric, alcohol harm reduction policy framework (DAGJ, 2017).

In line with this, the following benefits were identified by the NTG in relation to the reintroduction of the BDR:

- An increase in community awareness of risky drinking behaviour;
- Improved amenity around takeaway liquor outlets;
- A reduction in the number of hospital emergency department presentations of people suffering alcohol-related injuries and harms;
- A reduction in alcohol-related offending and domestic violence incidents; and
- An increase in the number of people accessing alcohol withdrawal and therapeutic support services.

There are a number of differences between the types of prohibitions that result in a person being placed on the BDR from the system in place during 2011-2012 and the way the system currently operates (Department of Health, 2017). Under the current BDR, a person may be placed on the BDR through the mechanisms outlined in the *Alcohol Harm Reduction Act 2017*:

- Being apprehended for an alcohol-related offence;
- Being named as the defendant on a Police domestic violence order where the officer believes that the defendant was affected by alcohol at the time of engaging in the conduct to which the order relates;
- Receiving any combination of three alcohol-related protective custody episodes or alcohol infringement notices in two years;
- Having an alcohol prohibition condition (purchase, possess or consume conditions) on a court order (including child protection and bail orders) or parole orders;
- By decision of the BDR Registrar after being referred by an authorised person or a family member or carer; or
- Self-referral for any reason.

In relation to the operation of the BDR, the BDR Registrar is a “clinical decision maker that evaluates the evidence and the outcomes of any assessment and makes a determination about a ban” (Department of Health, 2017a, p8). Appeals are now heard at the Northern Territory Civil and

Administrative Tribunal (NTCAT). The redesign of the system was developed by senior officers from within Government who were involved in the original implementation and operation of the BDR. This included representatives from Police, Health, Justice and Treasury (Department of Health, 2017a, p9).

2.4 Ministerial Commitment to Evaluation

In August 2017, the Minister for Health made a public commitment that the BDR implementation process would be continuously evaluated. The first six-month process evaluation was completed by June 2018 with independent oversight from Menzies School of Health Research (Menzies) (Smith & Adamson 2018). This report included 23 recommendations and seven key messages. The recommendations were clustered into five broad categories – (i) improving therapeutic support; (ii) community engagement and education; (iii) technology improvements; (iv) legislation and policy; and (v) research and data. The NTG provided a swift response, expressing its support for 14 recommendations and in-principle support for a further 9.

2.5 Aim of the Evaluation

There are four key questions that underpin the 12-month evaluation of the BDR:

1. What has happened in the first year of implementation of the BDR?
2. Does the BDR adequately target people misusing alcohol?
3. Has the BDR reduced the frequency of banned drinkers' contact with the justice system?
4. Has the use of specialist therapeutic services changed under the current BDR?

To respond to these questions, a mixed-methods approach has been adopted. This report represents Part 1 of a two stage process. Part 1 is quantitative. It involves a *descriptive analysis of relevant administrative data* held by the NTG. Part 2 of the evaluation is qualitative. It will involve an independent analysis of key stakeholder perspectives - such as service providers, licensees, youth, tourists, and community members - about the impact of the BDR in the first 12 months of implementation. The qualitative component will be presented in a second report to be finalised for public release by the end of June 2019.

2.6 Impact Evaluation Approach

The two main elements of the evaluation approach include:

- *A descriptive analysis of de-identified administrative data* relating to;

- comparisons with the previous BDR (2011-2012);
- the characteristics of individuals and groups on the BDR;
- individual contacts with the justice system pre and post BDR;
- pathways onto the BDR – including alcohol-related offences and protective custody orders; and the
- use of sobering up shelters and other treatment services by those on the BDR.
- *Interviews with key stakeholders, including:*
 - service providers;
 - licensees;
 - youth;
 - tourists; and
 - other community members.

Part 1 of the evaluation has been prepared and analysed by NTG personnel that have access to the relevant administrative data in their day-to-day operations. As such, ethics approval was not required for this component. Part 2 of the evaluation will require ethics approval, and will be submitted to the Human Research Ethics Committee of the Northern Territory Department of Health and Menzies School of Health Research in early 2019.

3 DESCRIPTIVE ANALYSIS OF THE BDR

3.1 Aims and methods of descriptive analysis

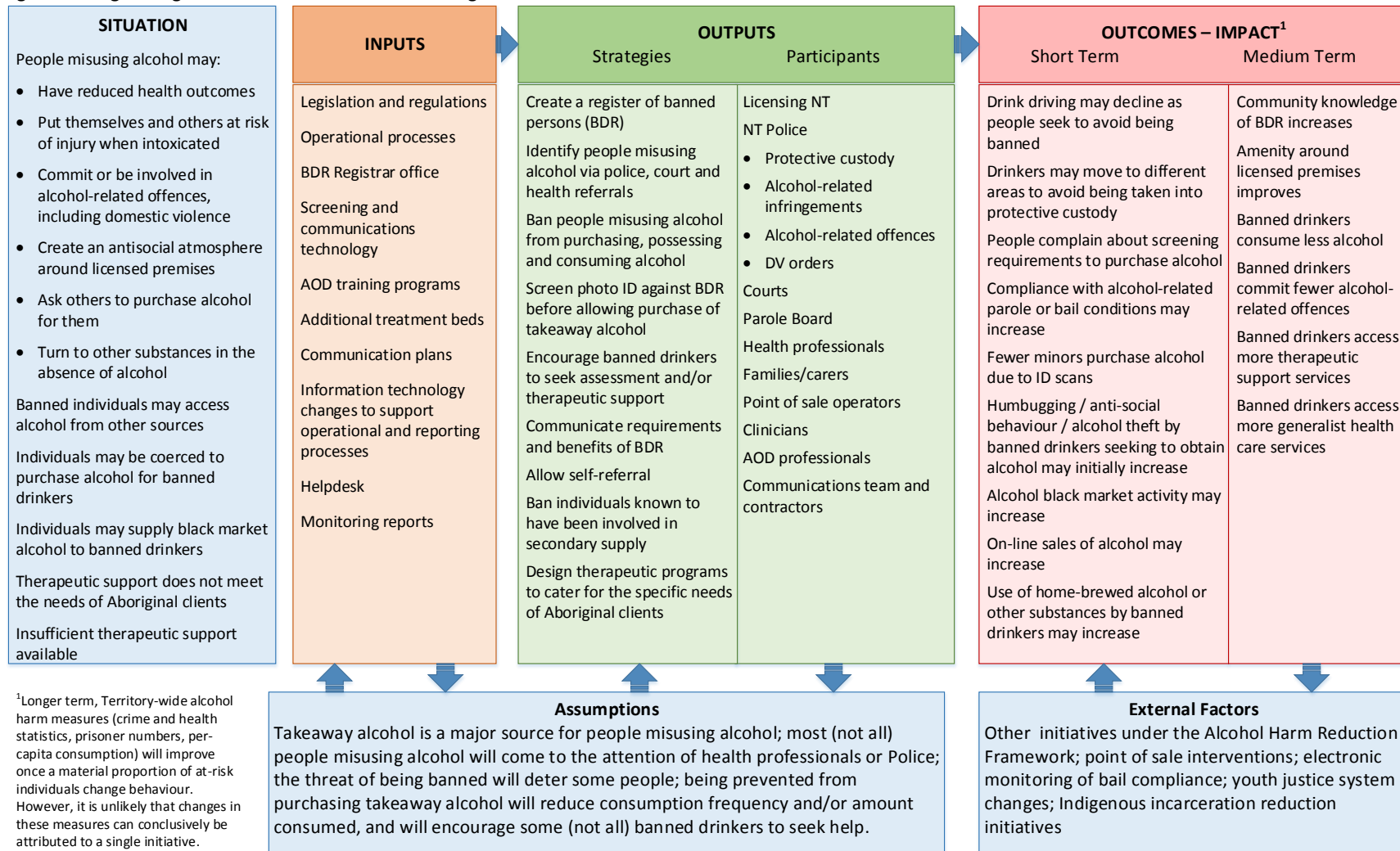
This report presents a summary of the BDR-related information observed in the first twelve months of operation, from September 2017 through August 2018. The areas of observation are aligned with some areas of the BDR Program Logic (see Figure 4 below). This includes patterns in the number of liquor transactions, persons on the BDR, and episodes of care. It also includes a more detailed analysis of alcohol-related contact with the justice system by banned drinkers in the year prior to the BDR and since going on the BDR. This shows how banned drinkers are responding to the BDR policy initiative. This report also includes charts showing patterns in various alcohol-related data series from both the justice and health sectors, such as alcohol-related assaults and drink driving, alcohol-attributable emergency department presentations, and sobering-up shelter admissions.

The charts presented provide preliminary evidence of the impacts and outcomes of the BDR. They provide an indication of the baseline patterns from which change as a result of the BDR and other alcohol-related initiatives can be measured over the longer term.

It is recognised that behavioural change from policy interventions, such as the BDR, need monitoring longitudinally to assess effectiveness. It is too early to determine the success of BDR in this way. It will also be important to understand the impacts and outcomes of the BDR in relation to other innovative policy interventions, such as Police Auxiliary Liquor Inspectors (PALIs) and the Minimum Unit Price (MUP) on alcohol in subsequent evaluations (Smith et al 2019).

BDR Program Logic

Figure 4. Program logic model for the Banned Drinker Register



¹Longer term, Territory-wide alcohol harm measures (crime and health statistics, prisoner numbers, per-capita consumption) will improve once a material proportion of at-risk individuals change behaviour. However, it is unlikely that changes in these measures can conclusively be attributed to a single initiative.

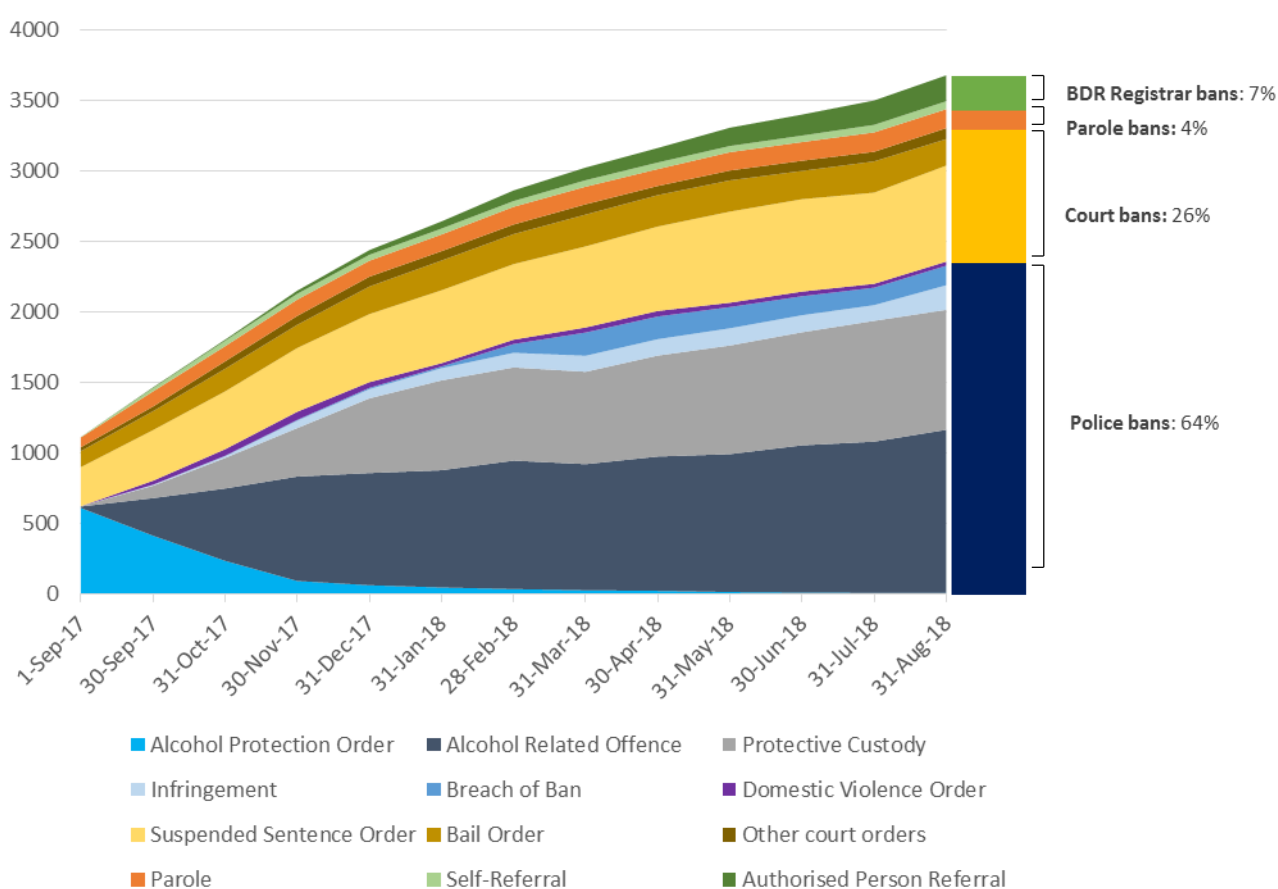
3.2 Evaluation question 1: What has happened in the first year of implementation?

This section considers the summary statistics for the BDR (number of people on the BDR, attempted purchases by people on the BDR) during the first year of implementation, and makes some comparisons with the previous BDR, which was operational from July 2011 to August 2012. It also discusses the types of people on the current BDR based on the frequency and type of contact with the NT justice system, identifies the types of responses being shown by banned drinkers, and discusses profiles for individuals showing different types of response.

3.2.1 BDR summary statistics

Figure 5 shows the number of people on the BDR on 1 September 2017 and at the end of each month through 31 August 2018.

Figure 5. Number of people on the BDR by most recently issued ban (end of month snapshots)



As at 31 August 2018, there were 3,682 adults on the BDR, and that number is still increasing. Of those who had existing Alcohol Protection Orders converted to bans, most either completed their bans and left the BDR or moved to other ban types in the first three months of implementation. Alcohol-related offences and protective custody episodes are the most common reasons for people being on the BDR, accounting for 85% of people on Police-issued bans and 55% of all people on the BDR at the end of August 2018. In March 2018, the number of Banned Drinker Orders (BDOs) issued for breaching a ban where a BDO was not triggered in other ways (e.g. through apprehension, infringement or protective custody) increased, and in August 2018 an IT enhancement resulted in an increased number of people on infringement bans issued through the electronic infringement (ELIN) process.

3.2.2 BDR self-referral activity

Since September 2017, 137 self-referral applications for a BDO have been received by the BDR Registrar. Of these, all but 7 (95%) have been placed on a BDO.

Forty-six percent (n=56) of the BDO's made were for 3 or 6 months, with 38% and 41% percent of these categories respectively being revoked before completion. Fifty-four per cent of BDO's made were for 12 months (n=65), 32% of these were revoked before completion (n=21), with 68% either being completed or in progress at the time of reporting.

Table 1: Self-referral applications to the BDR, September 2017-August 2018

	3 month	6 month	12 month	Totals*
BDO made (n)	34	22	65	121
% total	28%	18%	54%	100%
BDO revoked (n)	13	9	21	43
% revoked	38%	41%	32%	36%
% completed	62%	59%	68%	64%

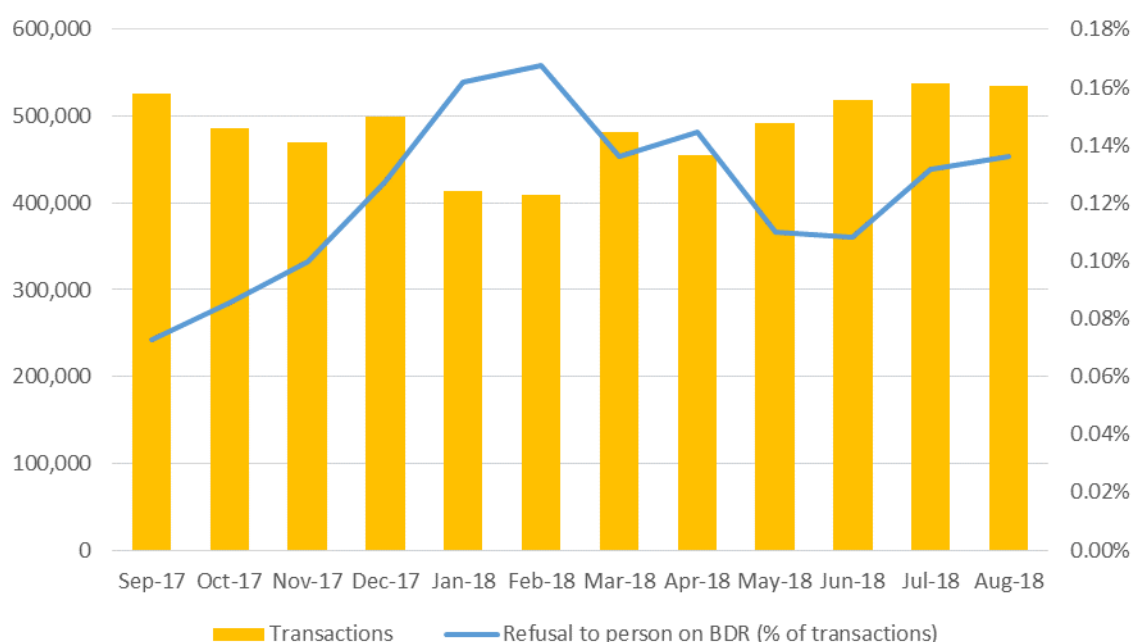
Source: Banned Drinker Register

* 8 orders were made and revoked for 2 individuals within short periods, these periods and counts have been excluded to remove bias.

3.2.3 BDR transactions

Figure 6 shows the number of alcohol transactions (both sale and no-sale transactions) recorded across the Territory each month (yellow bars), and the percentage of transactions that resulted in no sale because the person attempting to purchase the alcohol was on the BDR (blue line).

Figure 6. Number of monthly alcohol transactions and percentage refusals due to a person being on the BDR

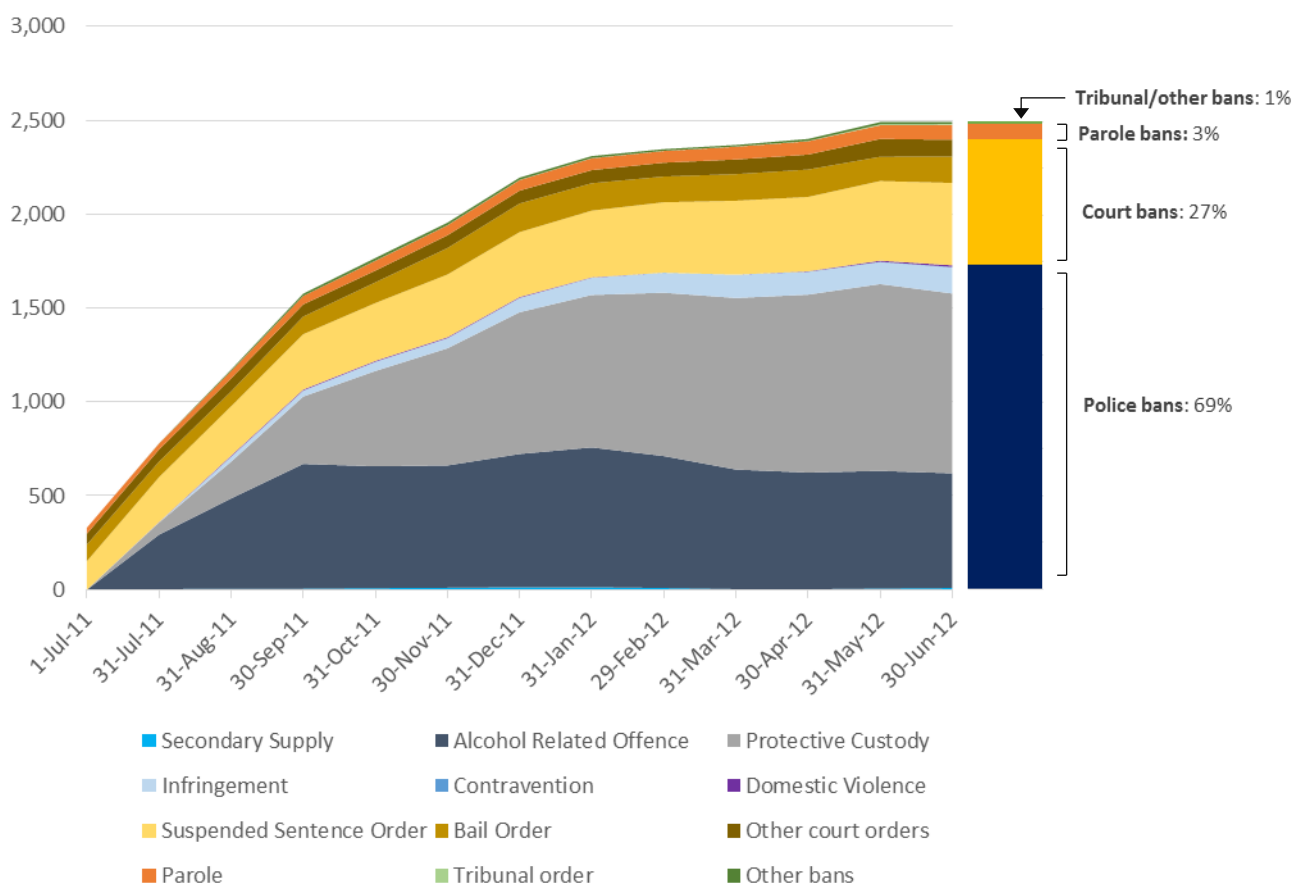


In the first year of the BDR, the number of alcohol transactions averaged approximately 485,000 per month, with 0.12% of transactions in the year resulting in refusal of sale due to the person being on the BDR. January and February had noticeably fewer transactions than other months but greater numbers of refused transactions than in either December or March: this resulted in the high percentages of refused transactions in those months.

3.2.4 Comparison with the previous BDR

Figure 7 shows the growth in people on the previous BDR by ban type in the first year of implementation (1 July 2011 through 30 June 2012). There were 2,491 people on the previous BDR on 30 June 2012. As with the current BDR, Police bans were the most frequent reason for people being on the previous BDR, followed by court and parole bans.

Figure 7. Number of people on previous BDR by most recently issued ban (end of month snapshots)



The 3,682 individuals on the current BDR on 31 August 2018 represented nearly 48% more individuals than were on the previous BDR after the first year. While the previous BDR appeared to be stabilising in terms of numbers after a year, the number on the current BDR is still increasing (Figure 2). The current BDR also has a larger percentage of people on non-justice bans (self-referrals or authorised person referrals where the person has not triggered a ban in the justice system).

Figure 8 shows the number of persons on the current and previous BDR after 12 months by sex and Aboriginal status. Relative to the previous BDR, the current BDR has a greater percentage of females (27.9% versus 23.6% previously) and non-Aboriginal people (12.1% versus 9.3% previously) on alcohol bans.

Figure 8. Persons on the new and old BDR by sex and Aboriginal status

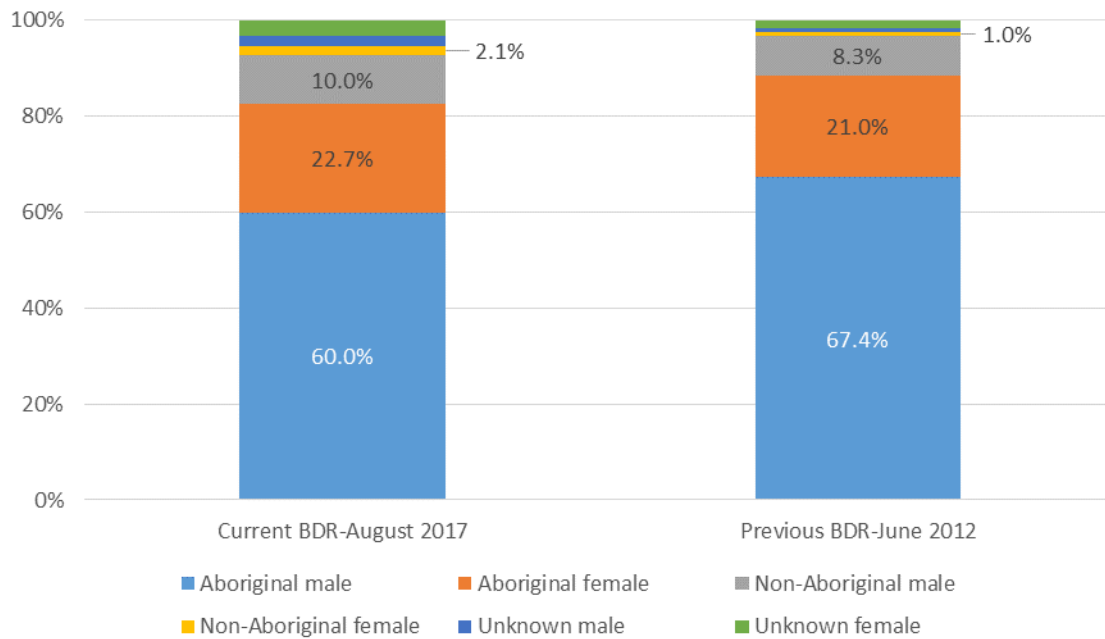
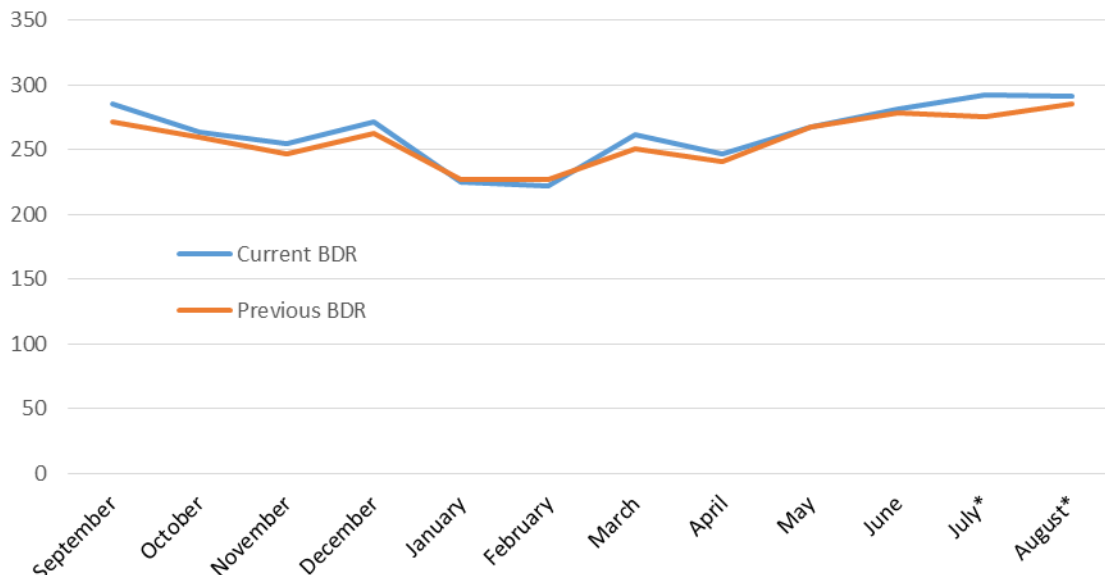


Figure 9 shows the number of transactions per 100 adults aged 18 and over in the population for the current and previous BDRs by calendar month. As the current BDR started in September and the previous BDR in July, the months of July and August for the previous BDR have been placed at the end of the series to align the months with the current BDR. The number of per-capita transactions is remarkably consistent in each calendar month, despite there being six years between the two BDRs. The calculation of transactions per 100 adults uses the December 2017 Estimated Resident Population for the current BDR and the December 2011 population for the previous BDR.

Figure 9. Number of transactions per 100 adults by calendar month

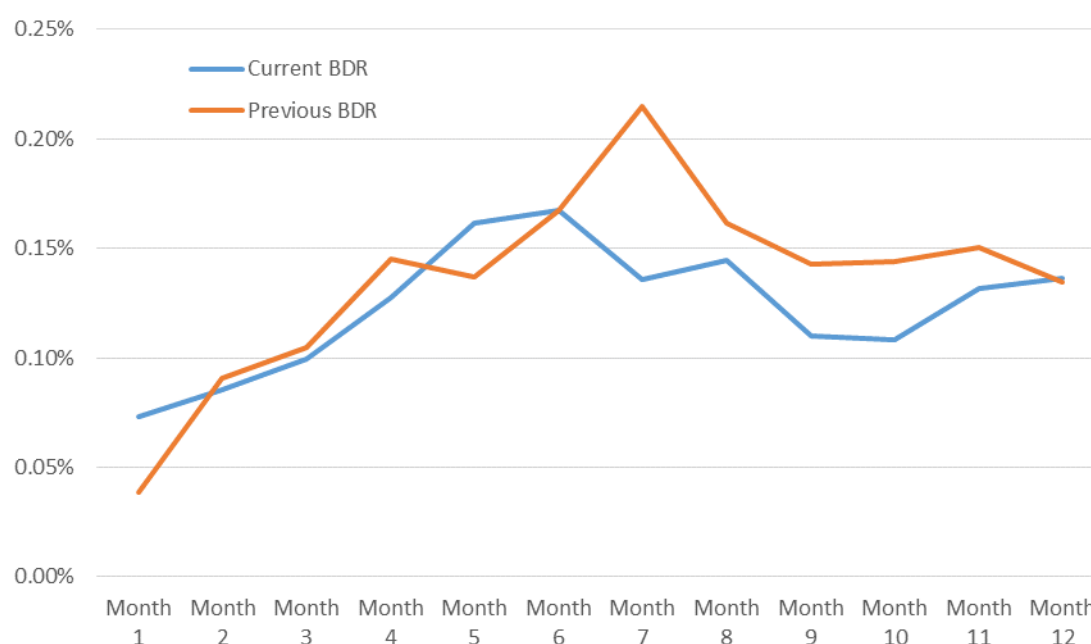


*Note that the months of July and August occurred prior to September for the previous BDR but are shown after June here for comparative purposes

Figure 10 shows the percentage of transactions resulting in no sale due to a person being on the BDR by month of implementation. The numbers are similar in value and pattern, though not as identical as per-capita transactions, when months post implementation are compared. The current BDR

averaged 0.12% of transactions refused over the year while the previous BDR averaged 0.14%, with the percentages of transactions resulting in refusals peaking in the sixth and seventh month of implementation before dropping back.

Figure 10. Percentage of monthly transactions refused due to a person being on the BDR



3.2.5 Types of Individuals on the BDR

Latent class analysis was used to identify similarities in the types of alcohol-related behaviours that banned drinkers showed both before and after going on the BDR. The first analysis was undertaken to identify groups of banned drinkers with similar patterns of alcohol-related contact with the justice system in the year *prior* to going on the BDR. This sample consisted of 6,234 individuals who had received one or more valid justice system bans (bans issued by the NT Police, courts, or Parole Board¹) by 31 August 2018.

The second analysis was undertaken to characterize classes of behaviour based on justice system contacts in the follow-up period *after* going on the BDR. This sample consisted of 3,408 individuals who had received one or more valid justice system bans *and* who had spent at least 180 days in the community (e.g. not in custody) after being banned, by 31 August 2018. This criteria meant that all individuals in the second analysis had at least six months of follow-up after going on the BDR during which alcohol-related contact with the justice system could occur (i.e. they were not prevented from drinking by being in custody for the entire follow-up period). As a result, the classes identified may not be representative of all banned drinkers, as those who were prevented from having alcohol-related contact with the justice system due to a significant period in custody are excluded.

Four indicators of justice system contact (alcohol-related protective custody episodes, infringements, apprehensions, and time in prison) were included in both analyses. The resulting groups were described based on the criminal or non-criminal nature of the justice system contacts as this is where the most distinctive differences among groups were found. Infringements (given for minor offences

¹ See *bans* in the Terminology section. Banned drinkers on a BDR Registrar ban who received no additional valid police, court, or parole bans were excluded from this analysis.

such as consuming liquor in a regulated place, which do not require an appearance in court) were included in the non-criminal category rather than the criminal category (which involved more serious offences). More information on the latent class method is given in Appendix 1.

3.2.5.1 *Alcohol-related justice system contacts before going on the BDR*

The analysis of alcohol-related contacts in the year prior to going on the BDR identified four groups from the data. Group 1 was characterised by drinkers who had strong associations with non-criminal events (protective custody episodes and infringement) that occurred mostly at a low to moderate (but on occasion high) frequency. Individuals in this group, representing 22.8% of banned drinkers, also had a very low frequency of alcohol-related apprehensions and a near-zero probability of spending time in prison in the year before going on the BDR.

Group 2 had a much smaller membership (10.7%) than Group 1 and was characterised by individuals with a low to moderate frequency of both criminal and non-criminal events prior to the BDR, with the addition of a time spent in prison. Individuals in this group often had one or more periods of time in custody before the BDR, with criminal and non-criminal alcohol-related events occurring outside of these custodial periods.

Group 3, which consisted of 20.3% of the sample, had very low probabilities of infringement and protective custody events and a moderate probability of apprehension. In the year prior to going on the BDR, most of these individuals spent time in prison: many individuals in this group are on parole or court bans, often for alcohol-related offending that happened more than a year prior to the implementation of the BDR.

Group 4 made up 46.1% of the sample and showed extremely low probabilities of infringement and protective custody events, and a high probability of having a single alcohol-related apprehension. This group also had near a zero probability of spending time in prison during the year prior to going on the BDR. The key difference between Group 3 and Group 4 is the absence of periods in custody for banned drinkers in Group 4 - many individuals within Group 4 had only a single alcohol-related apprehension in the year before going on the BDR (this being the event that put them on the BDR).

Figure 11 presents the mean frequency of events for each of these groups and shows that each group is characterised by a distinct pattern of alcohol-related events in the prior year. For instance, two groups (Group 1 and Group 2) averaged a low to moderate frequency of non-criminal events (infringement and protective custody episodes) prior to the BDR but Group 2 had the addition of moderate to high frequency criminal events (apprehensions) and time in prison, while Group 1 did not. The mean frequencies give an indication of the types of events that are important for each group.

Figure 11. Mean frequency of events before going on the BDR – four group model

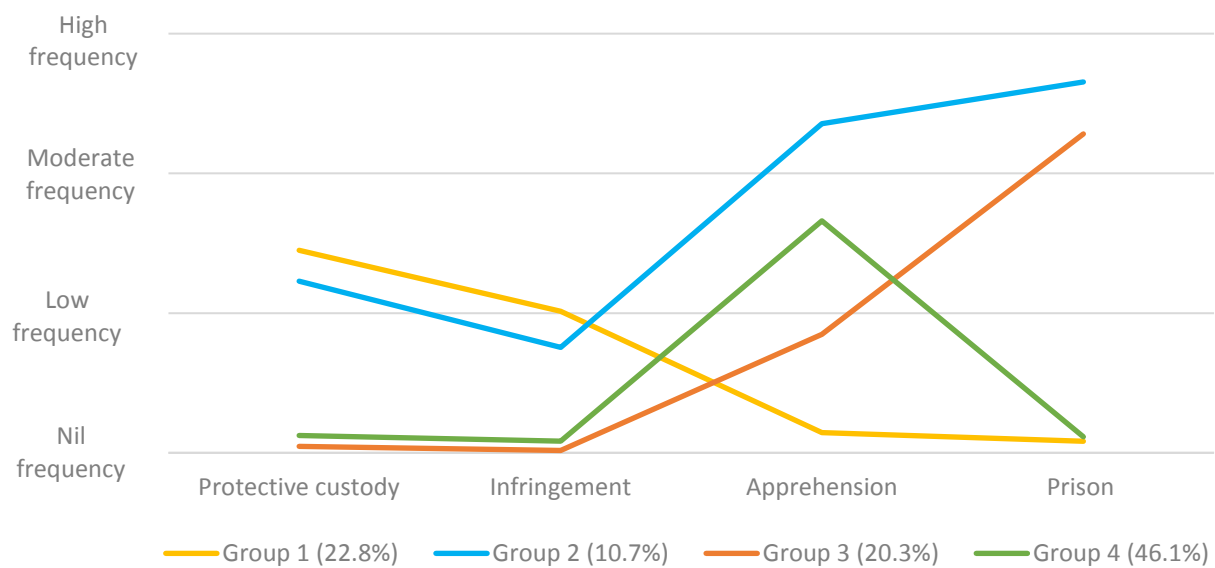
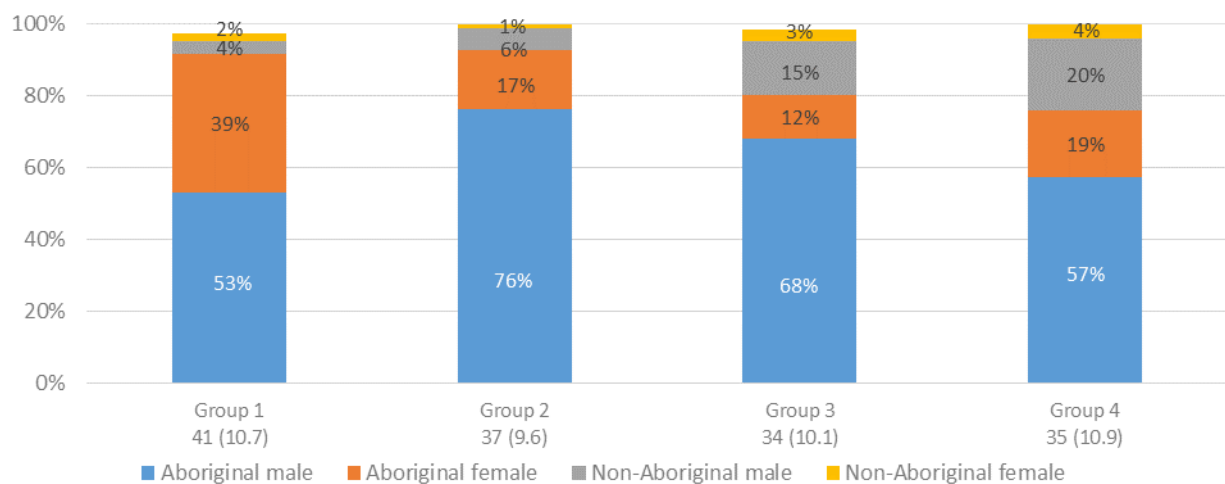


Figure 12 shows the percentage of persons in each group based on their Aboriginal status, gender, and age. The mean age of banned drinkers varied from 34 years ($SD = 9.7$) in Group 3, to 41 years ($SD = 10.3$) in Group 1. Group 4 also showed a relatively young mean age with banned drinkers in these groups being approximately 35 years old. In terms of Aboriginal status and gender, Group 4 had the highest proportion of non-Aboriginal people (24%) and Group 1 had the highest proportions of females (41%). The membership of all other groups was composed predominantly of Aboriginal males.

Figure 12. Sociodemographic profiles of the four groups of banned drinkers before BDR, including mean age and standard deviation



Note: Aboriginal status and/or gender was unknown or not recorded for a few individuals: bars for these individuals are not included in the chart. Percentages have also been rounded and may not sum exactly to 100%.

3.2.5.2 Alcohol-related justice system contacts after going on the BDR

Similar to the analysis of behaviours before the BDR, four distinct groups were identified in the analysis of alcohol-related events in individuals' follow-up period after the BDR. Similar to the previous latent class analysis, each group is characterised by a distinct pattern in justice system behaviours.

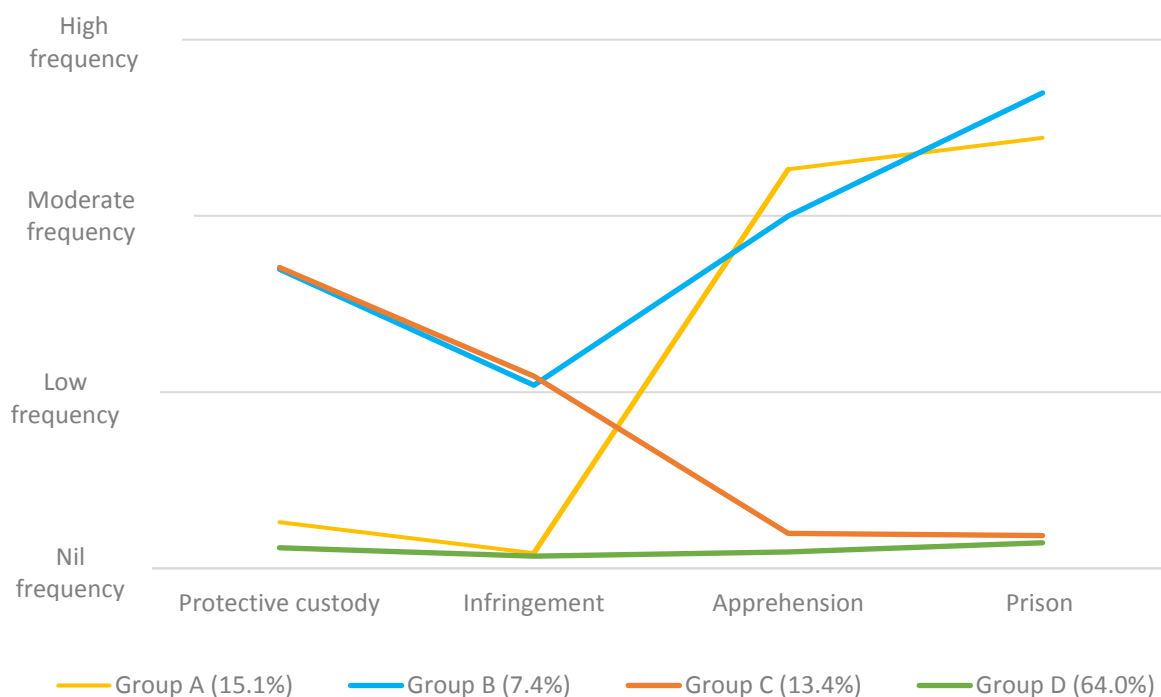
Group A represented 15.1% of banned drinkers and was characterised by individuals who, after going on the BDR, had strong associations with criminal events (apprehensions and prison) and weak associations with non-criminal events (protective custody and infringements). In comparison to the group who had predominantly criminal events and periods in custody before the BDR (i.e. Group 3), however, this response pattern indicated a slightly more frequent involvement in alcohol-related criminal events (many individuals in this group had two or more alcohol-related apprehensions).

Group B, with 7.4% of banned drinkers, also had a moderate to high frequency of apprehensions and time in prison after the BDR, but these individuals were also characterised by a low to moderate frequency of protective custody episodes and infringement events. This pattern of response is very similar to Group 2 (events prior to the BDR) with a moderate involvement in both criminal and non-criminal events.

Group C (13.4% of banned drinkers) showed an almost nil probability of having an apprehension after going on the BDR with majority also spending this period in the community, rather than custody. Similar to Group 1 before the BDR, these individuals had predominantly non-criminal events (infringements and protective custody episodes), but compared to Group 1, the non-criminal events of Group C occurred at a lower relative frequency.

Group D, which made up almost two-thirds of drinkers (64%) had almost no involvement in either criminal or non-criminal events after going on the BDR. The mean frequency of events occurring after the BDR for each of these groups is presented in Figure 13.

Figure 13. Mean frequency of events after going on the BDR – four group model



The mean age of banned drinkers had a lower end of 34 years ($SD = 9.8$) in Group A, up to a higher end of 43 years ($SD = 10.2$) in Group C (see Figure 14). The highest proportion of non-Aboriginal people (22%) was observed for Group D and the highest proportion of females was observed for Group C (44%). Individuals in Groups A and B were predominantly Aboriginal males.

Figure 14. Sociodemographic profiles of the four groups of banned drinkers, including mean age and standard deviation

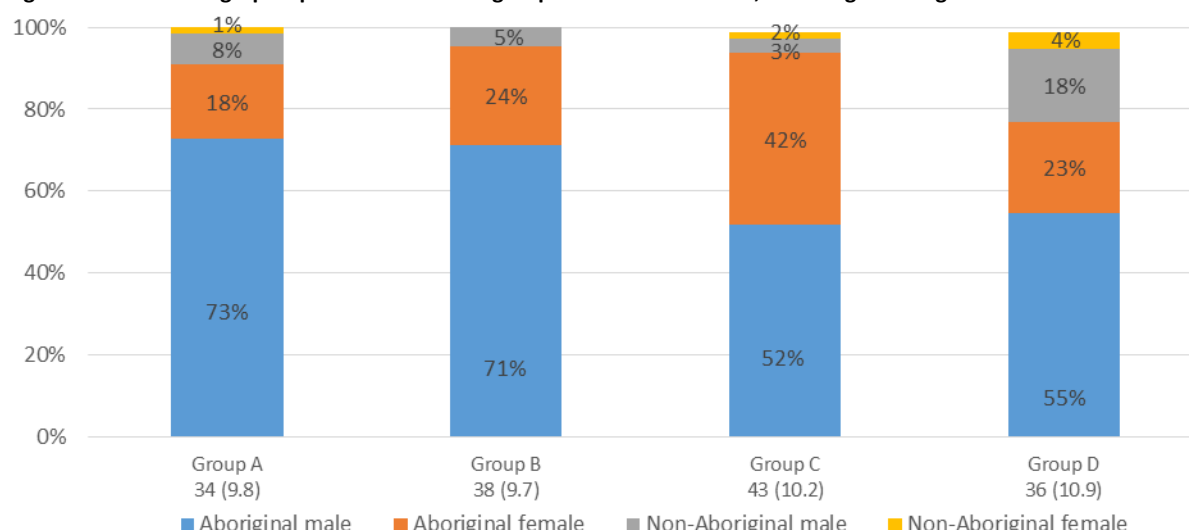
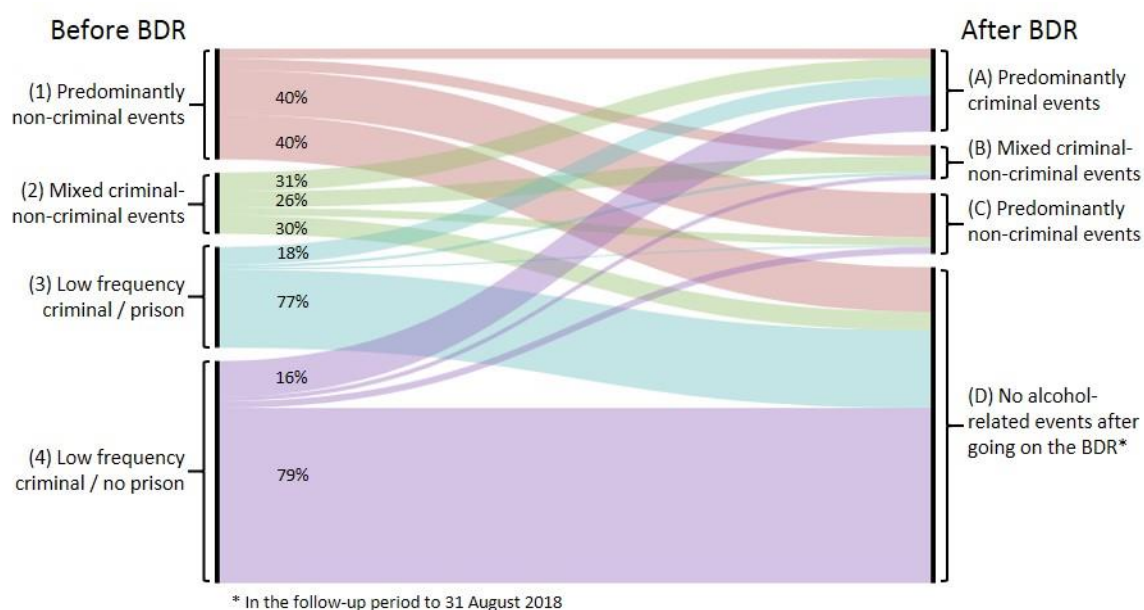


Figure 15 shows the relationship between the groups based on justice system contact in the year before the BDR (Groups 1-4) and the groups based on contact in the follow-up period after the BDR (Groups A-D). The coloured ribbons, which are read from left to right, represent the movement of individuals who were in both analyses between the groups. As above, individuals with less than six months of follow up time in the community, after going on the BDR, were excluded.

Figure 15. Relationships² between banned drinkers' patterns of alcohol-related events in the periods before and after the BDR



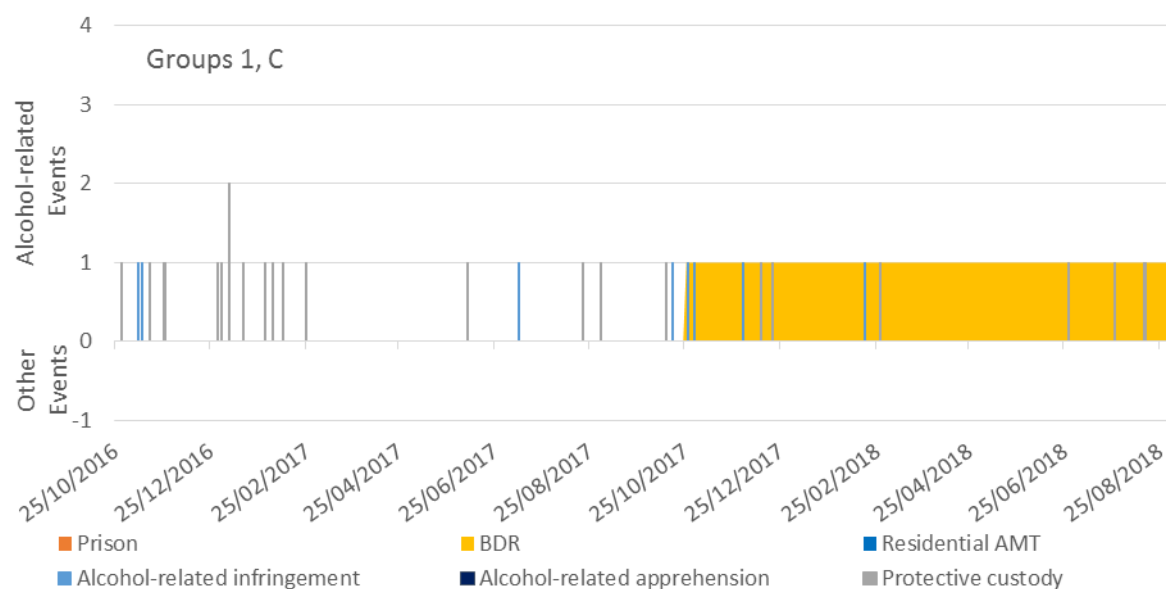
Most banned drinkers who had predominantly non-criminal events prior to the BDR (Group 1) continued to either appear in the justice system for similar types of non-criminal events (40% moved to Group C), or had no further alcohol-related contacts (40% moved to Group D) in the period after the BDR. This is a promising outcome as it suggests that relatively few of these individuals escalated in their frequency and type of contacts after going on the BDR (and as noted earlier, some individuals

² Chart created using RAWGraphs application (DensityDesign Lab and Calibro), <https://rawgraphs.io/>.

who spent a significant portion of their follow-up period in custody were excluded from the analysis). Without corroborating information for banned drinkers from other sources (e.g. health records), it cannot be assumed that the individuals with no further contact are no longer involved in harmful drinking. While this may be the case for some, it is possible that others have either left the Territory or relocated to a place where they are less likely to come into contact with the justice system for alcohol-related events.

Figure 16 and Figure 17 show profiles of individuals who were in Group 1 based on their behaviour prior to going on the BDR (predominantly non-criminal events) and who were in Group C (predominantly non-criminal events but at a lower rate, Figure 16) or Group D (no alcohol-related events, Figure 17) based on their justice-system contacts after going on the BDR. Each profile shows the justice system events in the year before and after the person went on the BDR, up to 31 August 2018. Alcohol-related events (alcohol-related apprehensions, protective custody episodes, infringements and positive alcohol tests) appear as vertical lines above the axis, and other events (residential alcohol mandatory treatment, prison and negative alcohol tests) appear below the axis. Time on the BDR is shown as a yellow bar above the axis.

Figure 16. Profile of a person with predominantly non-criminal justice contacts before and after going on the BDR



Groups 1, D

Alcohol-related Events

Other Events

28/11/2016 28/01/2017 28/03/2017 28/05/2017 28/07/2017 28/09/2017 28/11/2017 28/01/2018 28/03/2018 28/05/2018 28/07/2018

Prison BDR Residential AMT Alcohol-related infringement Alcohol-related apprehension Protective custody

Figure 18. Profile of a person with mixed criminal and non-criminal contact before going on the BDR, and no contact afterwards

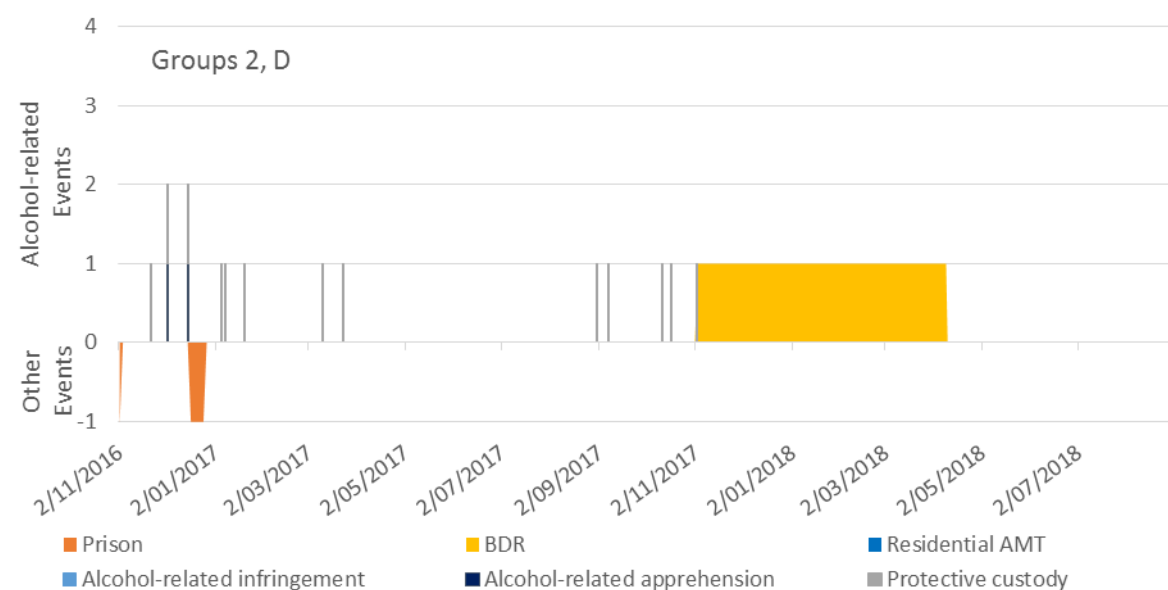
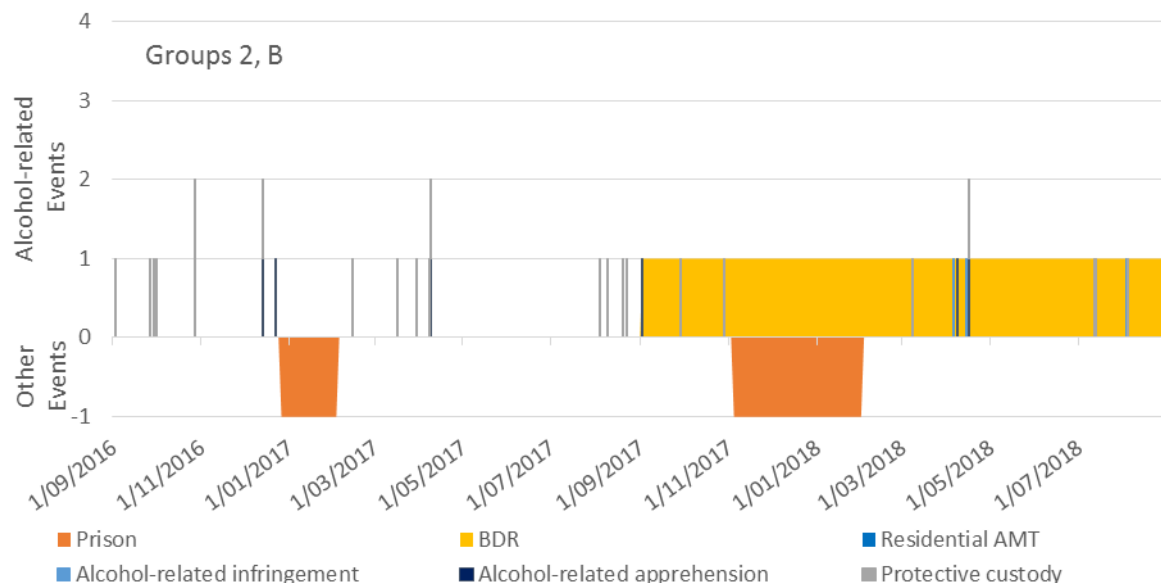


Figure 19. Profile of a person with mixed criminal and non-criminal contacts before and after going on the BDR



Many of the banned drinkers in Group 3 (low frequency criminal events/prison) came on to the BDR for a parole or court ban as a result of alcohol-related offending that occurred more than a year prior to the implementation of the BDR. For this reason, it is not surprising that 77% of this group moved into Group D and had no further alcohol-related events after the BDR (see Figure 20). The other notable movement away from this group was the 16% of individuals who moved into Group A (predominantly criminal events). Considering the strong association that Group 3 had with time in custody prior to the BDR, this association is not unexpected. However, this was a much less frequent response for individuals in Group 3 than the move to Group D (no further events).

Figure 20. Profile of a person with no alcohol-related events in the year before or after going on the BDR

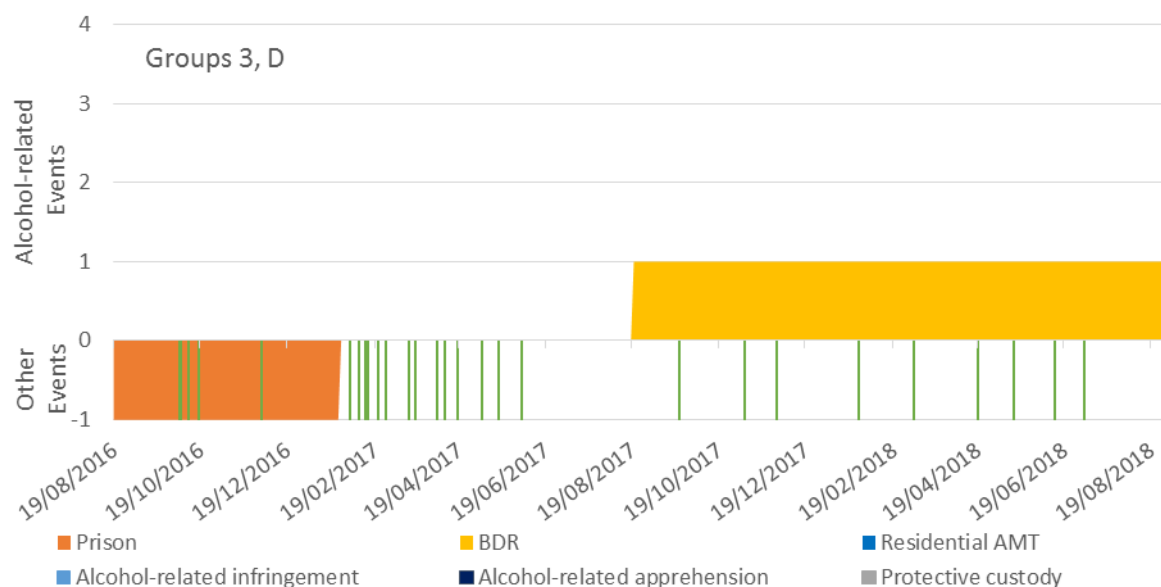
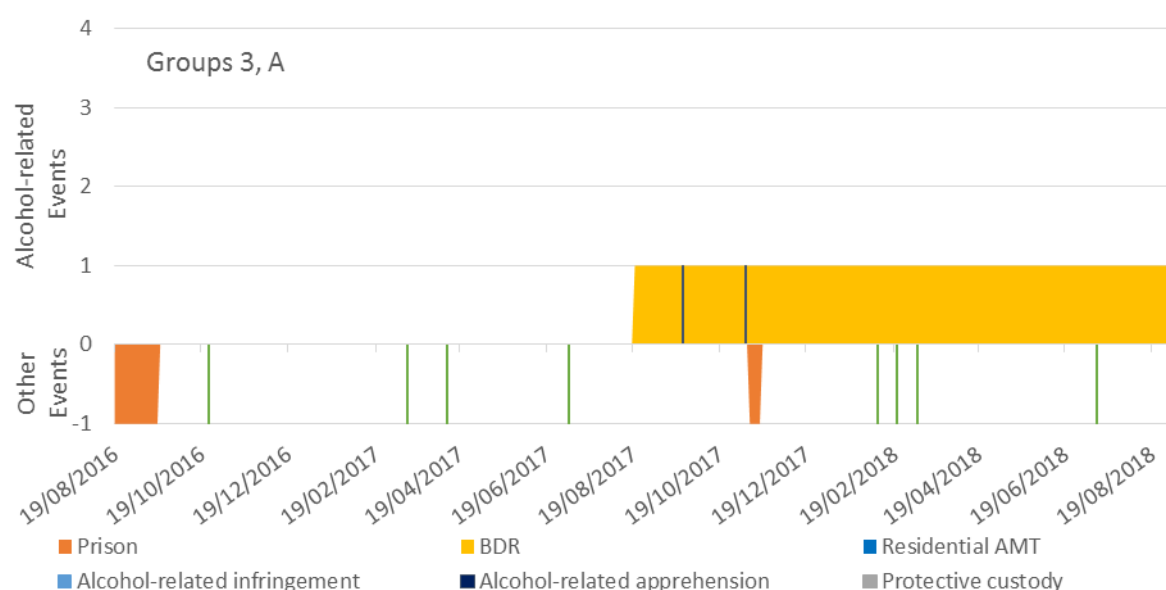
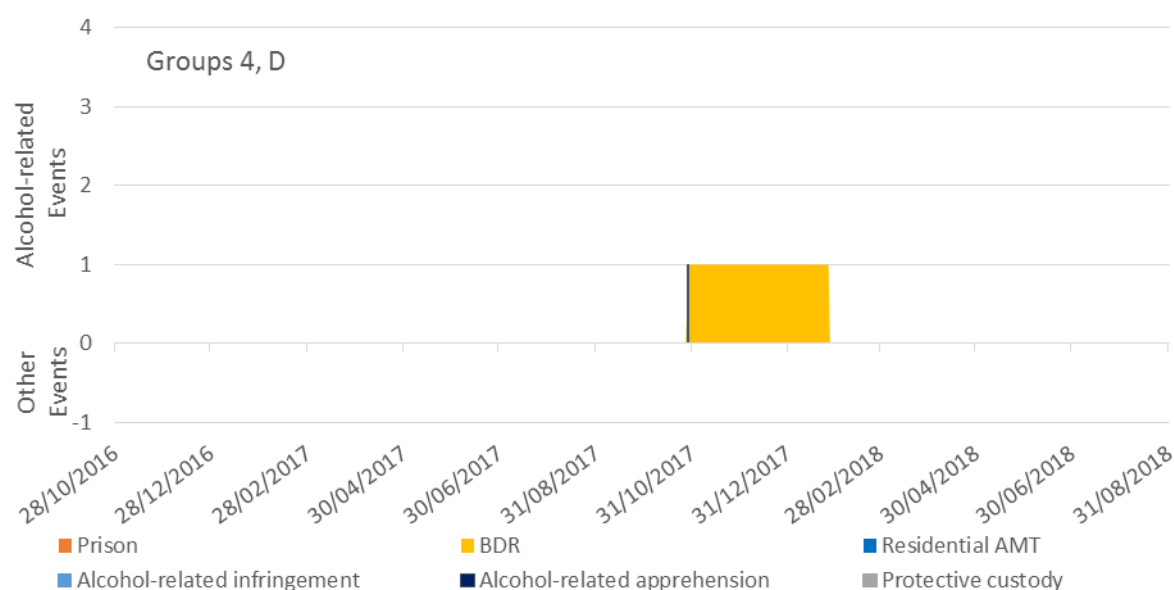


Figure 21. Profile of a person with no alcohol-related contacts in the year before going on the BDR and some criminal contact afterwards



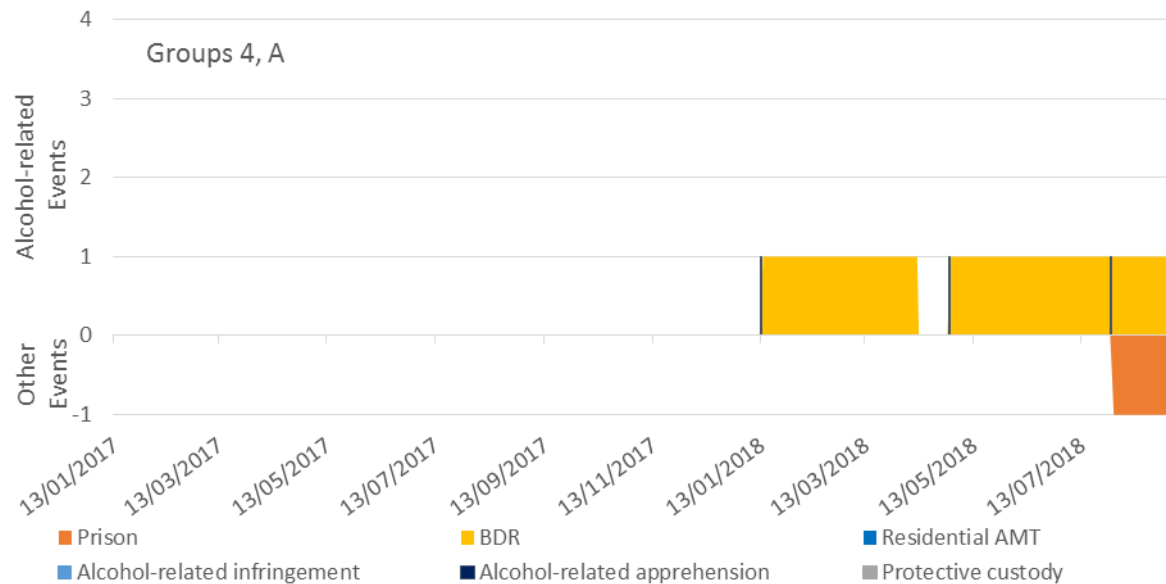
The largest movement between groups was observed for Group 4 (rare criminal events), where 79% of individuals showed no further alcohol-related events after going on the BDR (i.e. they moved to Group D—see Figure 22). However, this must be interpreted carefully. The analysis of prior-year justice system contacts showed that approximately 66% of banned drinkers had very few events in the year before going on the BDR. Most either spent the majority of the year prior to going on the BDR in prison, or had a single apprehension event. As such, the large numbers of individuals on this path should not be taken as indicative of individuals who have discontinued their alcohol-related contacts with the justice system entirely: rather, it is likely a continuation of the very limited alcohol-related interactions that these individuals have with the justice system. In addition, some individuals in Group D may have gone to prison as a result of the apprehension that put them on the BDR (which removed the opportunity for further events), but as individuals with less than six months in the community were excluded from this analysis, this path is not reflected in Figure 15.

Figure 22. Profile of a person with a single apprehension event in the year before going on the BDR and no events afterwards



The other significant movement from Group 4 was into Group A (16% of the group), where individuals with no contact in the year before other than the event that put them on the BDR had some criminal contacts after going on the BDR (Figure 23).

Figure 23. Profile of a person with a single apprehension event in the year before going on the BDR and a few criminal events afterwards



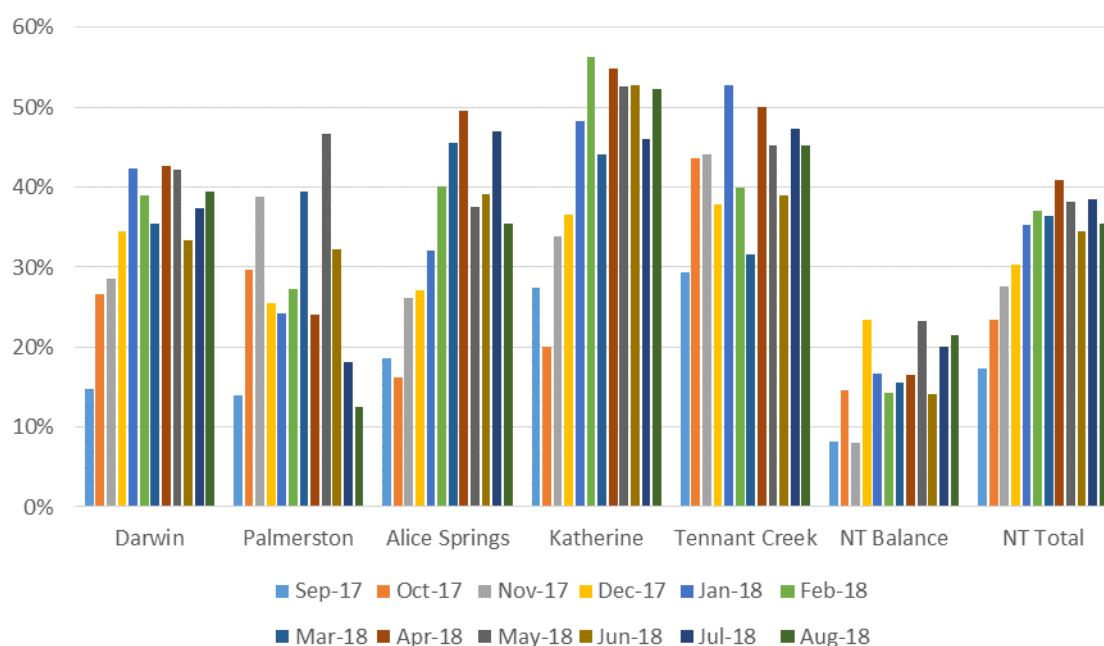
Evaluation question 2: Does the BDR adequately target people misusing alcohol?

The degree to which the BDR results in population-wide changes within regions and at a Territory level is likely to depend at least partially on the percentages of the target populations who are being affected by the policy at the time of alcohol misuse. The following analyses show the percentage of individuals who were on the BDR (and thus prevented from purchasing takeaway alcohol) at the time when they had events capable of triggering a police ban.

Alcohol-related offences

Figure 24 shows the percentage of adults apprehended for an alcohol-related offence who were on the BDR at the time of apprehension. Individuals were counted once for each date on which they were apprehended, regardless of the number of cases and apprehension reports involved.

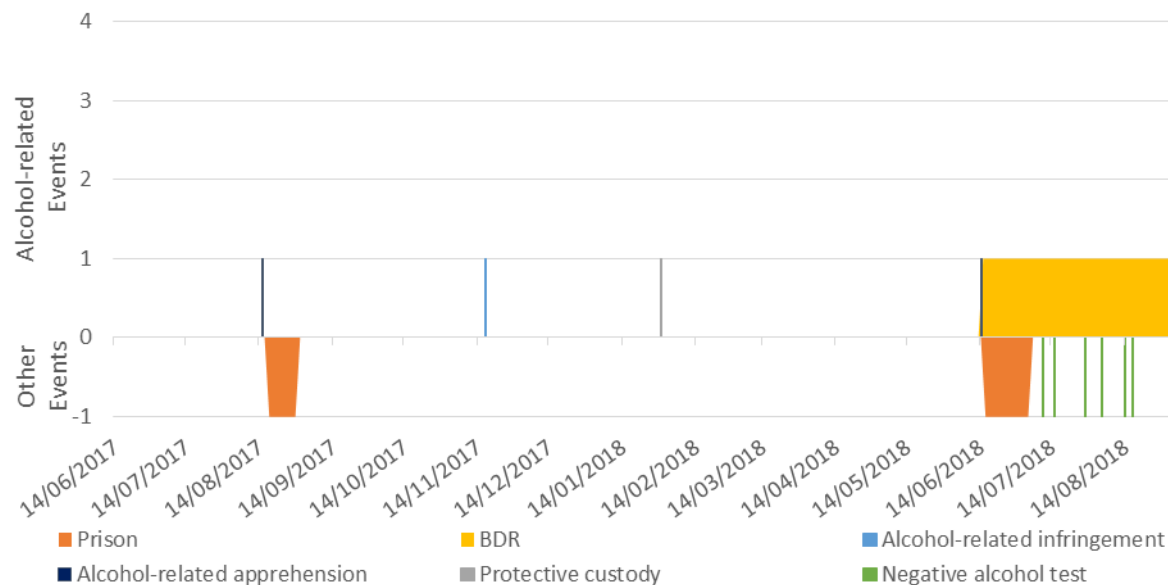
Figure 24. Percentage of adults apprehended for an alcohol-related offence who were on the BDR at the time



Territory-wide, 33% of adults apprehended for an alcohol-related offence during the first year of the BDR operation were on the BDR at the time of apprehension, with this percentage increasing during the first several months of operation. On a regional basis the percentage was highest in Katherine (averaging 44% across the year) and Tennant Creek (42%), and lowest in the NT Balance, where only 16% of individuals apprehended for alcohol-related offences were on the BDR at the time. Averages for other regions were 35% for Darwin, 28% for Palmerston, and 35% for Alice Springs.

An analysis of records for people who weren't on the BDR when they were apprehended for an alcohol-related offence showed that 94% were receiving their first Police ban—either they had no previous trigger events since the beginning of the BDR, or the previous events had not resulted in a Police ban (for instance, a person might have been apprehended for an offence that took place prior to 1 September 2017, might have only recently turned 18, or might not have received at least three protective custody episodes and/or infringement notices). Figure 25 shows the profile for such a person. In this case the individual had one infringement and one protective custody episode after the BDR began and finally went on the BDR in June 2018 for an alcohol-related apprehension. Even in August 2018, 89% of people apprehended for an alcohol-related offence and not on the BDR were receiving their first Police ban.

Figure 25. Profile of a person whose first ban was triggered by an alcohol-related apprehension in June 2018



Other individuals have periods between alcohol-related apprehensions that are longer than a 3-month ban. Figure 26 shows the profile of a person who received three bans for alcohol-related apprehensions in the first year of the BDR. After an apprehension on 31 August 2017, for which a prison term was completed, the person was immediately apprehended again and went on the BDR. Once that ban was finished, the individual had two protective custody episodes, which were not enough to trigger a new ban. An apprehension on 4 April 2018 initiated a second 3-month ban, and an apprehension on 27 August 2018 initiated a third 3-month ban.

Figure 26. Profile of a person apprehended for an alcohol-related offence who had completed a previous ban

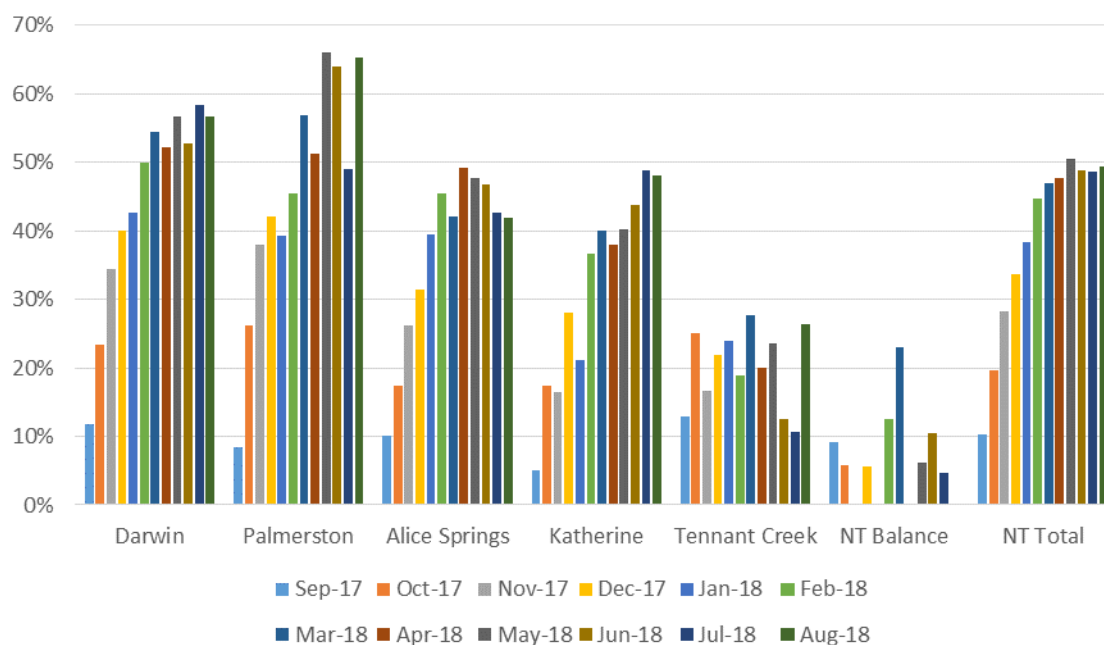


Given that many of the individuals with a single apprehension that put them on the BDR go on to have no further alcohol-related contact with the justice system for a substantial period of time (Figure 18), and that others with repeated apprehensions may finish out a 3-month ban before their next apprehension (Figure 26), consideration could be given to modifying the number of triggers and the lengths of bans associated with alcohol-related apprehensions.

Protective custody

Figure 27 shows the percentage of adults taken into protective custody who were on the BDR at the time of the episode. Individuals taken into protective custody on more than one occasion are counted for each occasion.

Figure 27. Percentage of adults taken into protective custody who were on the BDR at the time

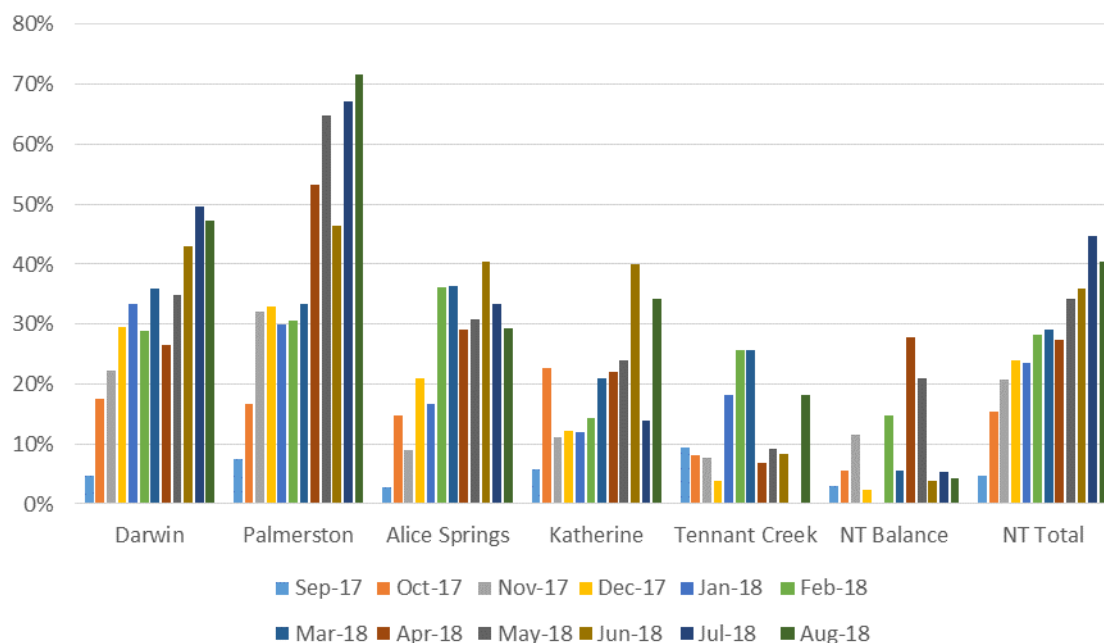


Across the Territory, 38% of adults taken into alcohol-related protective custody were already on the BDR at the time of their reception, with numbers close to 50% since April 2018. Of the records checked for those who were not on the BDR when taken into protective custody, approximately 80% had not yet met the combination of three protective custodies or infringements to trigger a ban, and approximately 14% were meeting the trigger for the first time. A small number of people not on the BDR when taken into protective custody had finished a previous ban.

Infringement notices

Figure 28 shows the percentage of adults issued with an alcohol-related infringement who were on the BDR at the time. Individuals given more than one infringement notice during the period were counted for each notice. Territory-wide, approximately 25% of adults given an alcohol-related infringement were on the BDR at the time of infringement, with 45% in July 2018.

Figure 28. Percentage of adults issued with an alcohol-related infringement who were on the BDR at the time

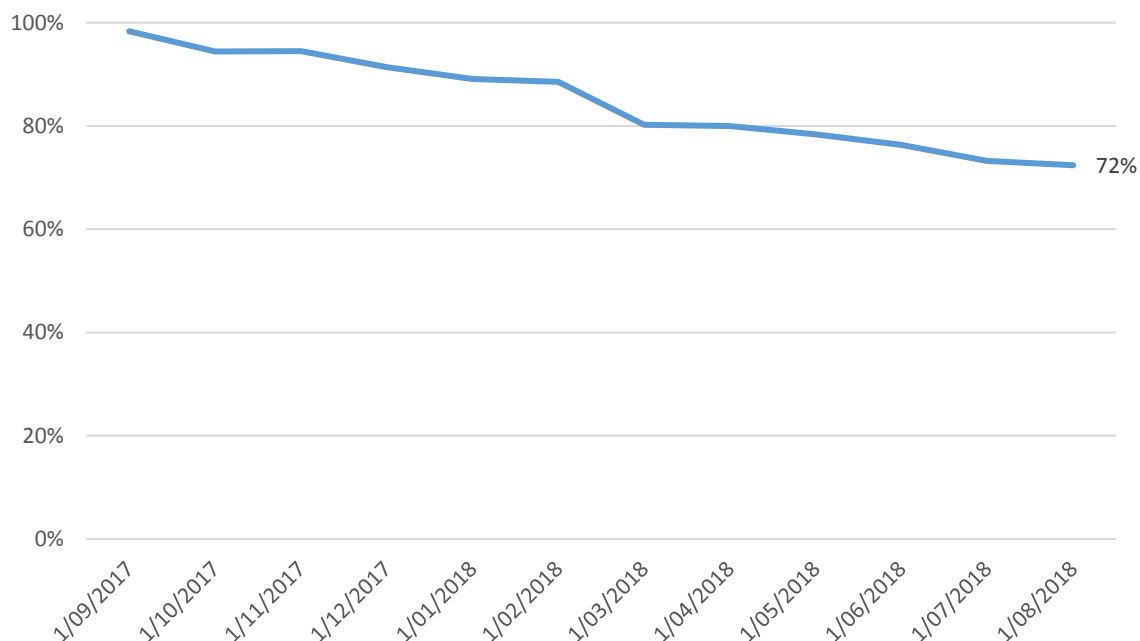


Of the individuals not on the BDR at the time of receiving an infringement, 77% had not previously amassed enough alcohol-related events to trigger a ban. For another 9% of these individuals, infringements against the *Liquor Act* had not been flagged as alcohol-related—in most cases these were not counted as trigger events by the system.

For a further 10% of the individuals not on the BDR when they were infringed, one or more of the person's previous infringement notices had been issued electronically. Initially, such infringements were out of scope of the BDR process and so they did not trigger bans. A system update implemented on 23 August 2018 resulted in electronic alcohol-related infringements triggering bans. This is likely responsible for the small increase in persons on the BDR due to infringements on 31 August 2018 (Figure 5). The impact of the delay in electronic infringements creating bans was relatively minor: of those individuals who had three or more trigger events (protective custody or alcohol-related infringements, including electronic) recorded by 31 August 2018 and who had an electronic infringement in the first three events (meaning that their entry onto the BDR would have been delayed), 95% were on the BDR by 31 August 2018.

Data for Police-issued bans were assessed as to whether a ban resulted in a person going on the BDR (as opposed to extending the person's period on the BDR) and if so, whether it was the person's first ban. Figure 29 shows the percentage of persons going on the BDR for Police-issued bans in each month who were on their first ban. After a year of implementation, 72% of the individuals going on the BDR for a Police ban were still going on for their first ban.

Figure 29. Percentage of persons going on the BDR for a Police-issued ban who were on their first ban



The percentages of the target populations who are on the BDR at the time they have an alcohol-related event in the justice system are still less than 50% after a year of implementation (Figure 24, Figure 27, and Figure 28). The high percentage of people going on the BDR for a Police ban who are on their first ban (Figure 29) suggests that the coverage of the target populations may continue to grow slowly. However, except for new arrivals in the Territory and persons turning 18 years of age, individuals who did not trigger a Police ban in the first few months of operation are likely to have a relatively low rate of alcohol-related appearances in the justice system, and so may not remain on the BDR for longer than an initial 3-month ban. If the low frequency of appearances in the justice system is the result of low-frequency harmful drinking, the current BDR ban length and trigger system may have a limited impact on such individuals. In the apprehension pathway particularly, it appears that many individuals finish a three-month ban prior to their next apprehension (Figure 26), and so there may always be a substantial proportion of people apprehended for alcohol-related offences who are not on the BDR.

3.3 Evaluation question 3: Has the BDR reduced the frequency of banned drinkers' contacts with the justice system?

3.3.1 Frequency of contact

Interrupted time series analysis³ was used to determine whether the frequency of banned drinkers' alcohol-related contacts with the criminal justice system changed after going on the BDR. For this analysis, individuals were only included if they had at least four days⁴ with alcohol-related events in the justice system (alcohol-related protective custody episodes, infringements, or apprehensions) in the year prior to going on the BDR. The sample was also restricted to individuals who went on the BDR in the first six months of operation (i.e. September 2017 through February 2018) and who had spent at least 21 consecutive days of their first ban in the community. These criteria ensured the following:

- all individuals in the sample would be able to show a response, in either a positive or negative direction, to the restrictions imposed by BDR;
- all individuals would have had at least three complete, consecutive weeks of their first ban during which they were in the community and unable to purchase takeaway alcohol (e.g. they did not spend the duration of their ban in custody);
- all individuals had at least six months of follow-up after going on the BDR during which changes in their alcohol-related contacts could be assessed (though not all of that time might be spent in the community).

The final sample consisted of 906 individuals, which represents 14.5% of all persons who received one or more valid justice system bans by 31 August 2018. These individuals had an average of 8.5 ($SD=5.8$) event days in the year prior to going on the BDR. The sample thus represents those on the BDR who appear in the justice system for alcohol-related events on a relatively frequent basis, and who did not spend the duration of their ban in custody. Other groups on the BDR include those with very infrequent alcohol-related apprehensions and those on parole bans, who may not have had any contact with the justice system in the year prior to going on the BDR. For those groups, no measurable reduction in the frequency of alcohol-related events in the justice system is necessarily expected (as their prior-year frequency is already extremely low), and a change in behaviour may only be apparent over a much longer term.

Sample characteristics

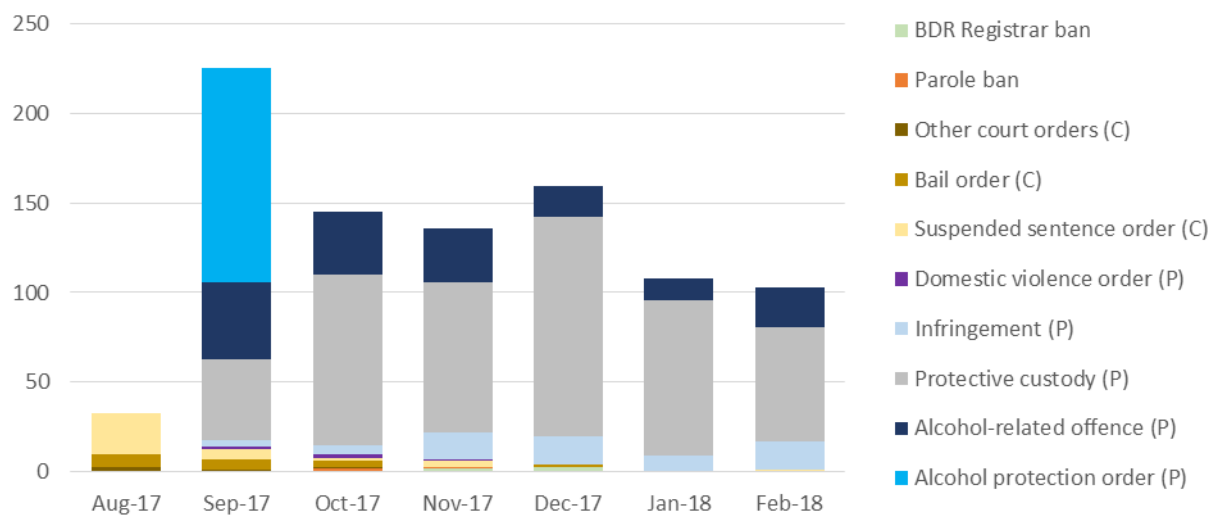
An analysis of first ban type, by month of entrance to the BDR⁵, showed that protective custody episodes were the most frequent reason for individuals in the sample going on the BDR in October 2017 through February 2018 (see Figure 30). The higher proportion of individuals going on for court-ordered bans in August 2017, and alcohol protection order bans in September 2017, reflected people whose details were pre-loaded onto the BDR in advance of full implementation.

³ For further details, see Appendix 2.

⁴ The number of event days is generally less than the number of events. This is because events of different types (i.e. apprehension and protective custody) which occurred on the same date were counted as a single event day.

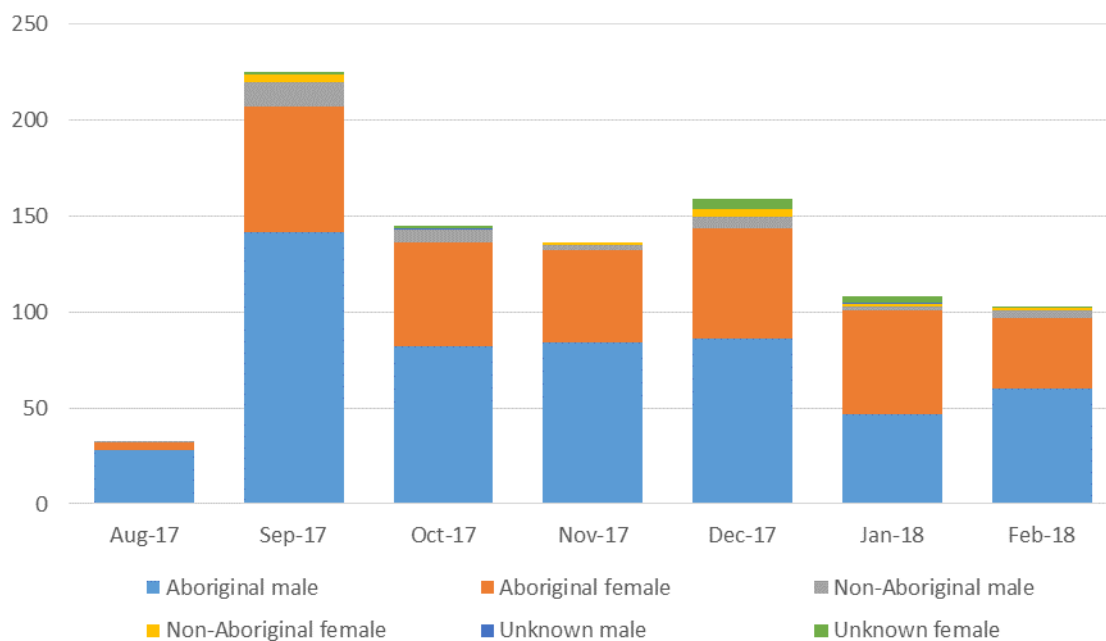
⁵ Month of entrance to the BDR refers to the first active ban date for the individual, regardless of how long that ban lasted or how many subsequent bans the individual has. A person is counted as an entrant in only one month.

Figure 30. Sample size by month and type of first active ban



As shown in Figure 31, individuals in the sample were predominantly Aboriginal males (58%), followed by Aboriginal females (35%). The mean age of individuals in the sample was 41 years ($SD=10.04$).

Figure 31. Sample size by month of first ban, gender and Aboriginal status



The rate of alcohol-related events before and after going on the BDR was assessed using the number of event days per 100 opportunity days. This was calculated as the number of individuals in the sample with an alcohol-related event on a given day (event days) divided by the number of individuals in the sample who were in the community, as opposed to custody, on that day and therefore had the opportunity to drink (opportunity days), multiplied by 100. As individuals differed in the date on which they went on the BDR, the x-axis values (time) were aligned from t-365 (a year before the person went on the BDR) to t0 (the date the person went on the BDR) to t365 (a year after the person went on the BDR). Individuals who had fewer than 365 days of follow-up time by 31 August 2018 were removed from the total opportunity days once they had reached this date which explains the noticeable

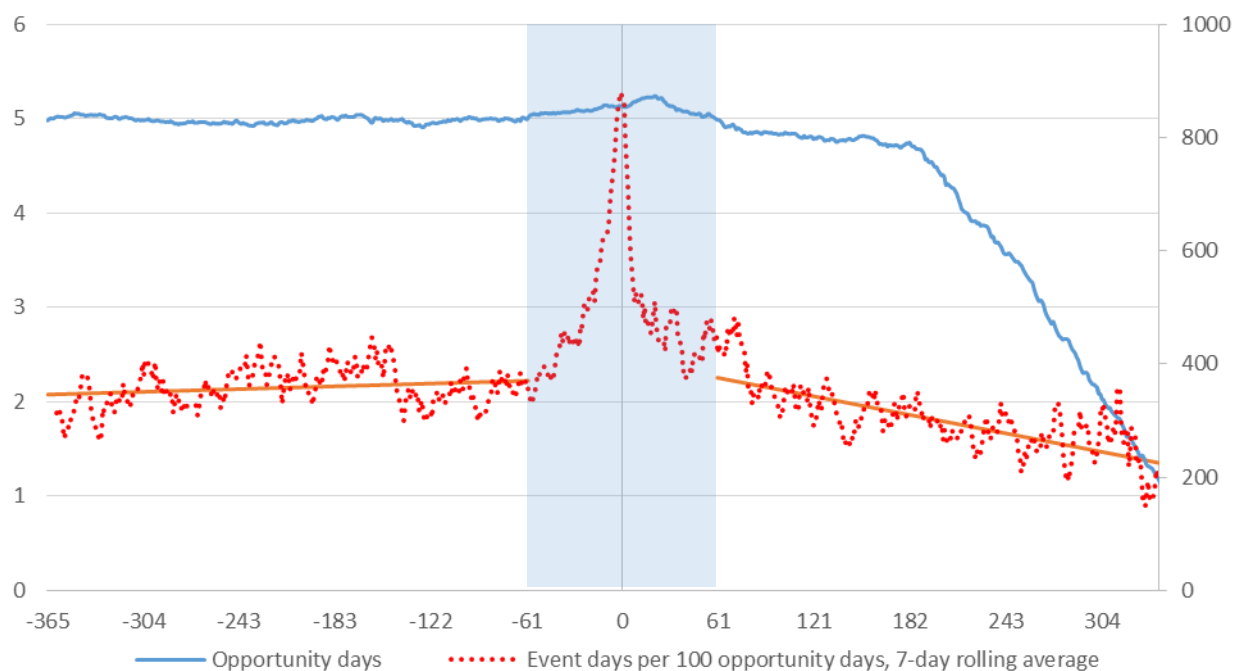
decrease in opportunity days after 183 days (six months). Further to this, the x-axis was truncated at 340 days given that opportunity days grew quite low after this point (<200) and the rate of event days per 100 opportunity days became quite volatile

To check whether individuals in the group were likely to have been present in the justice system for the entire year prior, a check was done of each individual's total prior year justice system contacts (i.e. all court appearances, apprehensions, infringements, police receptions). This indicated that majority ($n=901$) had justice system contacts more than one year prior to the date when they were issued their first ban. These individuals were assumed to have been in the Northern Territory for the entirety of the year prior to going on the BDR. In comparison, individuals who only first appeared in the Northern Territory justice system at some point during the year prior ($n=5$), were assumed to be new to the NT and taken out of the opportunity day count for all days prior to their first event day.

Sample response

Figure 329 shows the rate of event days per 100 opportunity days. The red dotted line shows the seven-day moving average⁶ (each point is the average of one complete week), the blue solid line reflects the number of opportunity days on each time point, and the orange solid line is the best-fitting straight line through the points excluding two months either side of t_0 where the trend is not linear (indicated by the section shaded in blue). Event days per 100 opportunity days are shown the left axis and the size of the sample in the community (opportunity days) is shown on the right axis.

Figure 32. Event days per 100 opportunity days and population size, relative to the date of first going on the BDR (t_0)



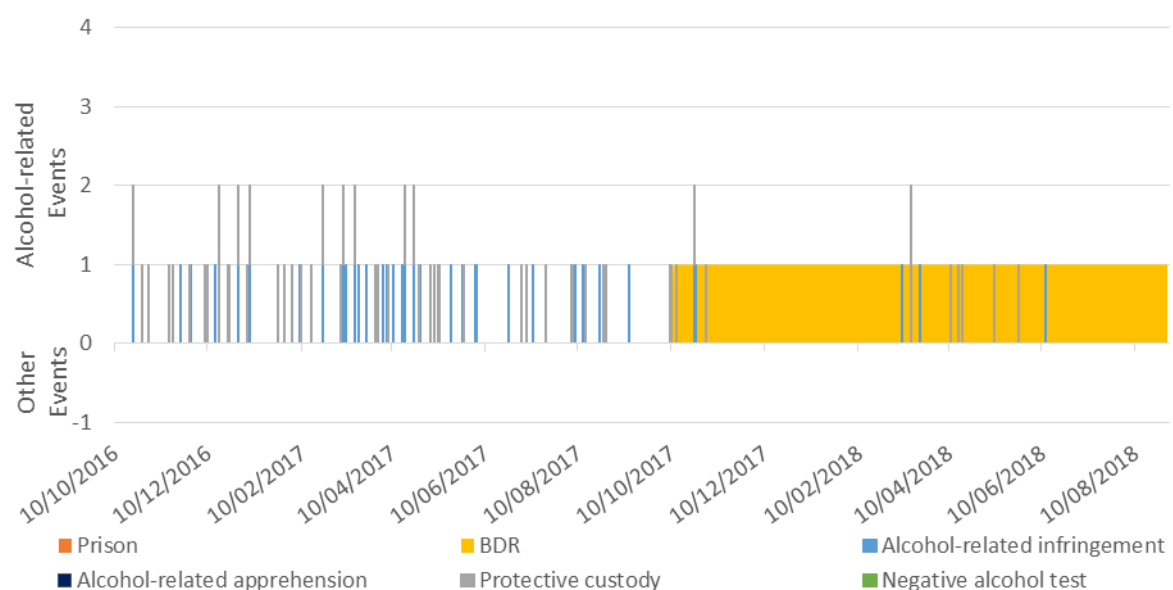
⁶ $t-1$ and t_0 were excluded from the moving average as they are outlier values – most individuals in the sample (with the exception of those who came on for a pre-loaded ban or a court ban) had an event either the day before or the day of their first ban commencing. Likewise, the sharp increase in the rolling average approaching t_0 is explained by trigger events occurring in the period of time immediately prior to an individual first going on the BDR (i.e. 62% of the sample went on for a protective custody or infringement ban which required an accumulation of three events). In some cases data entry occurred some days after the ban was issued; this also contributed to the increase in events prior to the date the person actually went on the BDR.

In the year prior to going on the BDR, the individuals in the sample averaged 2.15 event days per 100 opportunity days, excluding the period of 60 days immediately prior to t0. There was relatively little change in the slope of the line through these points. In contrast, while there was no immediate impact on the frequency of alcohol-related events after first going on the BDR, there was a statistically significant, gradual decline in the rate of individual's alcohol-related events after they went on the BDR. In the follow-up period between t61 and t340, the individuals in the sample averaged 1.80 event days per 100 opportunity days.

This analysis shows that for individuals with a moderate to high frequency of alcohol-related justice system contacts, the impact of a ban on future drinking behaviour is likely to be gradual rather than immediate, and suggests that the frequency of justice system contact with this group may drop further over time.

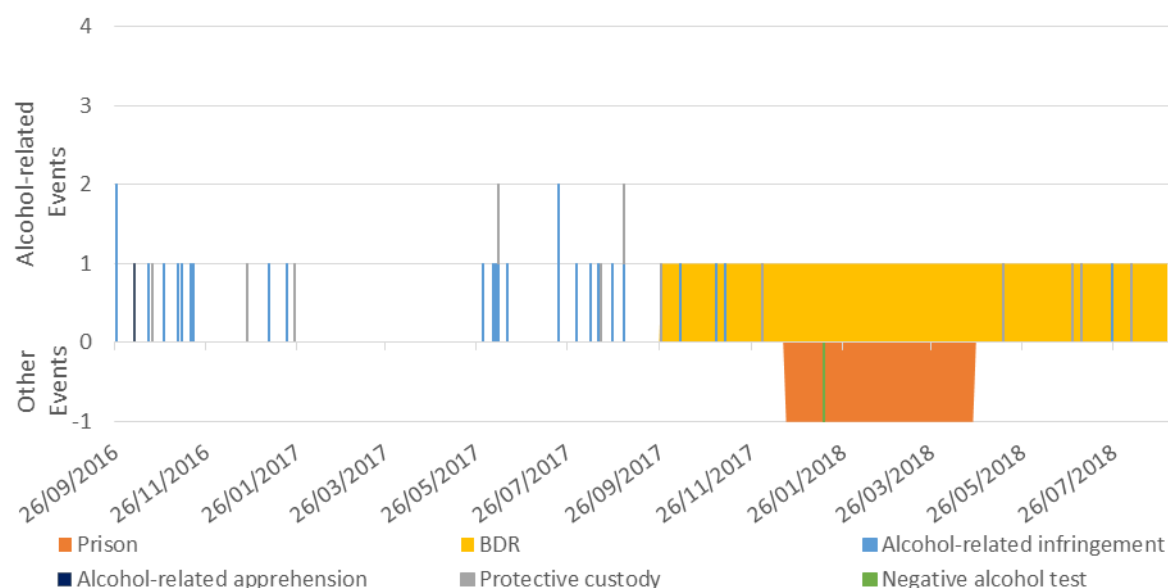
Figure 33 shows the profile of an individual in the group who had a very large number of protective custody episodes and infringement notices in the year prior to going on the BDR, with an average of 18.1 event days per 100 opportunity days. After being placed on the BDR, the individual initially continued to have frequent alcohol-related contact with the justice system before then showing a period with no contact. The second period of contact while on the BDR, although still involving numerous events, has approximately half the frequency of the year before. Across the whole follow-up period, the individual's frequency of alcohol-related contact with the justice system reduced to an average of 4.3 event days per 100 opportunity days. The two periods of no contact with the justice system both represent a statistically significant number of days with no alcohol-related appearances in the justice system, relative to the frequency of events in the previous year.

Figure 33. Individual profile: reduced contact with the justice system (1)



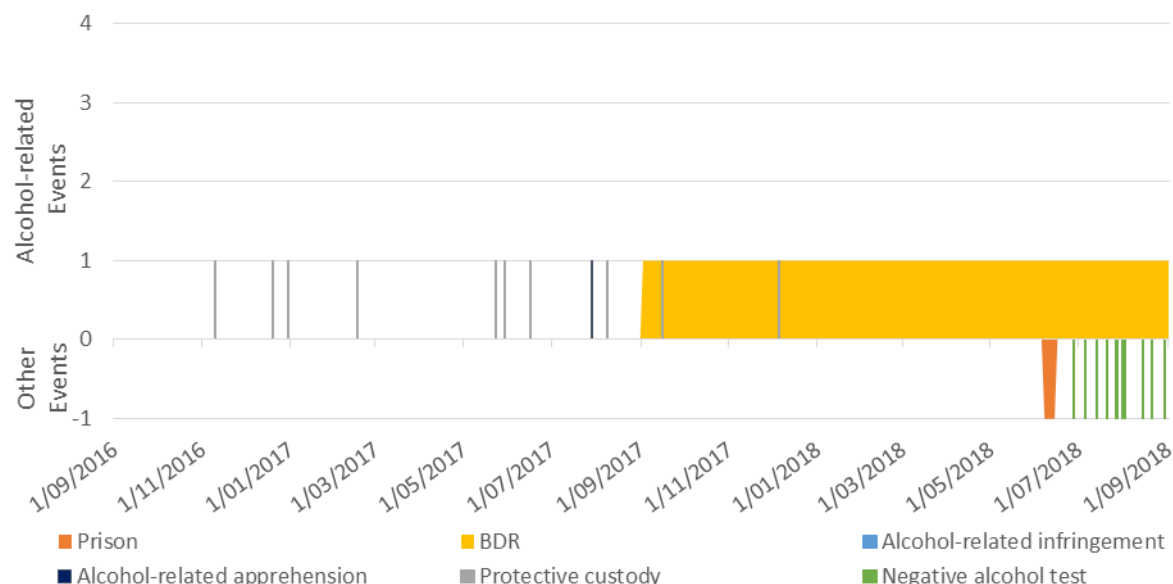
The individual in Figure 34 also shows a pattern of reduced frequency, though without significant periods of no contact, having 7.1 events per 100 opportunity days in the year before going on the BDR and 4.7 event days per 100 opportunity days after going on the BDR.

Figure 34. Individual profile: reduced contact with the justice system (2)



The individual in Figure 35 had an average of 2.5 event days per 100 opportunity days in the year before, which decreased to 0.6 event days per 100 opportunity days after going on the BDR, based on two events in the first four months of their ban and no further alcohol-related contacts since⁷. Compared to the previous two profiles however, justice system data (negative results on alcohol tests administered by NT Community Corrections as part of a suspended sentence) provides evidence that the cessation of alcohol-related events in recent months is not a result of leaving the NT, as well as positive evidence that the individual is not drinking frequently.

Figure 35. Individual profile: reduced contact with justice system (3)

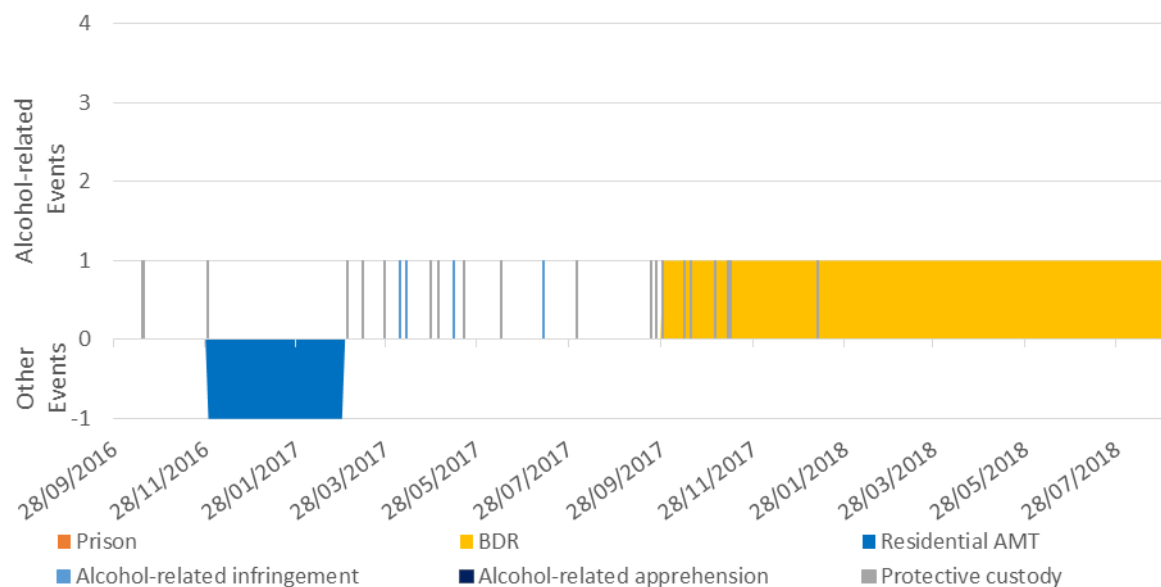


Without this sort of corroborating information (e.g. results of alcohol tests), it is generally not possible to determine whether a person who is no longer having alcohol-related contact with the justice system is still residing in the Territory. An example of this is provided in Figure 36, where the individual had a high frequency of events in the year before going on the BDR (6.4 events per 100 opportunity days),

⁷ The person did have an apprehension on 5th June 2018 that did not involve alcohol, which resulted in a short period in custody.

an initial continuation of alcohol-related events after first going on the BDR, and then a significantly longer period of time with no alcohol-related contacts than would be expected based on the prior year's event frequency. This individual may have left the Territory, or alternatively may have relocated to an area where alcohol is less available and/or contact with the justice system less likely. Alternatively, they may have opted to abstain from alcohol for this period.

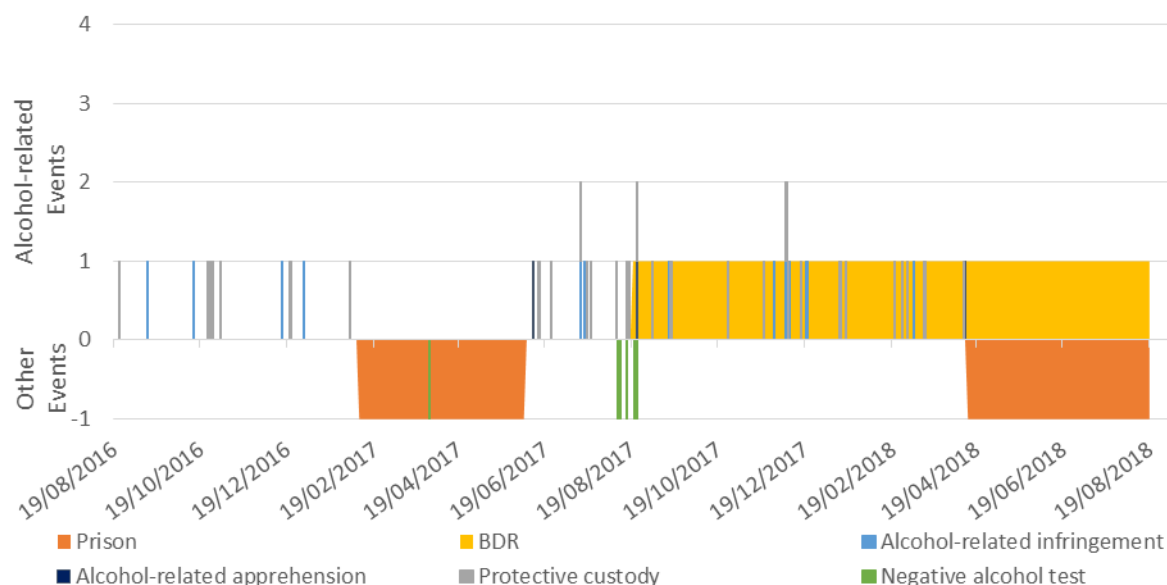
Figure 36. Individual profile: cessation of contact with the justice system



These examples show that the impacts of the BDR, and any consequent changes in behaviour, are highly individualised. As a group, banned drinkers with a higher level of alcohol-related contact in the previous year are showing a reduction in the frequency of such contact, but this includes those going from a very high to a moderate level of contact, those going from a moderate to low level, and those who appear to cease alcohol-related contacts with the justice system altogether.

Not all individuals in the group showed a reduction in contacts after going on the BDR. Figure 37 shows the profile for an individual who maintained a similar frequency of events while on the BDR as in the year prior to the BDR. This highlights the importance of continuing to monitor behaviour of banned drinkers over a longer period, as change (if it occurs) may take a long time for some individuals.

Figure 37. Individual profile: continued alcohol-related contact with the justice system



Despite some banned drinkers not moderating their behaviour, the initial results for individuals with a moderate to high frequency of alcohol-related events in the year prior to going on the BDR are cautiously positive, with this group as a whole showing a reduction in frequency of events in the period after going on the BDR.

Note that the only periods of residential alcohol treatment (when an individual might reasonably be expected to abstain from alcohol) that were included in this analysis were periods of residential alcohol mandatory treatment, for which specific orders were made indicating the dates of treatment. These were removed from the count of “opportunity days” in the period before going on the BDR for those who had participated (e.g. Figure 36). Other court-ordered or voluntary residential rehabilitation periods, either before or after going on the BDR, are not included, as the specific dates when individuals attended such programs were not available. Linkage between health and justice records would allow periods of hospital stays and residential rehabilitation to be removed from counts of drinking opportunity days, improving the analysis.

3.3.2 Long-term Expected Outcomes

As noted in the BDR program logic model (Figure 4), Territory-wide measures of alcohol harm are expected to improve once a material proportion of at-risk individuals change behaviour. The previous analysis showed that some individuals appear to have begun to reduce their alcohol-related contact with the justice system since going on the BDR; others, however, have not. For these individuals a longer period of follow-up is needed in order to determine how and if they will eventually respond to the BDR. It is, therefore, not expected that the administrative data shown in this section will show an immediate change following the BDR implementation. The charts are presented to show the present situation, with the expectation that Territory-wide change will occur over a longer time frame in response to combined alcohol harm reduction initiatives.

3.3.2.1 Alcohol-related Administrative Data

The following figures show patterns in administrative data recorded over the last seven to eight years, depending on data availability. The periods of the two BDRs are shown in shading, and the dates when the full-time Point of Sale Interventions (PoSIs) were introduced in Alice Springs, Tennant Creek and Katherine are shown with vertical lines. Dotted lines show rolling averages based either on 12 months or four quarters, as indicated in the chart title. The rolling averages smooth out monthly and seasonal variation and show the patterns in annual data.

A number of administrative alcohol-related data series (assault offences and victims, low, medium and high range drink driving offences and liquor consumption offences) were increasing at the time the BDR began; in recent months these series have shown a slight decrease in the 12-month rolling averages. While it is not possible to link this change with the BDR directly, this pattern is consistent with the results shown in Figure 32 and the previous section, where the frequency of alcohol-related events for people with frequent contact with the justice system dropped several months after first going on the BDR.

Additional charts for regional areas are included in Appendix 3.

Figure 38. Number of alcohol-related assault offences and 12-month rolling average, Northern Territory

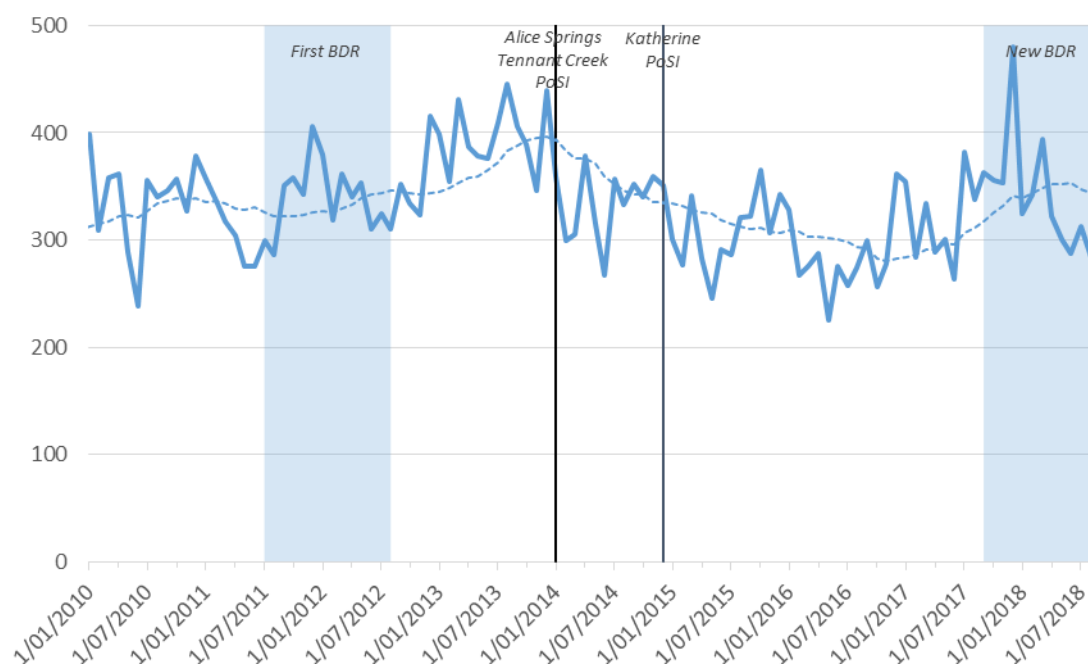


Figure 39. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Northern Territory

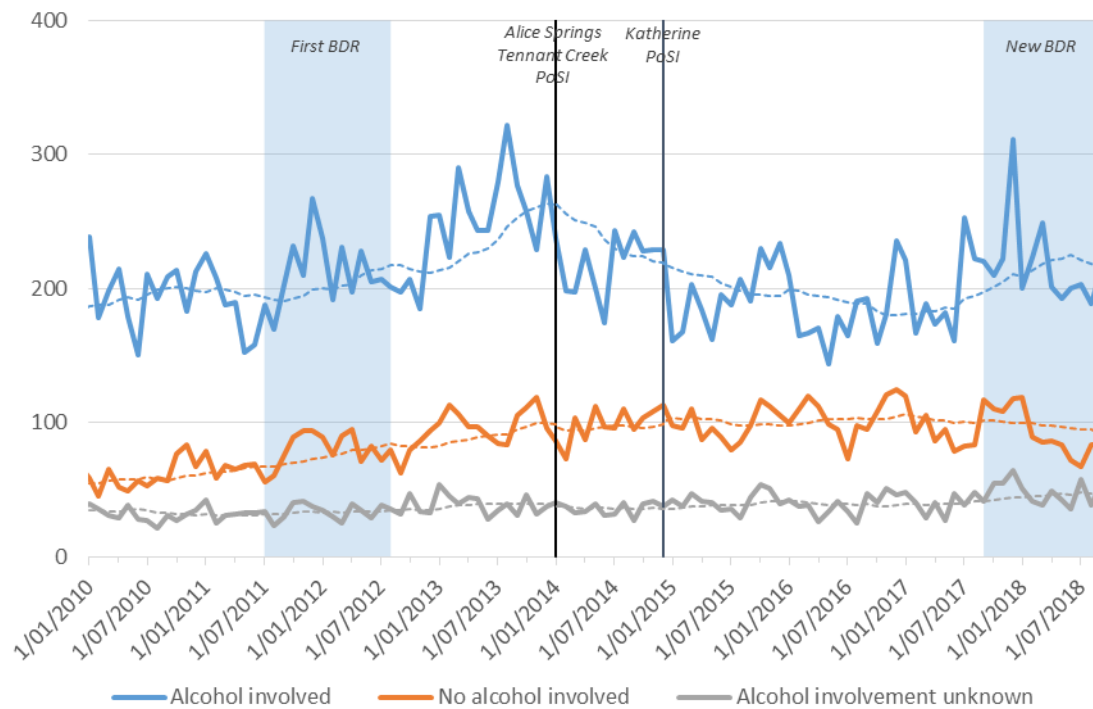
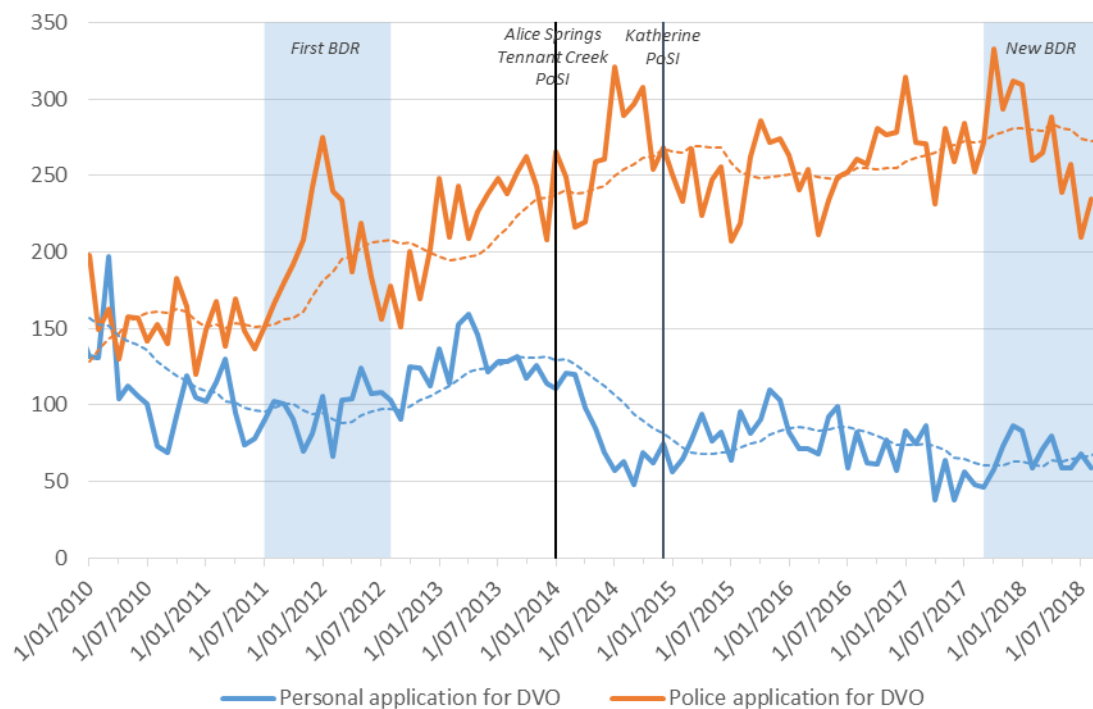


Figure 40. Monthly domestic violence applications and 12-month rolling averages, Northern Territory



Victim Data

Alcohol-related assault offences are those where either the victim, the offender, or both were affected by alcohol at the time of the offence. While patterns are similar to those for alcohol-related assault offences, victim data represents persons affected, and so can be shown by demographic group. "Youth" refers to individuals aged less than 18 years at the time the incident was reported to Police.

Figure 41. Monthly victims of alcohol-related assault by demographic group, Northern Territory, 12-month rolling averages

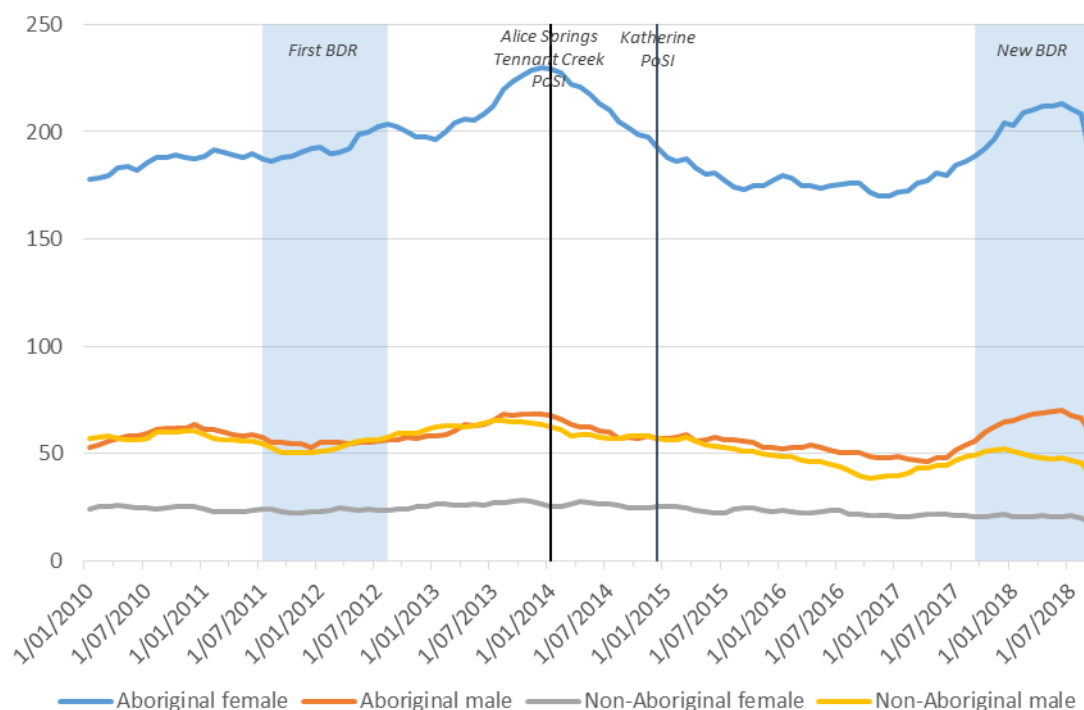
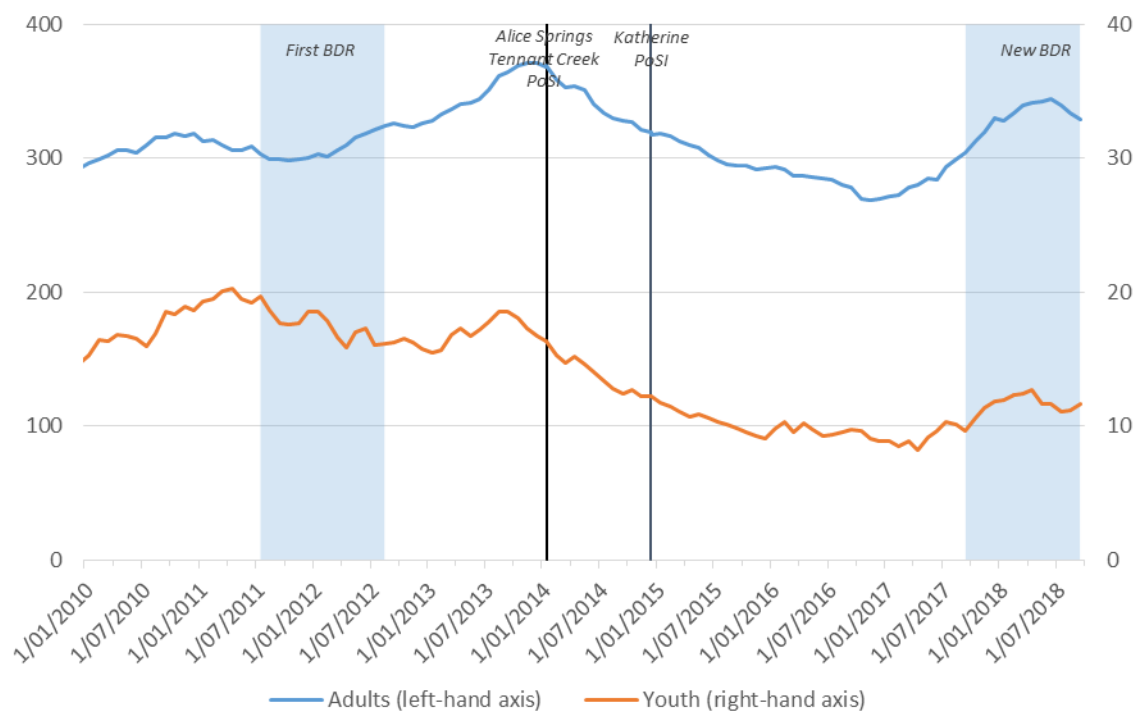


Figure 42. Monthly victims of alcohol-related assault by age group, Northern Territory, 12-month rolling averages



Active Policing

Drink-driving, liquor consumption, and liquor licensing offences are active policing offences and are influenced by police operational focus and constraints. They may therefore show different patterns to victim-based offences involving alcohol. Liquor consumption offences relate to drinking that breaches restrictions on alcohol consumption in specific places.

Figure 43. Number of drink-driving offences and 12-month rolling average, Northern Territory

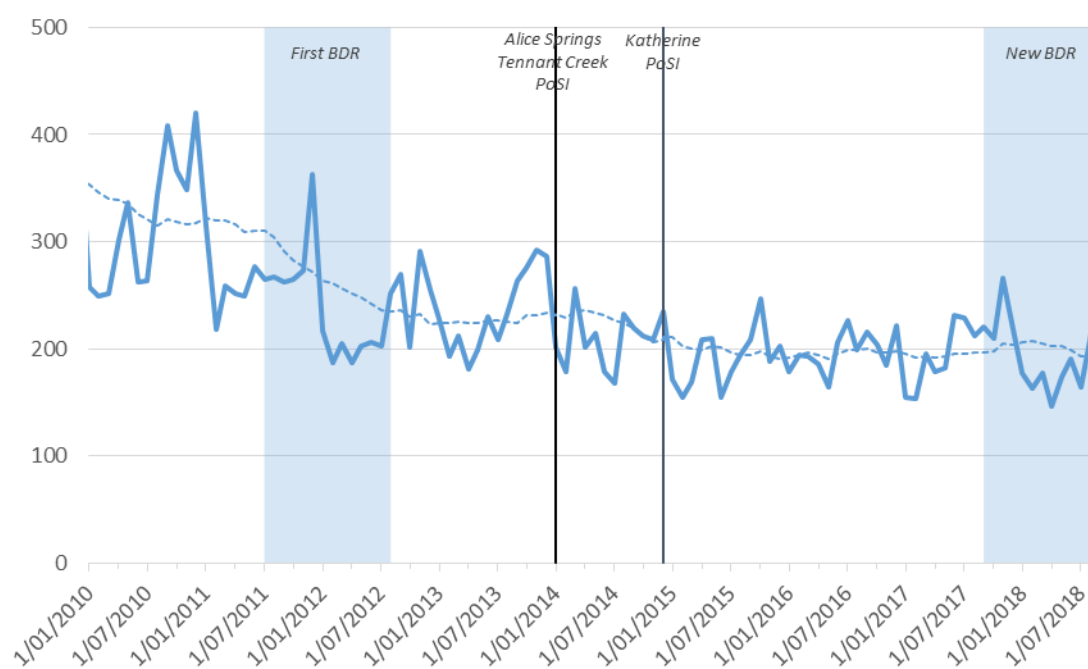


Figure 44. Number of drink-driving offences by type, Northern Territory, 12-month rolling averages

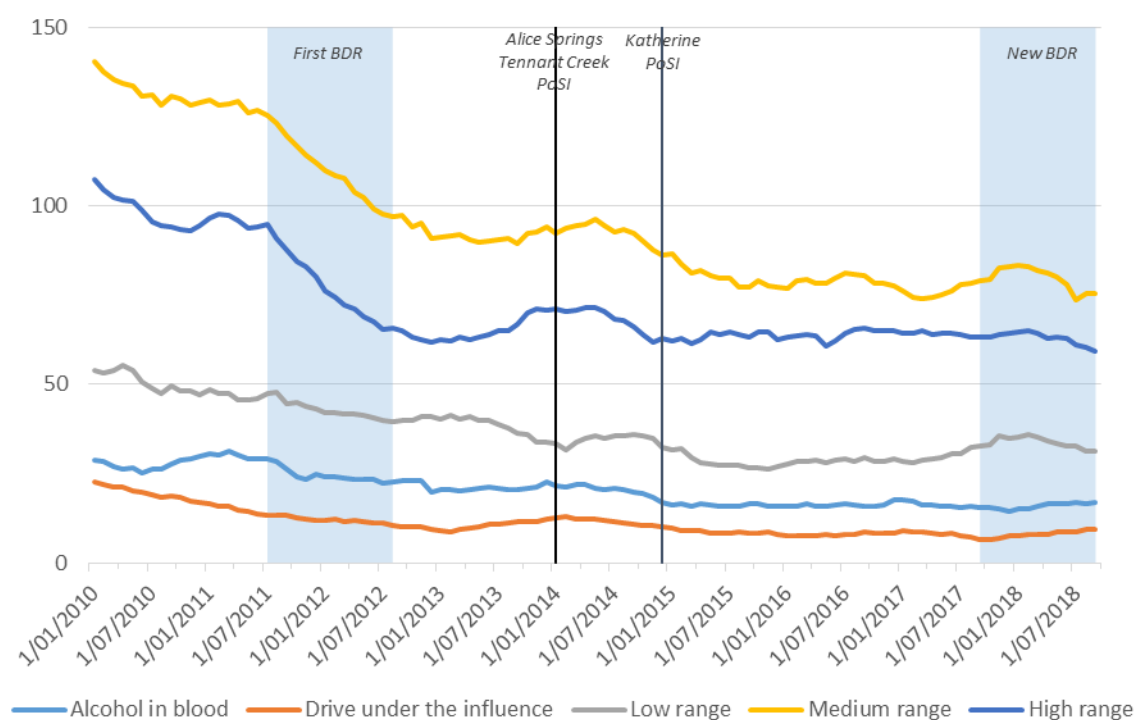
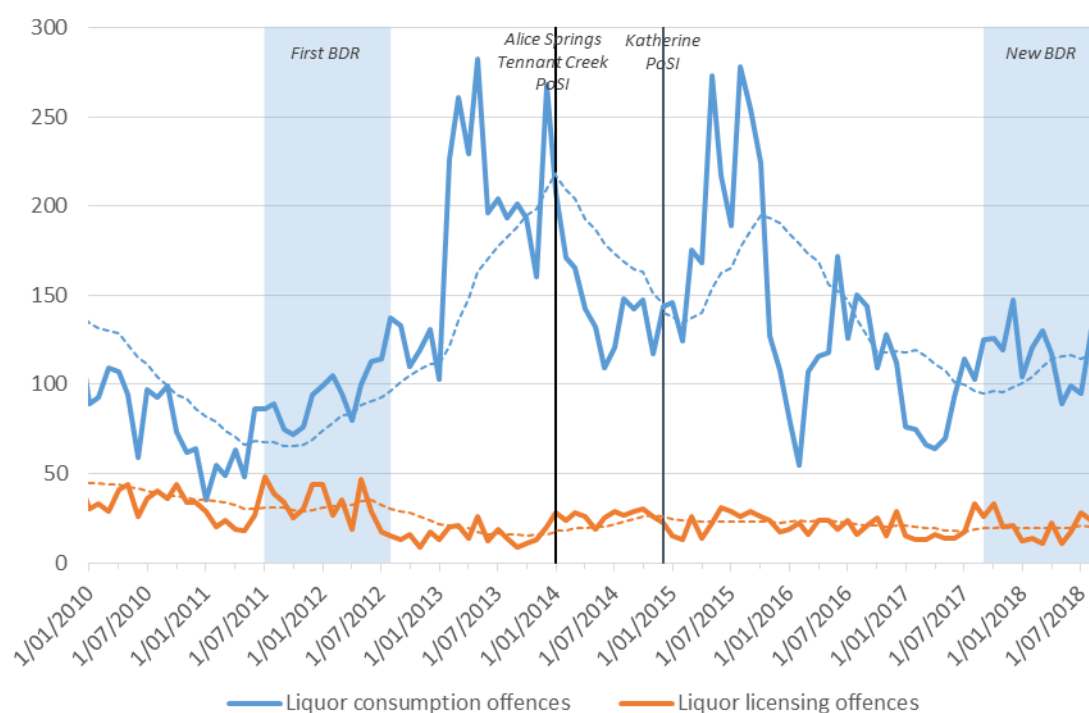


Figure 45. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Northern Territory



Wholesale alcohol supply⁸

The wholesale alcohol supply data is supplied on a quarterly basis by wholesalers following the close of a quarter; data quality checking and amendment requires some time and thus this information was only available through the December quarter of 2017 at the time of publication. Cider is included in total pure alcohol content but not as a separate series due to the small comparative volume.

⁸ Additional statistics and information on NT wholesale alcohol supply are available here:
<https://justice.nt.gov.au/attorney-general-and-justice/statistics-and-strategy/wholesale-alcohol-supply-data>.

Figure 46. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Northern Territory

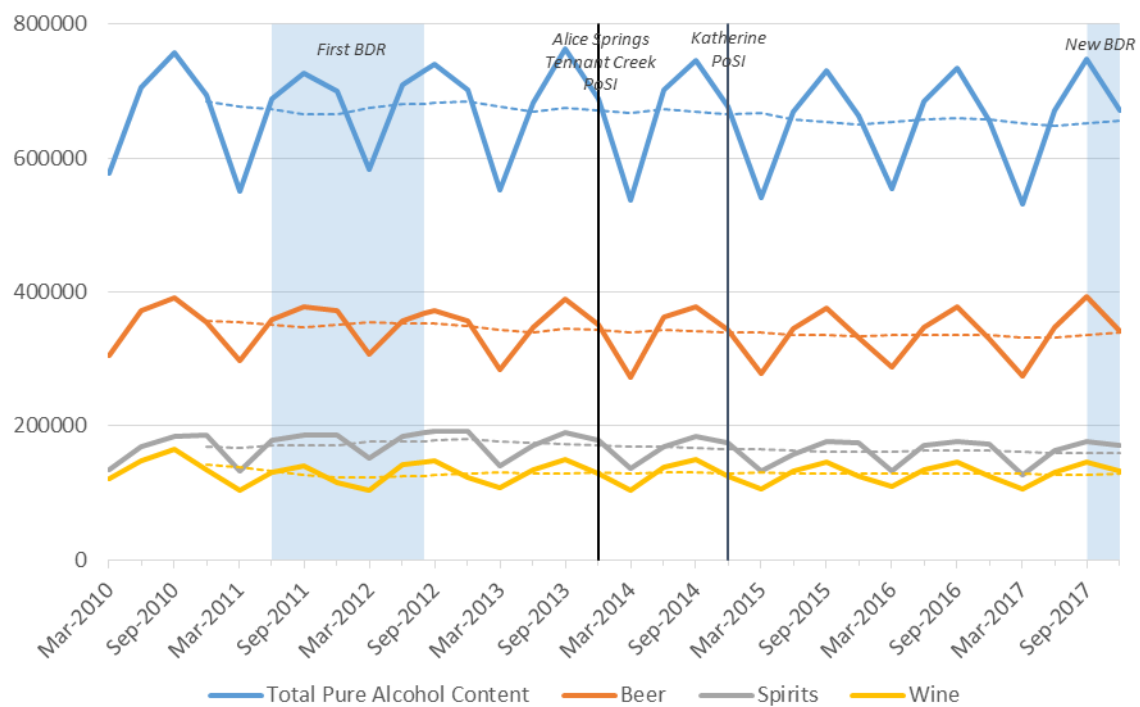


Figure 47. Monthly adult alcohol-related apprehensions and 12-month rolling average, Northern Territory

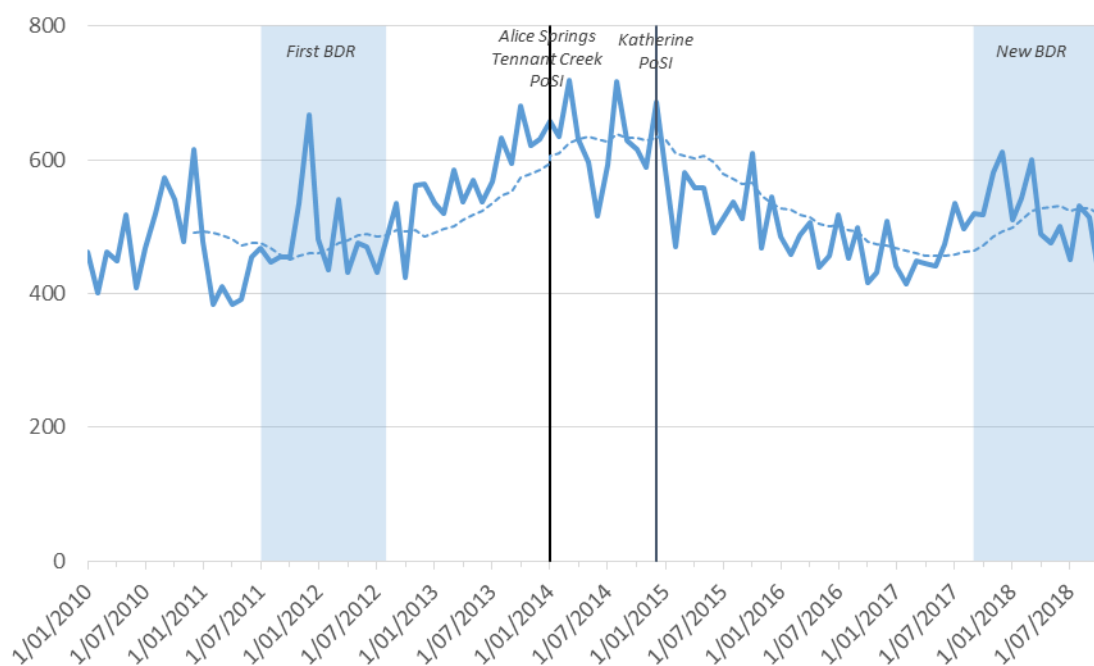
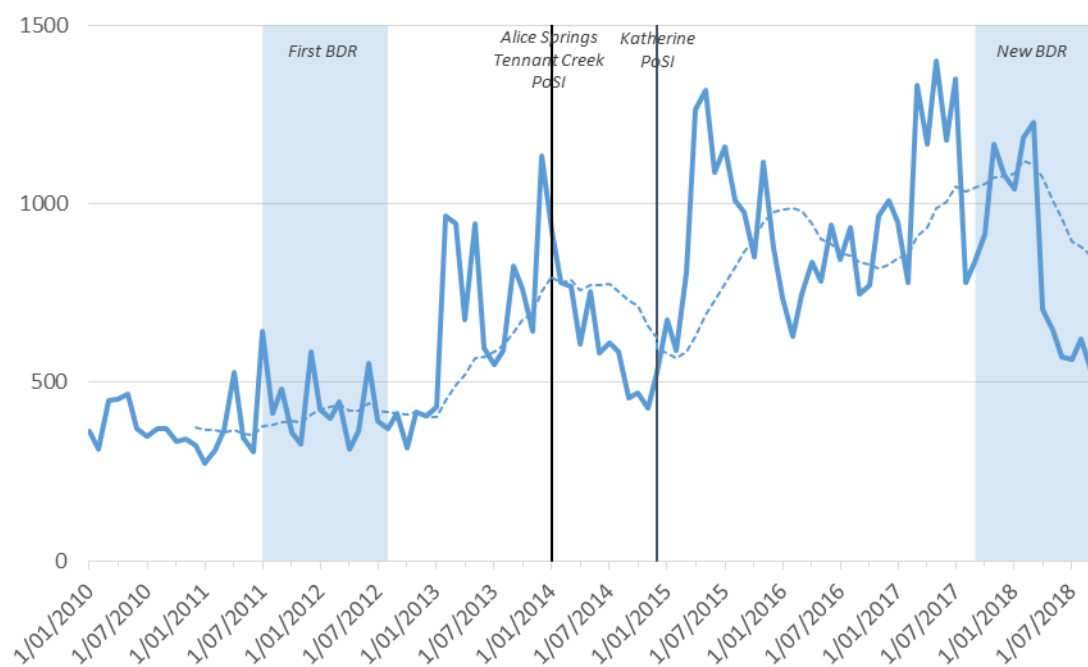


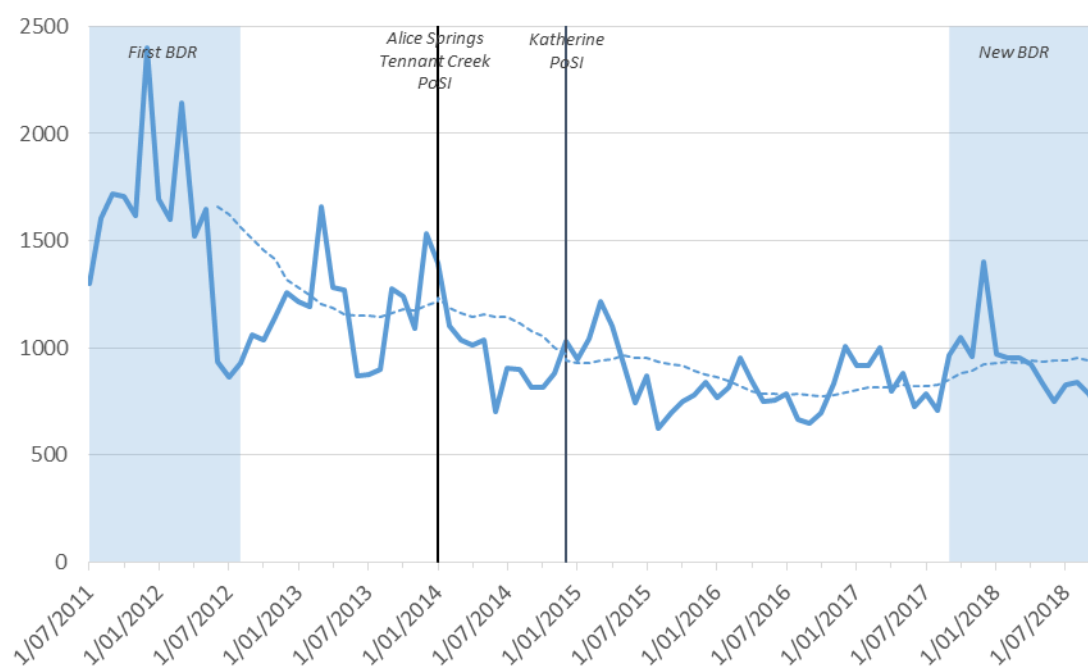
Figure 48. Number of alcohol-related infringement notices and 12-month rolling average, Northern Territory



Protective custody

The use of Police protective custody has changed substantially over the time period shown; hence the pattern may be very different than those of other alcohol-related data. This series should not be interpreted as representing a consistent proportion of the intoxicated individuals with whom Police come into contact over time.

Figure 49. Number of alcohol-related protective custody episodes and 12-month rolling average, Northern Territory

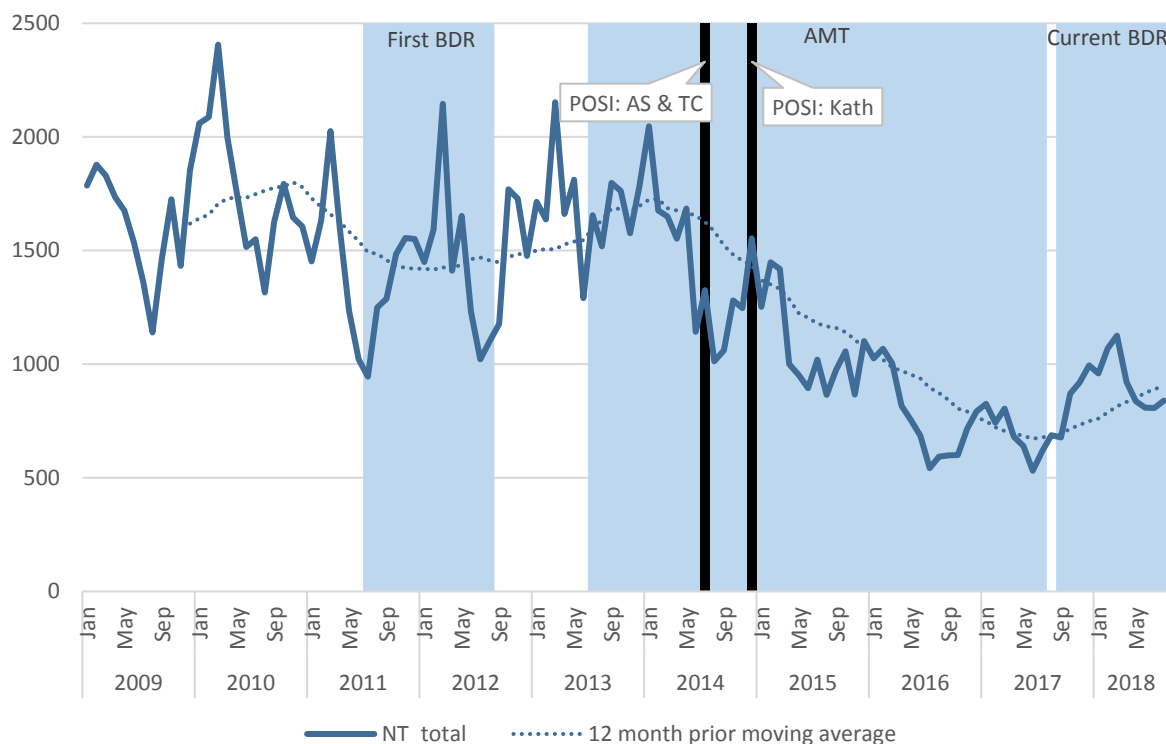


3.3.3 Sobering Up Shelter (SUS) Admissions

3.3.3.1 Total NT admissions

Admissions to NT SUS since January 2009 (Figure 50) show seasonal variation and fluctuation by month. The series shows a trend decline commencing around January 2014, continuing until June 2017 and reversing around August-September 2017.

Figure 50: Count of admissions to NT Sobering Up Shelters by month with 12 month moving average, January 2009 - August 2018.



Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

3.3.3.2 Regional SUS admissions

Admissions to SUS show different patterns over time by region (see Table 16 and Figure 141 to Figure 145 for detail).

Alice Springs SUS accounts for most of the decline from January 2014 seen in the NT total, with similar declines seen in Katherine, Tennant Creek shelters and a decline in Nhulunbuy commencing later, around June 2014. Darwin SUS shows a trend increase commencing around December 2012, a period of relative stability from January 2015 to May 2016 and a subsequent decline.

The increase in total admissions seen around August-September 2017 is accounted for by increases in all shelters, particularly for Alice Springs and Tennant Creek. Admissions to Darwin SUS show a milder trend increase since around May 2017.

3.3.3.3 Admission characteristics from September 2017 to August 2018

For the period of operation for the current BDR, 59% (Table 2) of admissions were referred by Police, 26% by Community Patrols and 14% by self-referral. Over the same months in 2016/17, Police referrals (62%) were slightly higher and self-referrals (11%) lower.

Table 2: Count of admissions to NT SUS by source of referral, selected months.

Referral source		Financial year of admission	
		Sep16-Aug17	Sep17-Aug18
Police	Count	5,095	6,373
	%	62%	59%
Patrol	Count	2,226	2,869
	%	27%	26%
Self	Count	876	1,480
	%	11%	14%
Other	Count	36	107
	%	0%	1%

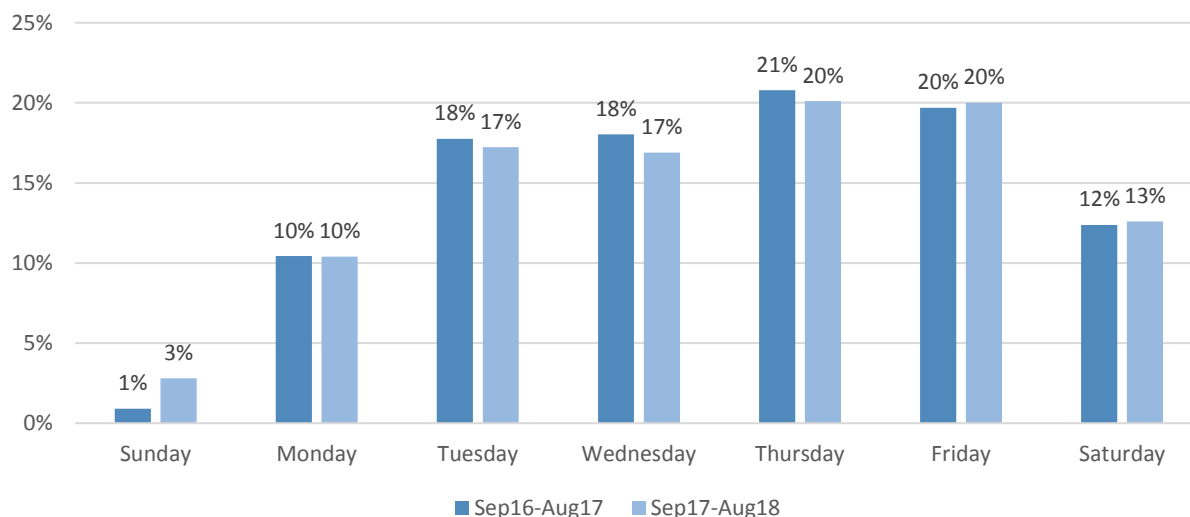
Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Source of referral to SUS shows variation across regions (Table 17).

- Between September 2017 and August 2018 Police referrals to Alice Springs SUS increased to 72%, compared to 61% over the previous 12 months, while self-referrals declined from 20% to 7%. Alice Springs recorded the highest proportion of Police referrals compared to other shelters and higher than the 59% for the NT as a whole.
- Katherine SUS shows a similar pattern to Alice Springs in that referrals from Police have increased as a proportion of total admissions, from 48% in the 12 months before the current BDR to 56% since, balanced by a decline in community patrol referrals, from 41% to 29%.
- Conversely, in Nhulunbuy, referrals from Police have declined, from 42% to 23% while community patrol referrals have increased from 55% to 72%.
- For Tennant Creek SUS referrals from Police have declined from 32% to 19% and referrals from community patrols have also declined, from 26% to 12%, while self-referrals have increased from 42% to 68%.

For the period of the current BDR, 40% (Figure 51) of admissions occurred on a Thursday or Friday and 34% on a Tuesday or Wednesday, with only small variation compared to the same months in 2016-17.

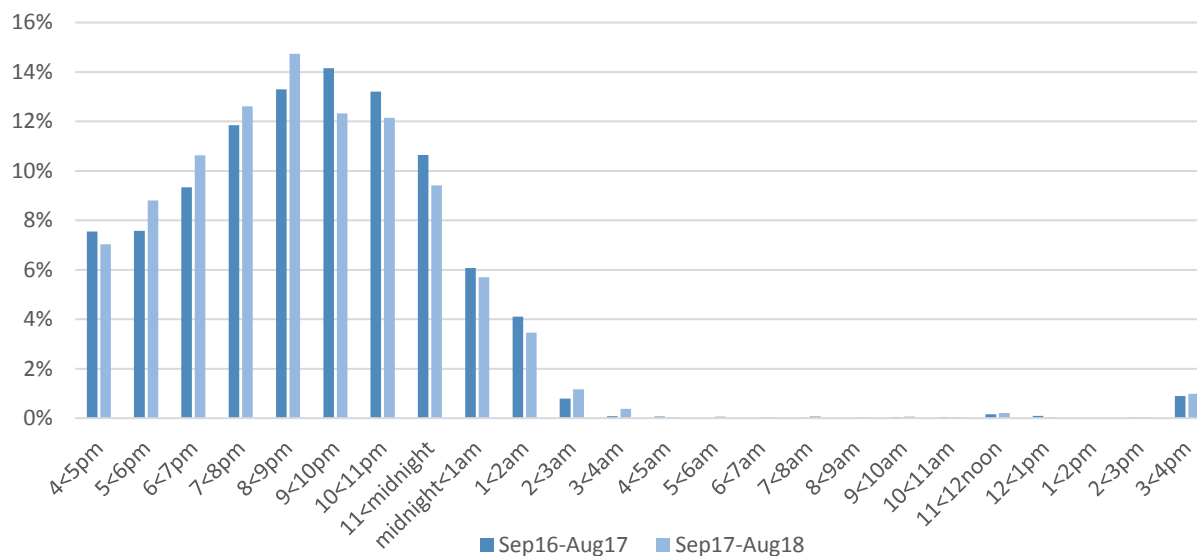
Figure 51: Count of admissions to NT SUS by day of the week by selected months, % in day.



Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Since September 2017, admissions to the SUS were slightly more likely to occur before 9pm (54%, Figure 4) than was the case for the same months in the previous year (50%).

Figure 52: Count of admissions to NT SUS by hour of the day by selected months, % in hour.



Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Admissions to NT SUS from September 2017 to August 2018 were mainly male (57%), Aboriginal (99%), and averaged 46 years of age (Table 3). These characteristics show only small variations compared to the previous 12 months.

Table 3: Admissions to NT SUS, selected months, summary demographic characteristics.

Characteristic	Sep 16 - Aug 17	Sep 17 - Aug 18
% male	56	57
% Aboriginal	99	99
Average age	45	46
Age percentiles		
25	38	39
50	45	46
75	51	53

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

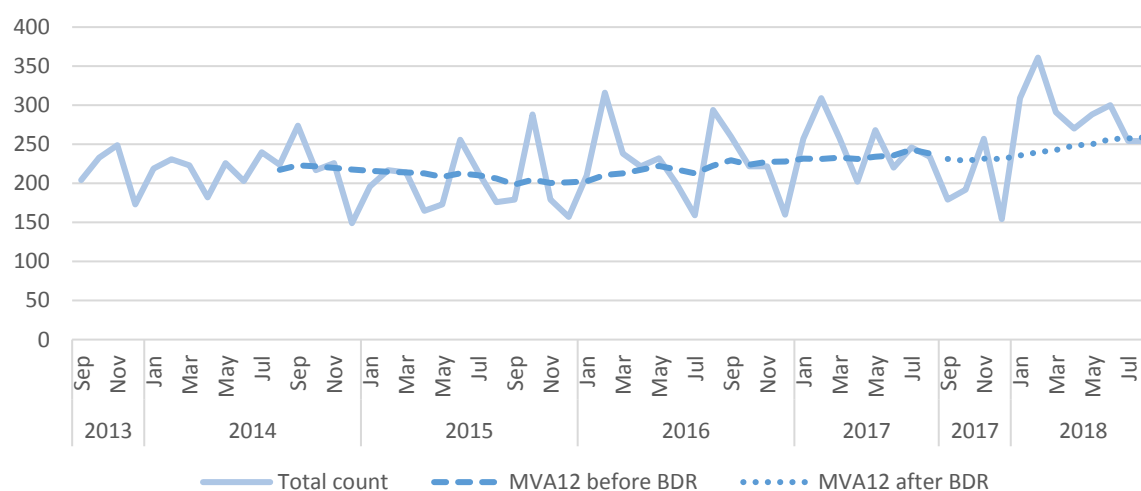
3.4 Evaluation question 4: Has the use of specialist therapeutic services changed under the current BDR?

3.4.1 Episodes of care⁹ in the AOD Non-Government Organisation sector

3.4.1.1 Alcohol-related episodes of care

Between September 2013 and August 2017, the total (BDR-related and not BDR-related) number of commencements in NGO treatment services where alcohol was the main drug of concern fluctuated around an average of 221 per month (Figure 5). Since the introduction of the BDR in September 2017 and up to the end of August 2018, total commencements have increased to a monthly average of 259.

Figure 53: Count of alcohol-related episodes of care in NGO agencies, September 2013-August 2018.

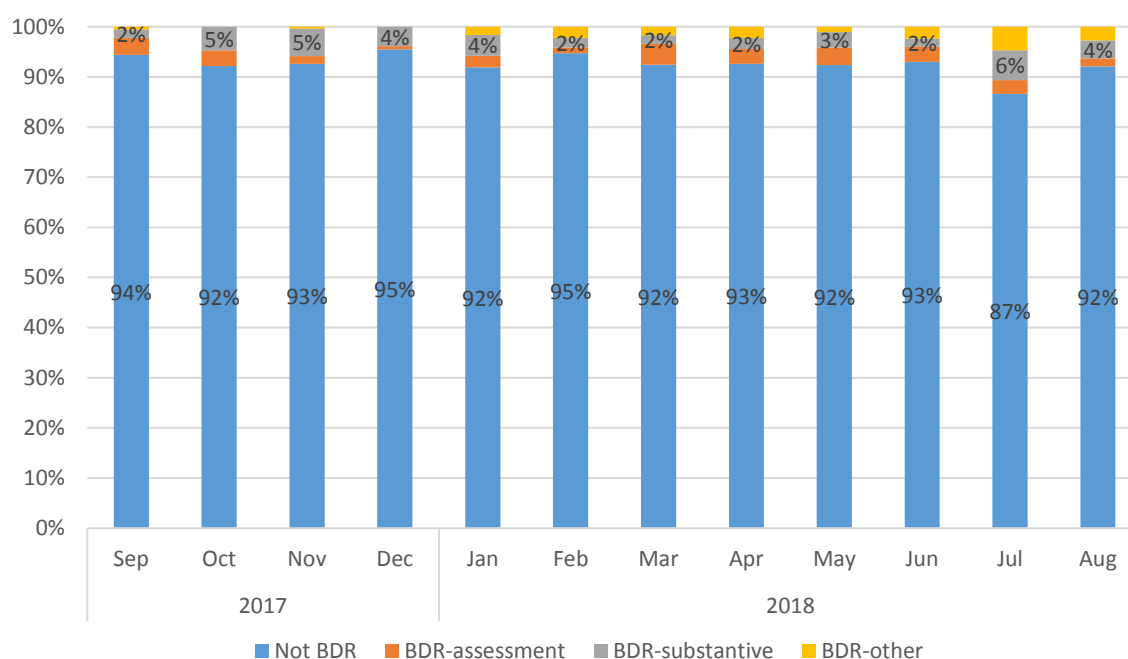


Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, External Service Provider Client System

In the first 12 months of BDR operation, treatment episodes where the client has identified as being on the BDR have averaged 7% of total commencements (Figure 54), with around 3% of the total having substantive main treatment types – withdrawal, counselling or rehabilitation.

⁹ Definitions for some of the terms used in the treatment sector can be found in Appendix 5.

Figure 54: Proportion of alcohol-related episodes of care in NGO agencies BDR status, September 2013-August 2018 (%).



Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, External Service Provider Client System

3.4.1.2 BDR-related episode activity and characteristics

There is no mandatory recording of treatment activity for people who are on the BDR. Clients who enter treatment in specialist AOD treatment services in the NGO sector can self-identify as being on the BDR at the time of the commencement of their treatment episode and this is recorded on the AODD External Service Provider Client System. This system of self-identification means that the counts provided here are likely to be an underestimate.

Between 1 September 2017 and 31 August 2018, 174 individuals self-identified as being on the BDR when commencing a treatment episode. People can have more than one treatment episode in a given period - for example, an assessment followed by counselling - and so this group accounted for 234 episodes in total (Table 4). Thirteen episodes were still in progress at the time of reporting. Most (87%) assessment episodes were completed, over half (58%) of all episodes with a substantive main treatment type were completed and just over a third (36%) of other types of treatment were completed.

Table 4: Treatment episode commencements, completion and length of stay, September 2017 to August 2018.

Main treatment type	Count of episodes (n)	Treatment completed (%)	Mean length of stay (days)
Assessment	78	87%	1.1
Substantive treatment - withdrawal, counselling, rehabilitation	89	58%	58.7
Other treatment - support, information, education, other	54	37%	50.1
Total	221		

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, External Service Provider Client System

Of the 174 individuals identifying as being on the BDR, 71% commenced one episode of treatment in the period, 25% commenced two and small numbers reported three or four commencements.

Table 5: Frequency of multiple treatment episodes by people on the BDR.

Number of episodes commenced	Frequency	Percent (%)
1	123	71%
2	44	25%
3	5	3%
4	2	1%
Total	174	100

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, External Service Provider Client System

Forty-three (25%) people received an assessment with no further treatment. The balance received either a substantive form of treatment – 51% withdrawal, counselling or rehabilitation – or another form of treatment – 31% support and case management or information and education – including some who received both.

3.4.1.3 Client characteristics

The 174 clients were mainly male (72%, Table 6) and Aboriginal (89%). Aboriginal clients were slightly more likely to be male (71%) than non-Indigenous clients (75%, Table 19). The average age at the commencement of the first episode in the period was 35 years, with non-Aboriginal clients being slightly older than Aboriginal clients – 39 years compared to 35 years.

Table 6: Treatment episodes by age, Aboriginal status and sex.

Characteristic	
% male (n=102)	72
% Aboriginal (n=102)	89
Average age in years at episode start (n=218)	35
Male (n=155)	35
Female (n=63)	35
Aboriginal (n=196)	35
Non-Aboriginal (n=22)	39

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, External Service Provider Client System

Most clients (72%) nominated either Darwin (17%), Alice Springs (33%) or Tennant Creek (23%) as their usual town or community. The balance (n=49) nominated a range of rural and remote communities.

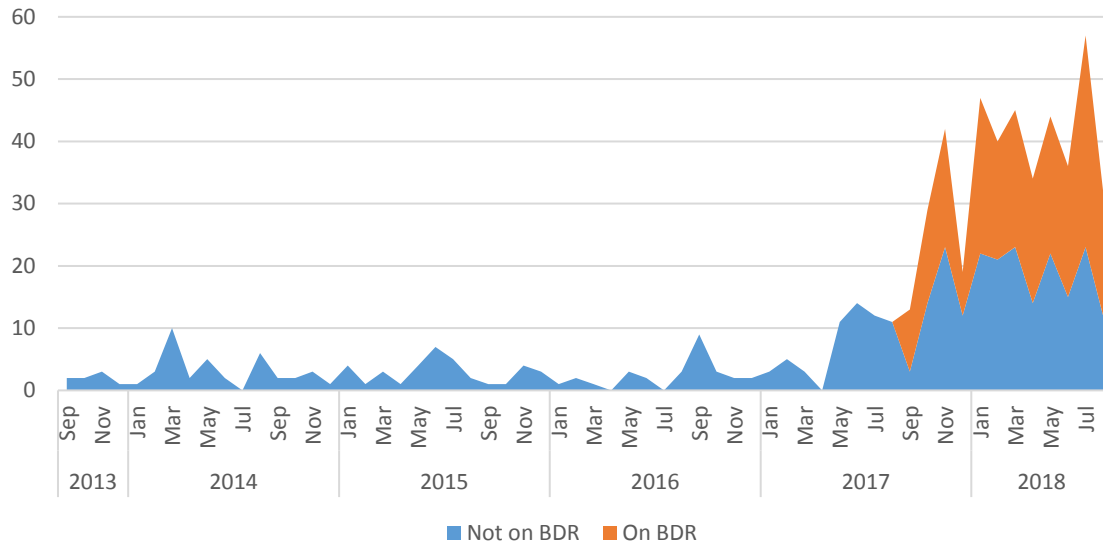
3.4.1.4 Episode history

Since reporting BDR participation whilst in treatment is not mandatory, the individuals who self-report BDR registration can have additional episodes over the same period where they do not self-identify as being on the BDR.

The 174 individuals mentioned above who self-reported as being on the BDR in 234 episodes, recorded an additional 204 treatment episode commencements between September 2017 and August 2018 where they did not identify as being on the BDR.

Figure 55 shows the total number of treatment episodes recorded by this group before and after the commencement of the BDR. As a group, they recorded a monthly average of three treatment commencements over the four years prior to the BDR commencing and a monthly average of 34 treatment commencements subsequent to the BDR.

Figure 55: Count of episodes by year and month for people self-identifying as being on the BDR after September 2017.



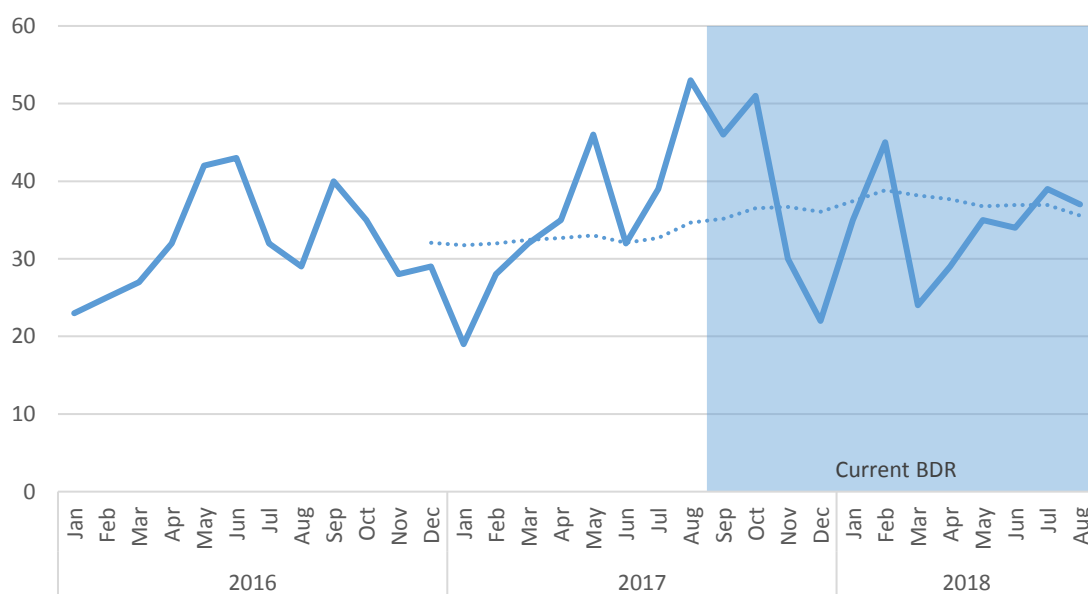
Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, External Service Provider Client System

3.4.2 Episodes of care in the NT Government (NTG) sector

3.4.2.1 Alcohol-related episodes of care

The number of episodes of care in the NTG sector where alcohol is the main drug of concern that have commenced in each month in NTG agencies since January 2016 has fluctuated around an average of 34 with no material change in pattern since the introduction of the BDR (Figure 56).

Figure 56: Count of alcohol-related episodes of care in NTG agencies, January 2016 – August 2018.



Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch

3.4.2.2 BDR-related activity

There is no mandatory recording of treatment activity for people who are on the BDR. Clients self-identify to NTG assessment and treatment staff and a simple tally is kept of these clients (Table 7).

Table 7: Count of assessment and treatment clients commenced who self-identify as on the BDR in NTG services.

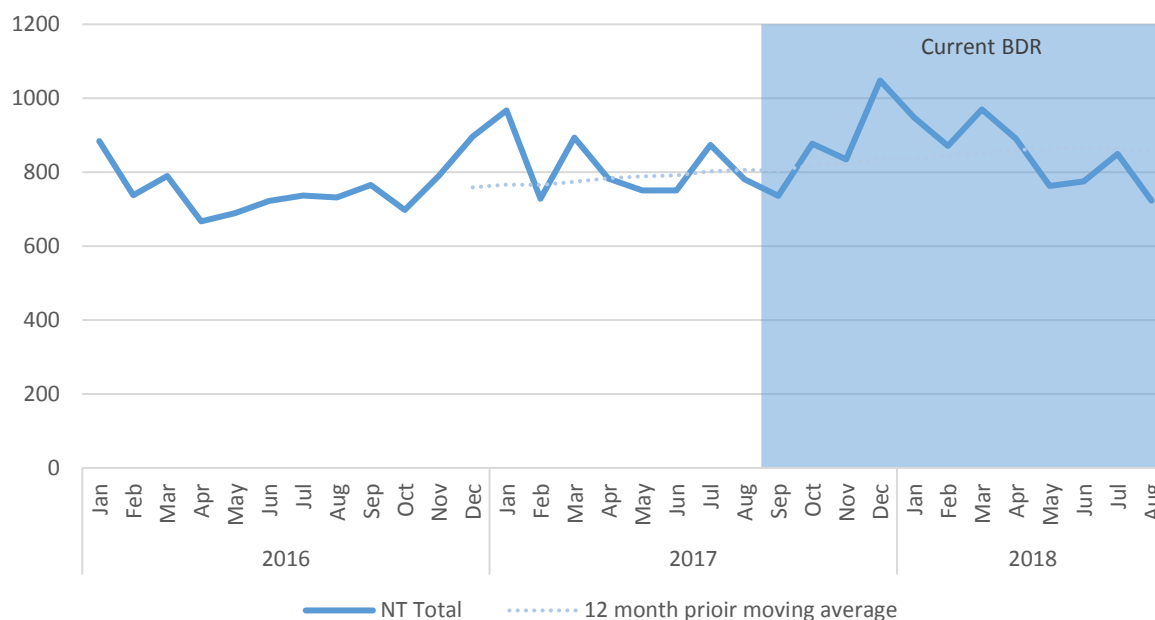
	Number of assessments completed where the person was on the BDR or was referred to or from the BDR	Number of therapeutic support cases where the person was on the BDR on or after commencement
Sep-17	1	1
Oct-17	9	6
Nov-17	9	5
Dec-17	6	0
Jan-18	2	2
Feb-18	3	3
Mar-18	10	2
Apr-18	9	9
May-18	14	6
Jun-18	17	8
Jul-18	10	2
Aug-18	15	2
Total	105	46

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch

3.4.2.3 Alcohol-attributable presentations to NT Emergency Departments

Alcohol-attributable presentations¹⁰ to all NT hospital¹¹ Emergency Departments (ED) have increased over the period shown in Figure 57, and are 6% higher since the commencement of the current BDR compared to the previous 12 months. This increase pre-dated the BDR, commencing in 2016.

Figure 57: Count of selected alcohol attributable presentations to NT EDs, January 2016 - February 2018.



Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches

Regional differences in the total number of alcohol-attributable presentations to ED are presented in Table 8. Alice Springs, Katherine and Gove District hospitals show increases in presentations during the current BDR compared to the previous 12 months (17%, 22% and 35% respectively), while Darwin and Tennant Creek presentations have declined, by 7% and 15%.

Table 8. Count of alcohol attributable presentations to NT EDs, selected months

Hospital	Sep 16- Aug 17	Sep 17 - Aug 18	% change
Alice Springs	4,055	4,750	17%
Royal Darwin	3,785	3,526	-7%
Katherine	847	1,037	22%
Tennant Creek	745	633	-15%
Gove District	246	331	35%
NT total	9,678	10,277	6%

Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches

¹⁰ Presentations are counted where the principal condition diagnosis is wholly alcohol attributable, such as intoxication, or where the condition has an attributable fraction of 0.4 or greater. See Appendix 6 for further detail.

¹¹ Palmerston Regional Hospital commenced operation in September 2018 and has been excluded from this analysis.

As with the NT total presentations, in all cases these regional changes can largely be attributed to pre-existing patterns or changes in patterns seen subsequent to the introduction of the current BDR (see Figure 146 to Figure 150 in Appendix 5). Alice Springs (Figure 146), Katherine (Figure 148) and Gove District Hospital (Figure 150) ED presentations show increases commencing in 2016. Royal Darwin Hospital (Figure 147) is stable for most of the period prior to the current BDR commencing, with a slight decline from around late 2017. Tennant Creek Hospital (Figure 149) shows stable monthly average presentations though to early 2018 followed by a decline. These regional differences in ED presentations indicate that other alcohol and social policy interventions, particularly those tailored to specific regional contexts, need to be understood in the context of the BDR implementation. Closer scrutiny of the combined impact of multiple alcohol policy interventions is warranted in subsequent evaluations of the BDR.

4 DISCUSSION

4.1 Impact of the BDR on alcohol-related issues in the justice system

4.1.1 Alcohol-related contact with the justice system is the major reason for people being on the Banned Drinker Register

Of the 3,682 people on the BDR on 31 August 2018, 93% were banned due to alcohol-related contact with the NT justice system. The analysis of banned drinkers' contacts with the justice system shows that a high proportion of individuals have contacts either primarily of the non-criminal (protective custody, infringement) type (e.g. Group 1, 23%) or primarily of the criminal (apprehension, prison) type (e.g. Groups 3 and 4, 66%), with fewer having contacts of both types (Group 2, 11%).

4.1.2 Some individuals have no further alcohol-related contact with the justice system after going on the BDR

Responses to the BDR vary, with some individuals reducing frequency of contact and others not. A positive sign is that 40% of those with predominantly non-criminal alcohol-related events in the year before the BDR, and 30% of those with mixed criminal and non-criminal events, had no alcohol-related events in the justice system during the follow-up period. Additional data from outside the justice system is required to confirm whether many of these individuals remain in the Territory or have moved elsewhere. Many of those having no contact after going on the BDR had little or no alcohol-related contact in the year prior to going on the BDR (including those on parole bans and bans for alcohol-related apprehensions).

4.1.3 The main impact of the BDR may be on individuals who have relatively frequent alcohol-related contact with the justice system.

Analysis of banned drinker status when apprehended, infringed or taken into protective custody suggests that a significant proportion of individuals who come into contact with the justice system for alcohol-related events do so at a low frequency. Some are coming onto the BDR for the first time, and others have finished a previous ban. While those who have frequent events are likely to stay on the BDR for a long period of time (e.g. the individuals in Figure 33 and Figure 34), there are still a significant proportion of individuals who are not on the BDR, and so not prevented from purchasing takeaway alcohol, at the time they commit an alcohol-related offence, receive an alcohol-related infringement, or are taken into protective custody. If the infrequent nature of contact corresponds to infrequent drinking behaviour, the BDR may have only limited impact on these individuals.

4.1.4 The impact of the BDR on those having frequent contact with the justice system is likely to be gradual rather than immediate

The analysis of contact frequency shows that banned drinkers having frequent alcohol-related contact with the justice system do not stop such contact as soon as they go on the BDR; takeaway alcohol is not the only source of alcohol available, and those with alcohol addiction (which is not necessarily all of those on the BDR) will seek and find other sources of alcohol until and unless they are ready to change. Nevertheless, over time many are showing a reduction in the frequency of events: as a group, the 906 individuals analysed had a mean frequency of 2.15 alcohol-related event days per 100 opportunity days in the year before the BDR, and a mean frequency of 1.80 in the follow-up period. This corresponds to a reduction of 16%.

The small, recent drop in the 12-month rolling average for alcohol-related assault offences (Figure 38), while not able to be conclusively linked to the BDR, is consistent with the decline in alcohol-related events shown by banned drinkers with a moderate to high frequency of such events in the year prior to going on the BDR.

4.2 Impact of the BDR on alcohol-related issues in the health system

4.2.1 There are limitations in assessing the direct impact of the BDR on health behaviour change

The impact of BDR registration on the health system or changes in health-related behaviours that align with BDR registration cannot in most cases be reliably determined due to limitations in the relevant client management systems. BDR registration is not recorded in the relevant hospital, Community Care or Sobering Up Shelter systems, and relies on self-identification in the NGO treatment services system.

4.2.2 NGO alcohol treatment commencements have increased since the commencement of the BDR

Alcohol-related commencements in NGO treatment services are higher since September 2017 compared to before that date, rising from a monthly average of 221 to 259 (Figure 49). This change is mostly explained by an existing trend increase in NGO commencements (Figure 49). Clients who self-identify as being on the BDR show a marked increase in treatment commencements after the start of the current BDR (Figure 51). This may be evidence of increased use of specialist therapeutic services by people on the BDR.

4.2.3 Requirements to self-identify BDR status mean that it is difficult to ascertain the level of assessment and therapeutic interventions undertaken by NT Government alcohol treatment services

BDR registration is not recorded in NTG treatment service systems and so the history of BDR clients in the NTG treatment sector cannot be easily determined and relies on self-identification of BDR status. New assessment and referral processes implemented at the same time as the BDR have, as of the end of August, resulted in 105 clients involved with the BDR being assessed, and 46 therapeutic interventions occurring.

4.2.4 The relationship between BDR registration and admission to SUS is unclear

Admissions to SUS show an upturn commencing around or slightly before September 2017 (Figure 46). This is particularly the case for Darwin and Alice Springs SUS (Figures 137-141). Some changes have been seen in referral sources for SUS admissions, with increases in Police referrals to Alice Springs and Katherine SUS, and a decrease in Police referrals to Tennant Creek SUS (p44). However, the relationship between BDR registration and SUS admissions cannot be determined.

4.2.5 There is considerable regional variation in alcohol-related NT Emergency Department presentations since the introduction of the BDR

Presentations to Alice Springs ED show a decline since January 2018, following a marked increase from September to December 2017. Royal Darwin Hospital is stable for most of the period prior to the current BDR commencing, with a slight decline from around late 2017. Tennant Creek Hospital shows stable monthly average presentations though to early 2018 followed by a marked decline commencing around February 2018. Attribution of any of these changes to involvement with the BDR is problematic, given pre-existing trends, that some of the changes do not coincide with the commencement of the BDR and that BDR clients are not identified in hospital systems. The introduction of other alcohol and health and social policy interventions other than the BDR may also influence ED presentations.

5. CONCLUSION

This 12-month impact evaluation of the BDR has been independently oversighted by Menzies School of Health Research in close collaboration with the NT Department of Health and NT Department of Attorney General and Justice. The evaluation has been guided by the BDR program logic (Figure 4) and four overarching questions. These evaluation questions included:

1. What has happened in the first year of implementation of the BDR?
2. Does the BDR adequately target people misusing alcohol?
3. Has the BDR reduced the frequency of banned drinkers' contact with the justice system?
4. Has the use of specialist therapeutic services changed under the current BDR?

To address the first question a broad summary of BDR statistics was provided, including a discussion about BDR self-referral activity; a comparison with data from the previous BDR (2011-2012); and a statistical analysis of the types of individuals and groups currently on the BDR. To address the second question, justice-related data was assessed to determine whether individuals committing alcohol-related offences, taken into protective custody, and receiving alcohol-related infringement notices were on the BDR. To address the third question, an examination of the frequency of contacts with the justice system, both pre- and post-BDR, was assessed. Administrative data series from the justice system and sobering up shelter admissions were also examined to provide additional context and a baseline for identifying longer-term outcomes. To address the final question, health data relating to the episodes of care among both non-government organisations and government alcohol treatment services was analysed.

The analyses show that:

- Alcohol-related contact with the justice system is the major reason for people being on the Banned Drinker Register
- Some individuals have no further alcohol-related contact with the justice system after going on the BDR
- The main impact of the BDR may be on individuals who have relatively frequent alcohol-related contact with the justice system.
- Individuals with frequent alcohol-related contact with the justice system appear to be showing a reduction in contact frequency as a group.
- The impact of the BDR on those having frequent contact with the justice system is likely to be gradual rather than immediate.

- There are limitations in assessing the direct impact of the BDR on health behaviour change
- NGO alcohol treatment commencements have increased since the commencement of the BDR
- Requirements to self-identify BDR status mean that it is difficult to ascertain the level of assessment and therapeutic interventions undertaken by NT Government alcohol treatment services
- The relationship between BDR registration and admission to SUS is unclear
- There is considerable regional variation in alcohol-related NT Emergency Department presentations since the introduction of the BDR

The findings have led to the following six key messages:

1. The BDR is one of many alcohol harm minimisation policy initiatives: it does not work in isolation. It forms part of the contribution in achieving a healthier and safer community by reducing alcohol-related harms.
2. The influences, impacts and outcomes of the BDR need to be understood in the context of other alcohol harm minimisation policy reforms and initiatives underway in the NT (such as those outlined in the *Alcohol Harm Minimisation Action Plan 2018-19*).
3. The effectiveness of the BDR is best understood longitudinally. The results of this impact evaluation should be used as an initial baseline. Impacts on health behaviour change will become more evident once the 24-month evaluation is completed and throughout subsequent evaluation processes.
4. There is potential to strengthen support for people on the BDR by examining their parallel engagement with health and justice systems more closely. This will require increased investment in data-linkage capacity.
5. The BDR provides a unique opportunity to engage in more assertive alcohol-related community development health promotion activities at a population level.
6. An increased focus on both service provider and public perceptions of the effectiveness of BDR is warranted, and should be incorporated into Part 2 of the 12-month evaluation. This will provide additional context to tailor parallel alcohol intervention strategies.

In addition, a further 12 recommendations have been included for the NT Government to consider as part of its ongoing commitment to alcohol reforms in the NT.

REFERENCES

Department of the Attorney-General and Justice (2017), Business Case: Reintroduction of a system to support the Banned Drinker Register, Version 1.0 (20 April 2017). NT Government: Darwin.

Department of Health (2017), Debate Notes, Minister for Health. Alcohol Harm Reduction Bill.

Lanza, S. T., Collins, L. M., Lemmon, D. R., & Shafer, J. L. (2007). PROC LCA: A SAS procedure for latent class analysis. *Structural Equation Modelling*, 14 (4), 671-694.

Northern Territory Government. (2017). *Banned Drinker Register: Banned Drinker Overview*.

Northern Territory Government. (2018a). *Northern Territory Government response to the alcohol policies and legislation review Final Report*. Darwin, Northern Territory Government.

Northern Territory Government (2018b). *Alcohol Harm Minimisation Action Plan 2018-2019*. Darwin, Northern Territory Government.

Northern Territory Government (2018c). *Response to BDR evaluation report recommendations - July 2018*. Darwin, Northern Territory Government.

Penfold, R. B., & Zhang, F. (2013). Use of interrupted time series analysis in evaluating health care quality improvements. *Academic Pediatrics*, 13 (6), 38-44.

Riley, T., Angus, P., Stedman, D. & Matthews, R. (2017). *Alcohol Policies and Legislation Review: Final Report*. Darwin, Northern Territory Government.

Shwarz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics*, 6 (2), 461-464.

Skov, S., Chikritzhs, T., Li, S., Pircher, S. & Whettong, S. (2010). How much is too much? Alcohol consumption and related harm in the Northern Territory. *Medical Journal of Australia*. 193 (5), 269-272.

- Smith, J. & Adamson, E. (2018). *Process evaluation of the Banned Drinker Register in the Northern Territory*. Darwin, Menzies School of Health Research.
- Smith, J., Livingston, M., Miller, P., Stevens, M., Griffiths, K., Judd, J. & Thorn, M. (2019). Emerging alcohol policy innovation in the Northern Territory, Australia. *Health Promotion Journal of Australia*. 30 (1), 1-4.
- Symons, M., Gray, D., Chikritzhs, T., Skov, S., Saggers, S., Boffa, J. & Low, J. (2012). *A longitudinal study of influences on alcohol consumption and related harm in Central Australia: with a particular emphasis on the role of price*. Perth, National Drug Research Institute, Curtin University.
- Whetton, S., Hancock, J., Chandler, N., Stephens, E. & Karmel, C. (2009). *Harms from and costs of alcohol consumption in the Northern Territory: Final report*. Report commissioned by Menzies School of Health Research. Adelaide, South Australian Centre for Economic Studies, Adelaide and Flinders Universities.

6. APPENDICES

6.2 Appendix 1: Latent Class Analysis

Latent class analysis (LCA) is a statistical method used to identify mutually independent subtypes of behaviour (latent classes) from a set of multivariate categorical indicators. As a model-based clustering method, LCA is able to capture the unobserved heterogeneity both among and within subgroups of individuals. By drawing from categorical data, LCA also has the advantage of making no assumptions about the distribution of the variables; the only assumption underpinning this technique is that of local independence which holds when there is zero correlation between the manifest (i.e. observable) variables within latent classes.

The analyses were performed using PROC LCA (Lanza et al., 2003), an add-on for SAS for Windows. Four indicators of justice system contact (alcohol-related protective custody episodes, infringements, and apprehensions, and time in prison) were used in the analyses.

To account for variation in the frequency of non-criminal and criminal events, protective custody and infringement were recoded into four response categories: 1 = no occurrence of the event, 2 = low frequency of the event, 3 = moderate frequency of the event, 4 = high frequency of the event, and apprehensions were recoded into three response categories: 1 = no occurrence of the event, 2 = low to moderate frequency of the event, 3 = high frequency of the event. For both alcohol-related infringements and protective custody events, low frequency was defined as the individual having between one and three events occurring on a sporadic basis. Moderate frequency was defined as the individual having either four or five events occurring on a sporadic basis. High frequency was defined as the individual having either (a) two or more infringements or two or more protective custody episodes in a seven-day period on at least two separate occasions during the prior year, or (b) six or more events during the prior year.

Apprehensions occur at a much lower frequency than protective custody and infringement events. In addition, a single alcohol-related apprehension is sufficient to put an individual on the BDR, compared to any combination of three alcohol related protective custodies or alcohol infringement notices in two years. In many instances an apprehension is also followed by a period in custody, which should theoretically introduce a normative break in behaviour and an opportunity for the individual to desist from further offending. For this reason, anything more than one alcohol-related apprehension in the year prior was coded as high frequency. The final indicator, time in prison, was dichotomised due to the low number of individuals who had multiple prison events: 1 = no occurrence, 2 = one or more occurrences. Table 9 and Table 10 show the descriptive statistics for the individual indicators, and the way in which the frequencies of events were coded. The same coding was used for both analyses.

Table 9. Frequency distribution for alcohol-related event indicators (behaviour the BDR)

Indicator	Code	Label and number of events	Frequencies, % (n)
Infringement	1	None (0)	73.2 (4,563)
	2	Low (1-3 sporadic events)	19.7 (1,229)
	3	Moderate (4-5 sporadic events)	2.5 (158)
	4	High (2 or more occasions with 2+ events in 7 days or 6 or more total events)	4.6 (284)
Protective Custody	1	None (0)	60.3 (3,760)
	2	Low (1-3 sporadic events)	27.9 (1,736)
	3	Moderate (4-5 sporadic events)	5.8 (362)
	4	High (2 or more occasions with 2+ events in 7 days or 6 or more total events)	6.0 (376)
Apprehension	1	None (0)	33.9 (2,118)
	2	Low-moderate (1 event)	47.1 (2,935)
	3	High (2 or more events)	18.9 (1,181)
Prison	1	No (0)	67.1 (4,182)
	2	Yes (1 or more occurrences)	32.9 (2,052)

Table 10. Frequency distribution for alcohol-related event indicators (after the BDR)

Indicator	Code	Label and number of events	Frequencies, % (n)
Infringement	1	None (0)	76.9 (2,318)
	2	Low (1-3 sporadic events)	19.5 (755)
	3	Moderate (4-5 sporadic events)	1.7 (119)
	4	High (2 or more occasions with 2+ events in 7 days or 6 or more total events)	1.9 (216)
Protective Custody	1	None (0)	68.0 (2,662)
	2	Low (1-3 sporadic events)	22.2 (664)
	3	Moderate (4-5 sporadic events)	3.5 (57)
	4	High (2 or more occasions with 2+ events in 7 days or 6 or more total events)	6.3 (65)
Apprehension	1	None (0)	33.9 (2,360)
	2	Low-moderate (1 event)	47.1 (510)
	3	High (2 or more events)	18.9 (538)
Prison	1	No (0)	69.3 (2,364)
	2	Yes (1 or more occurrences)	30.1 (1,044)

Using the Bayesian information criterion (BIC; Schwarz, 1978), a four-class solution was identified as providing the best overall fit to the data for both the analysis of events before the BDR (Table 11) and events after the BDR (Table 12). The basis for this decision is that BIC is one of the most widely used evaluation criteria in LCA selection, with smaller results for the criteria indicating a better fitting model. The error of overfitting (i.e. overestimating the true number of classes) is also more likely when working with large n so using a parsimonious criteria, such as BIC, is preferable because sensitivity is more important than specificity. The increases in these criteria beyond the four-class models show that the addition of further classes provided no improvement in model fit.

Table 11. Comparison of baseline models (before the BDR)

No. of classes	Likelihood Ratio G^2	Degrees of Freedom	AIC	BIC
2	1492.1	76	1530.7	1658.8
3	765.9	66	823.9	1019.2
4	202.1	56	280.1	542.9
5	138.3	46	236.3	566.4

Table 12. Comparison of baseline models (after the BDR)

No. of classes	Likelihood Ratio G^2	Degrees of Freedom	AIC	BIC
2	976.5	76	1014.5	1131.0
3	219.9	66	277.9	455.8
4	80.3	56	158.3	397.5
5	67.7	46	165.7	466.2

Note: bold type indicates the best fitting model

An assessment of membership probabilities for both analyses (see Table 13 – before BDR, and Table 14 – after the BDR) provided further confidence in the four-class models as each class was distinguishable from the others in terms of item-response probabilities, and there was no class with a near-zero probability of membership (i.e. the latent classes were non-trivial in size). For each of the identified groups, Table 13 and Table 14 show the probability of membership and conditional item-response probabilities for each type of alcohol-related event. Item-response probabilities range from 0.00 to 1.00, with probabilities closer to 1.00 indicating a higher probability of a ‘yes’ response for that item, conditional on membership in that group. For example in Table 13, individuals in Group 2 show a high (0.62) probability of having low frequency protective custody events occurring in the prior year, a high probability (0.69) of having two or more apprehension events, and a very high (0.87) probability of spending some time in prison.

Table 13. Item response probabilities for the four-group model (before the BDR)

Note: probabilities in bold type indicate greater confidence in the presence of that frequency for the group

		Group 1	Group 2	Group 3	Group 4
Group membership probabilities		22.8%	10.7%	20.3%	46.1%
		<i>Item response probability</i>			
Non-criminal events	Frequency				
Protective custody	None	.05	.12	.93	.85
	Low	.56	.62	.07	.15
	Moderate	.19	.12	.00	.00
	High	.20	.14	.00	.00
Infringement	None	.30	.48	.96	.91
	Low	.48	.36	.04	.09
	Moderate	.08	.04	.00	.00
	High	.14	.12	.00	.00
Criminal events	Frequency				
Apprehension	None	.83	.00	.67	.03
	Low-moderate	.15	.31	.03	.86
	High	.02	.69	.30	.11
Prison	No	.87	.13	.33	.85
	Yes	.13	.87	.67	.15

The types and frequencies of events which define the groups in Table 13 (before BDR) are also approximately comparable to the latent groups identified in the earlier process evaluation of the Banned Drinker Register in the Northern Territory (Smith, & Adamson, 2018). The key difference is the size of the group memberships as the people added in the second six months have, in general, lower frequencies of events in the year prior to going on the BDR (i.e. if they had high frequency events they would have gone on to the BDR sooner). The BDR process evaluation, for example, identified the rare event group (i.e. a single apprehension) as making up 36.6% of the sample. In the current outcome evaluation this grew, as a percentage of the total, to 41.6% which reflects the month-to-month increase in the number of people being on the BDR for a police issued ban relating to an alcohol-related offence (see Table 10).

Table 14. Item response probabilities for the four-group model (after the BDR)

		Group A	Group B	Group C	Group D
Group membership probabilities		15.1%	7.4%	13.4%	64.0%
<i>Item response probability</i>					
Non-criminal events	Frequency				
Protective custody	None	.70	.01	.04	.89
	Low	.30	.52	.51	.11
	Moderate	.00	.19	.14	.00
	High	.00	.28	.31	.00
Infringement	None	.87	.28	.21	.92
	Low	.13	.57	.61	.08
	Moderate	.00	.05	.09	.00
	High	.00	.10	.09	.00
Criminal events	Frequency				
Apprehension	None	.02	.16	.86	.88
	Low-moderate	.41	.19	.09	.10
	High	.57	.65	.05	.02
Prison	No	.21	.01	.98	.83
	Yes	.79	.99	.02	.17

6.3 Appendix 2: Interrupted time series analysis

Interrupted time series (ITS) design is a powerful quasi-experimental approach to evaluating the longitudinal effects of interventions introduced at a clearly defined time point. To most effectively capture changes in the outcome of interest from pre-intervention to post-intervention, a modified approach to standard regression analysis, such as segmented regression, is required. Using interrupted time series data on a continuous outcome measure collected at regularly spaced intervals, segmented regression analysis captures both the change in level of the outcome (i.e. jump or drop in the outcome), and the change in trend of the outcome (i.e. increase or decrease in) from one time segment to another (e.g. pre-intervention compared to post-intervention). The strength of this approach is that prior trends in the outcome variable are able to be controlled for so that the impact of external factors other than the intervention (e.g. a pre-existing downward trend) can be determined.

The analysis was performed using PROC AUTOREG (Penfold, 2013), a function in SAS software. The main model included an intercept, a term for the baseline trend (i.e. prior to t0), and terms for change in level and trend after t0. Four months of observations, two months prior to t0 and two months after t0, were removed for each individual. Excluding this data recognised that events in the two months before t0 are likely to be inflated due to trigger events, and events in the two months after t0 may not reflect the true 'effect' of the BDR on alcohol-related events. This is a group of individuals with a moderate to high frequency of alcohol-related events in the year prior to going on the BDR so it is expected some may take longer to change (e.g. the individual will first need to run out of alcohol, their immediate friends and family will need to be issued bans to reduce/cut-off their alcohol supply network). The Durbin-Watson value indicated the presence of autocorrelation so this was adjusted for by using the maximum likelihood method and a lag term¹².

Results presented in Table 13 indicate that in the year prior to going on the BDR, there was no significant change in the mean number of events days per 100 opportunity days (*p*-value for baseline trend = 0.28). After the BDR however, there was a slight but significant decrease in the day-to-day number of event days per 100 opportunity days (*p*-value of <.001).

Table 15. Parameter estimates, standard errors and *p*-values segmented regression model

	Coefficient	Standard error	<i>t</i> -statistic	<i>p</i> -value
Intercept θ_0	2.079	0.075	2.784	<.001
Baseline trend θ_1	.001	0.001	.108	0.28
Level change after BDR θ_2	.049	.105	.047	0.64
Trend change after BDR θ_3	-.004	.004	-.625	<.001

¹² Durbin-Watson statistic (original):1.75
Durbin-Watson statistic (transformed):1.99

6.4 Appendix 3: Regional administrative data

Darwin

Figure 58. Number of alcohol-related assault offences and 12-month rolling average, Darwin

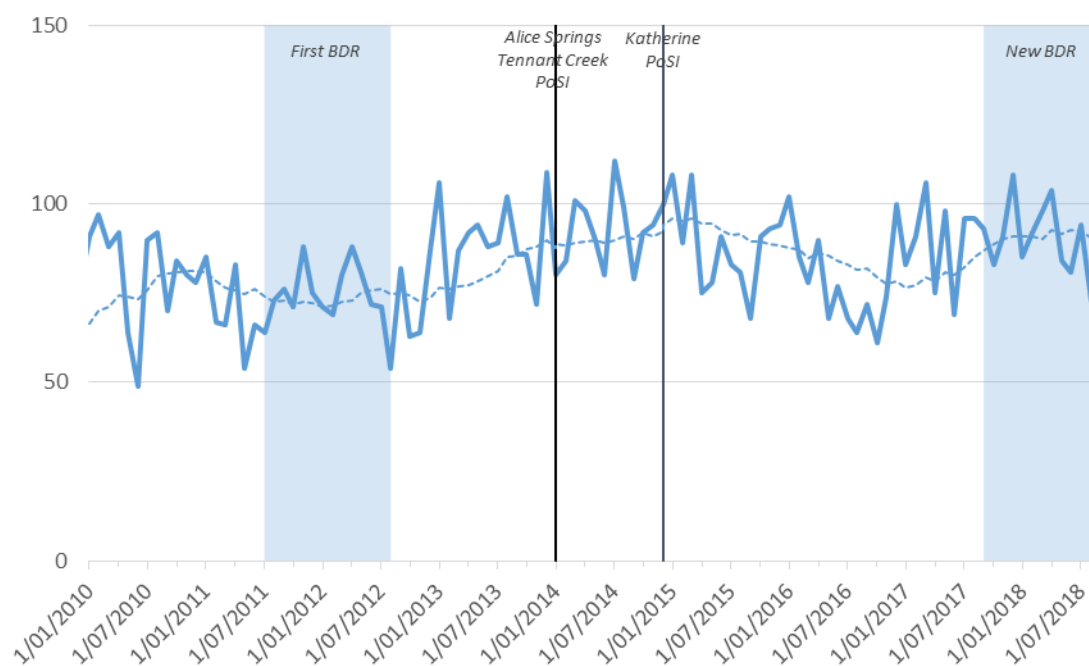


Figure 59. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Darwin

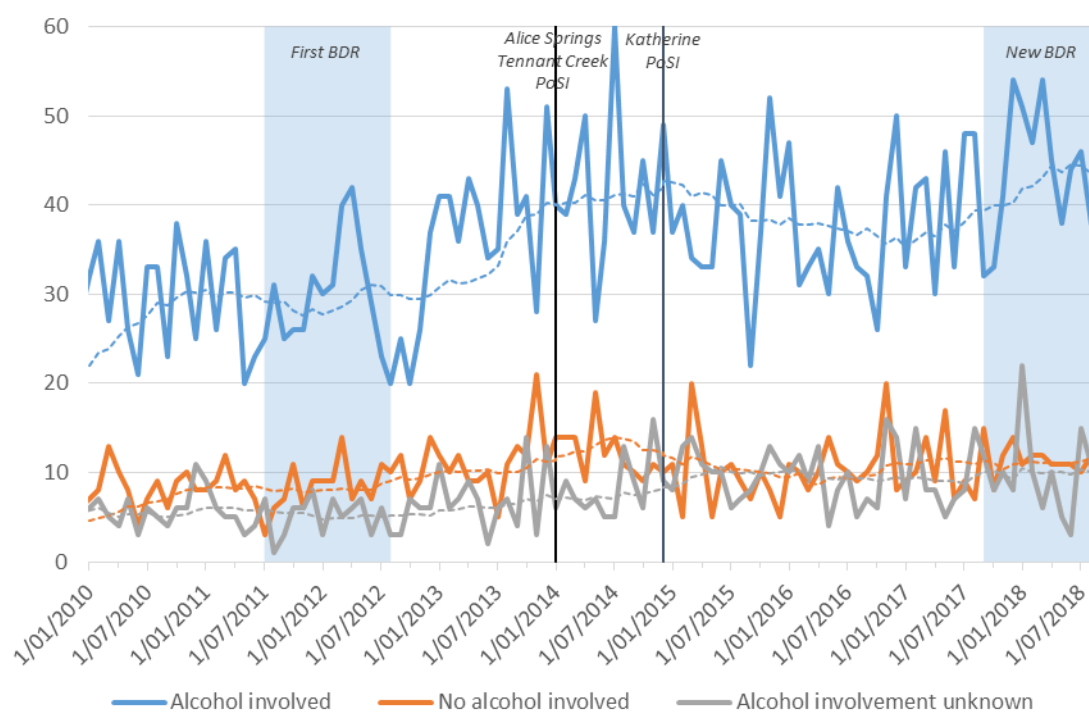


Figure 60. Monthly domestic violence applications and 12-month rolling averages, Darwin court

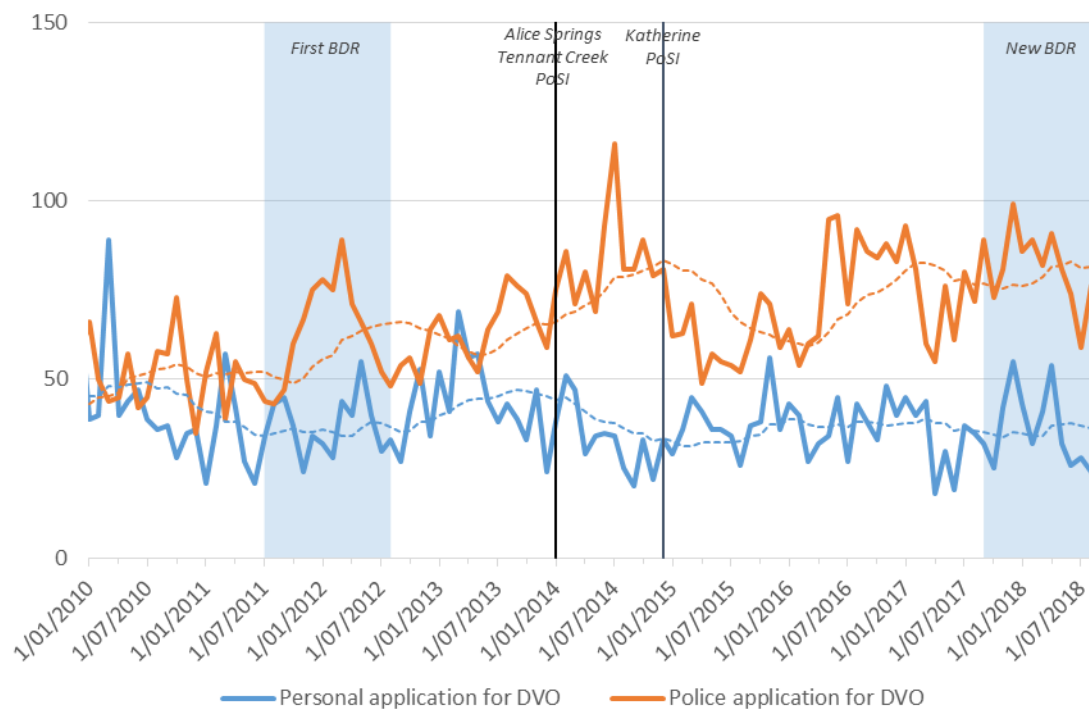


Figure 61. Monthly victims of alcohol-related assault by demographic group, Darwin, 12-month rolling averages

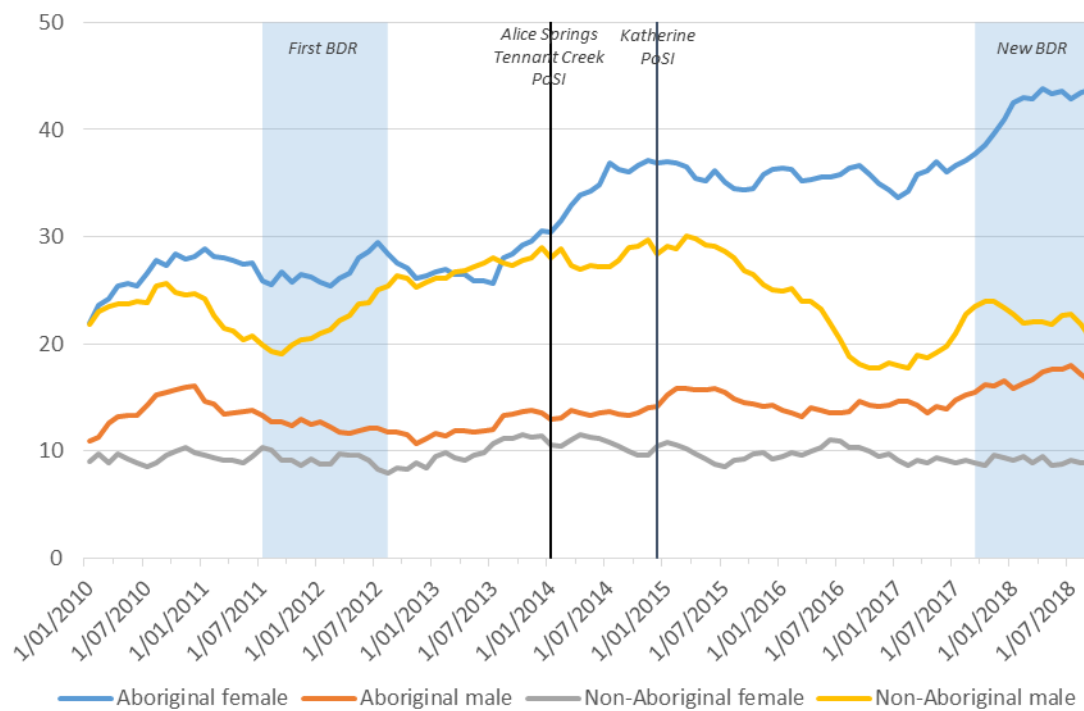


Figure 62. Monthly victims of alcohol-related assault by age group, Darwin, 12-month rolling averages

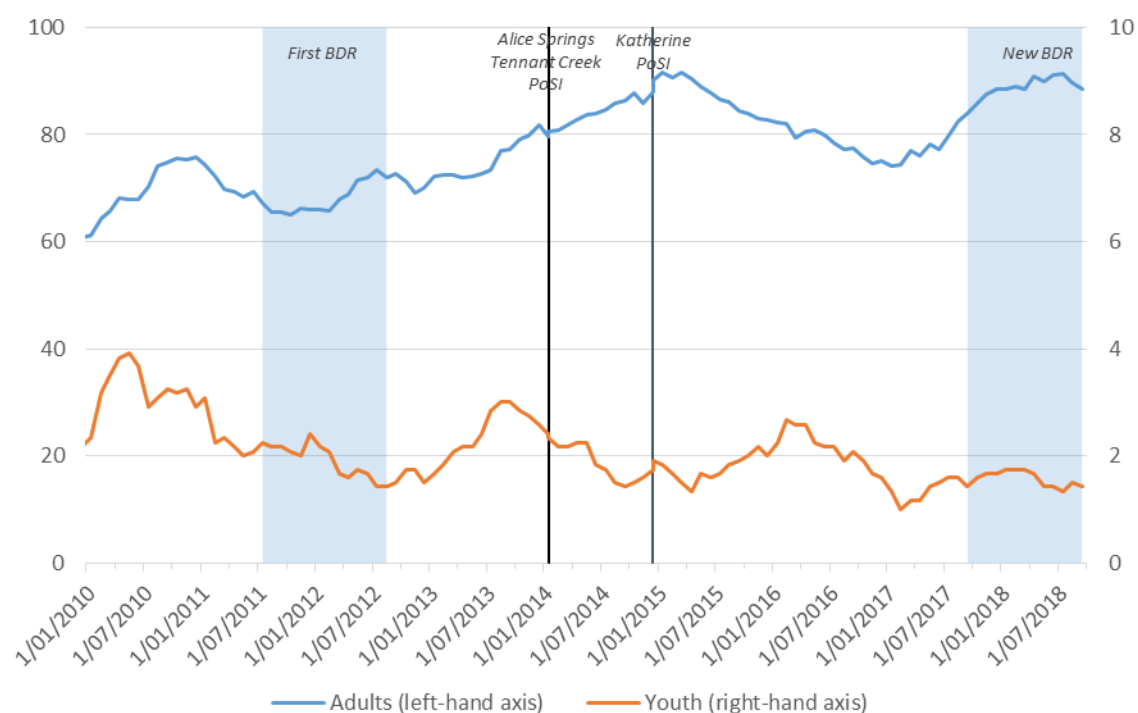


Figure 63. Number of drink-driving offences and 12-month rolling average, Darwin

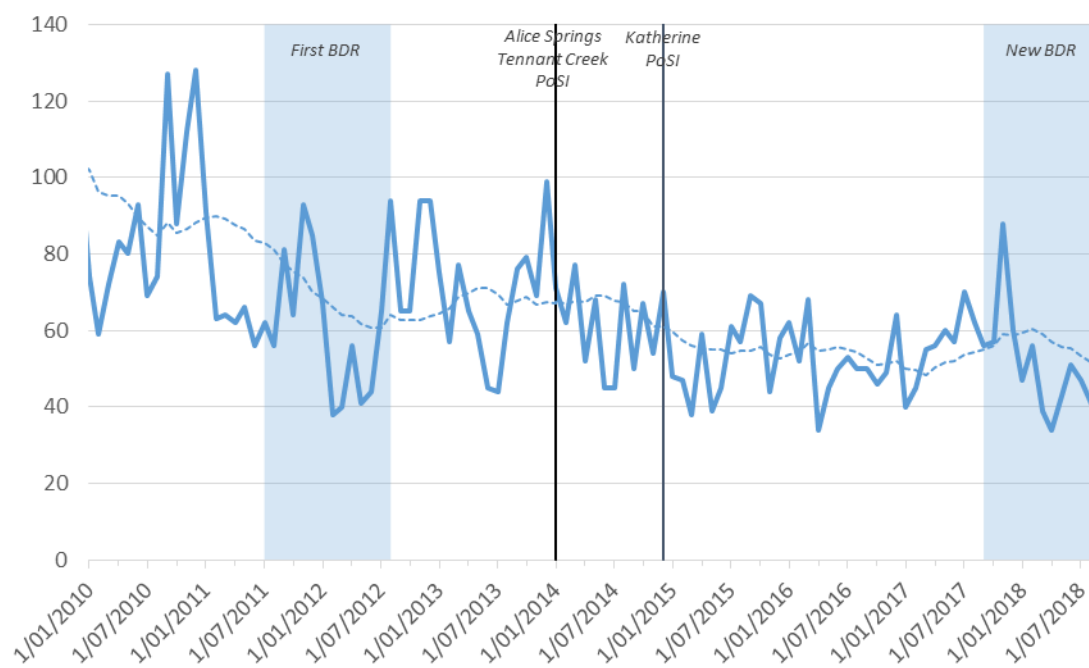


Figure 64. Number of drink-driving offences by type, Darwin, 12-month rolling averages

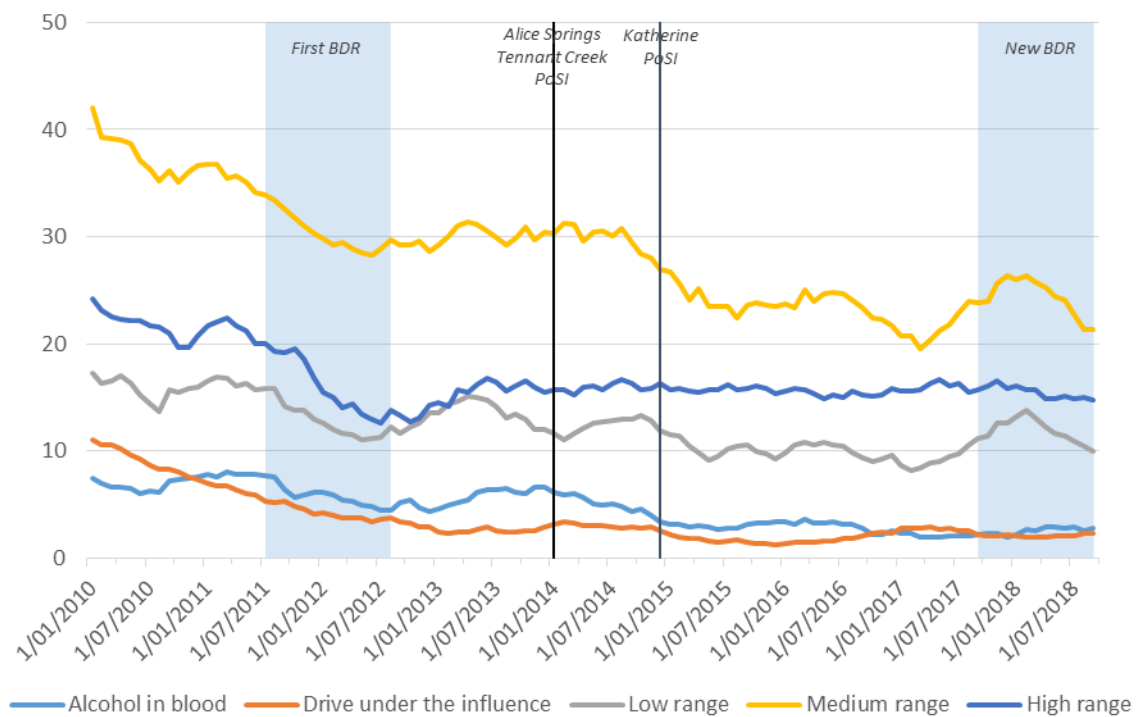


Figure 65. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Darwin

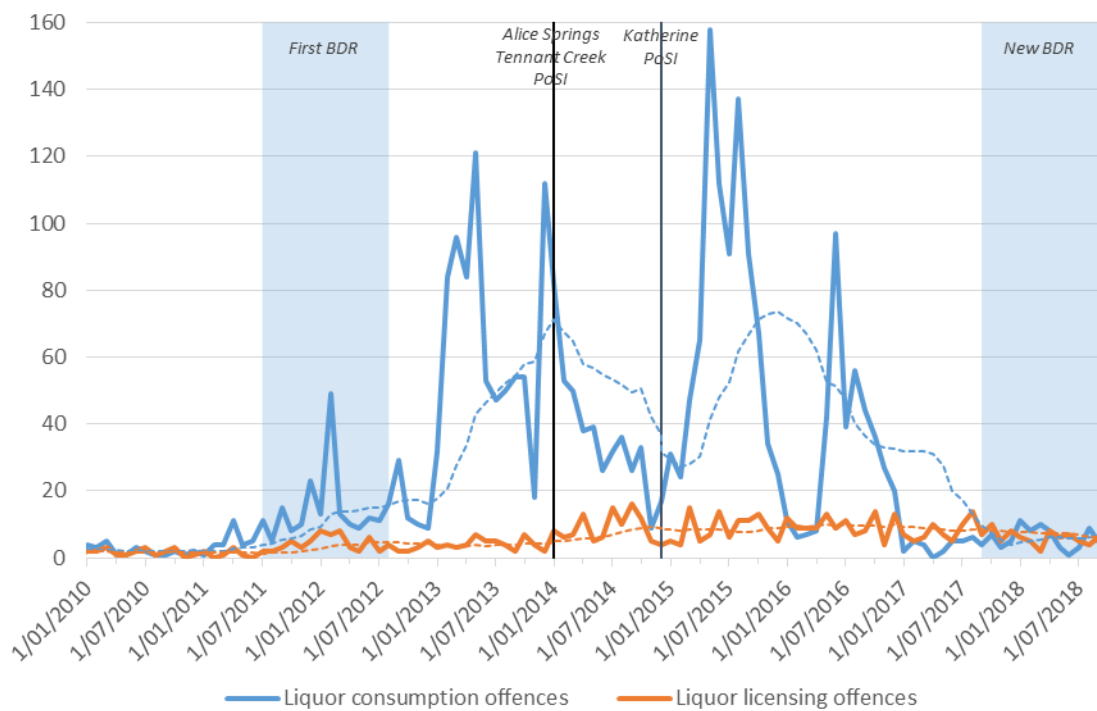


Figure 66. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Darwin

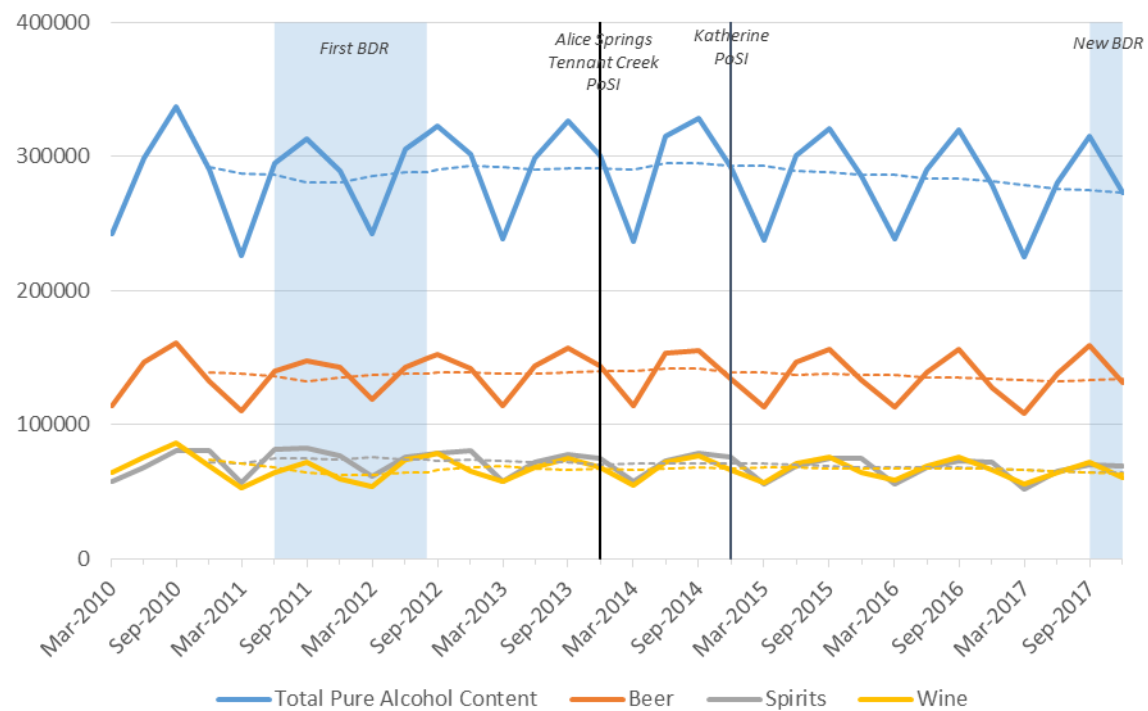


Figure 67. Monthly adult alcohol-related apprehensions and 12-month rolling average, Darwin

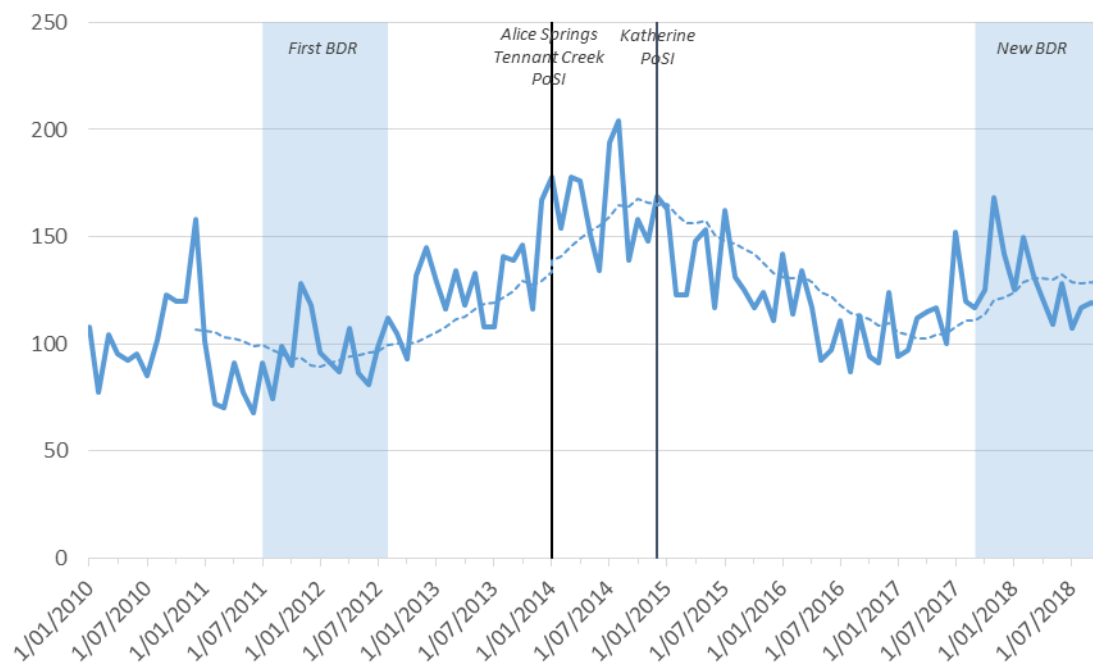


Figure 68. Number of alcohol-related infringement notices and 12-month rolling average, Darwin

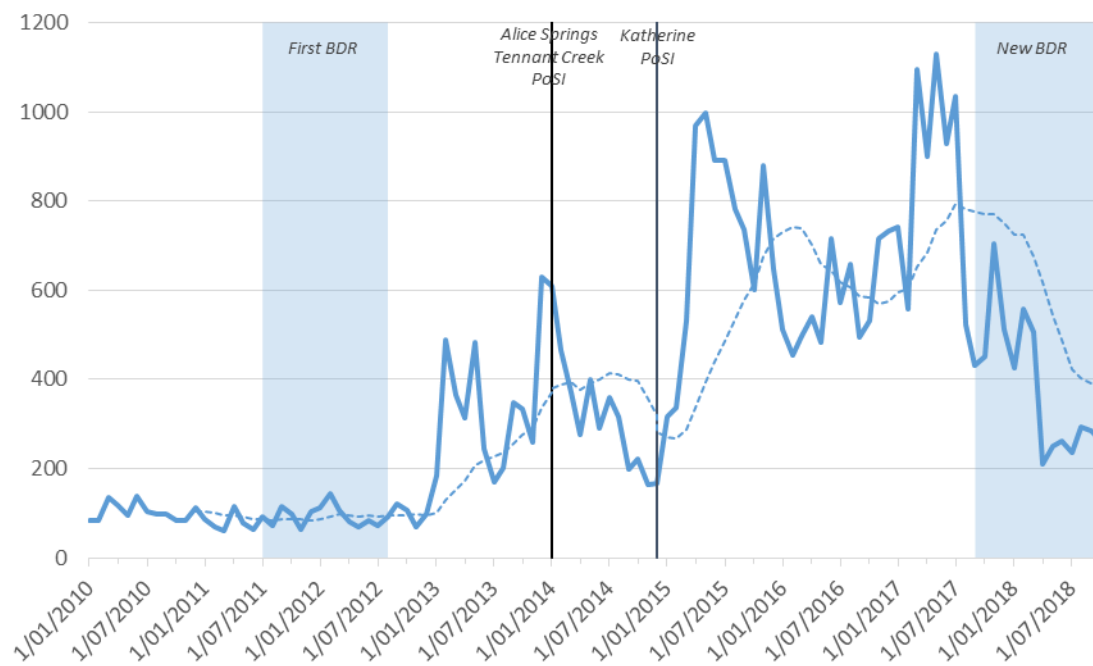
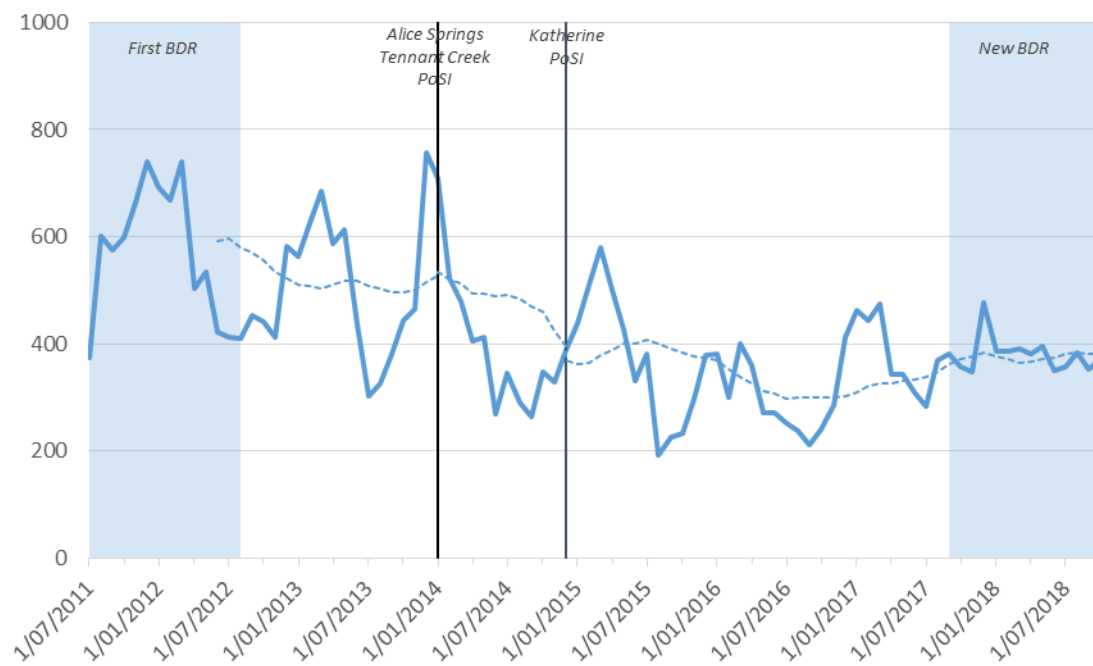


Figure 69. Number of alcohol-related protective custody episodes and 12-month rolling average, Darwin



6.4.2 Palmerston

Figure 70. Number of alcohol-related assault offences and 12-month rolling average, Palmerston

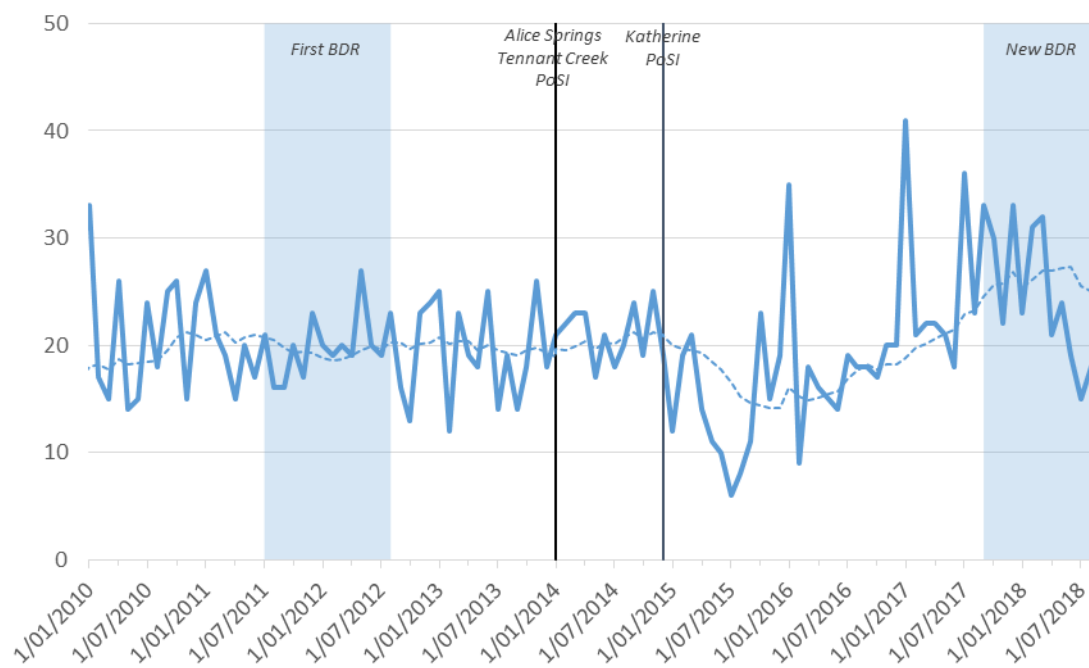


Figure 71. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Palmerston

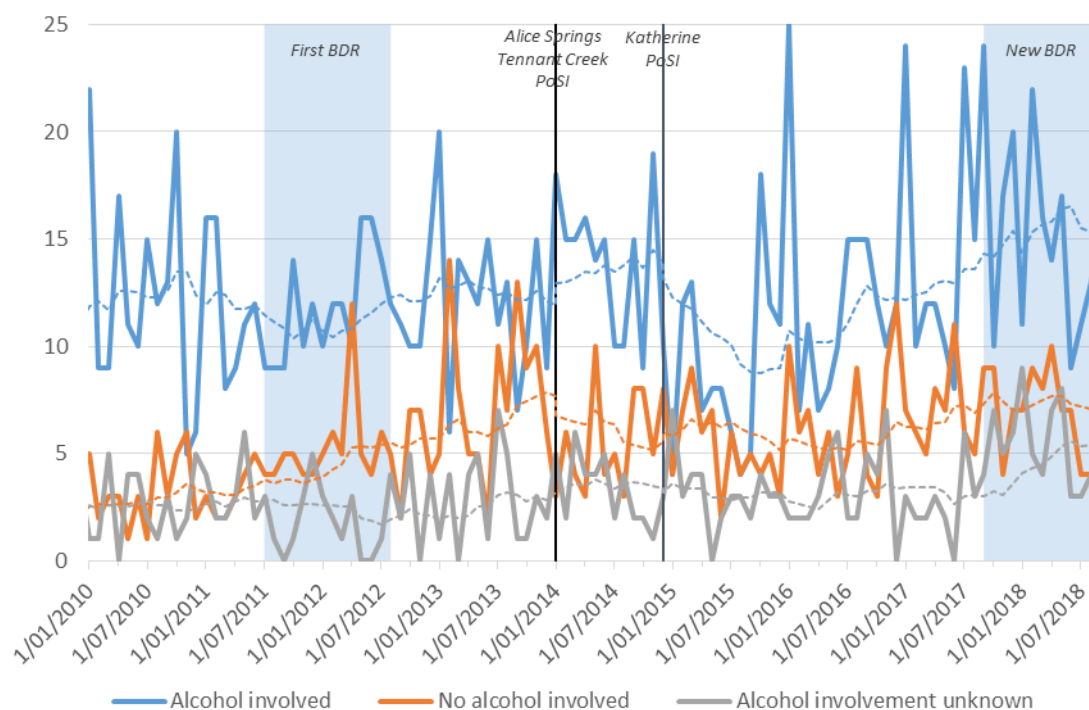


Figure 72. Monthly victims of alcohol-related assault by demographic group, Palmerston, 12-month rolling averages

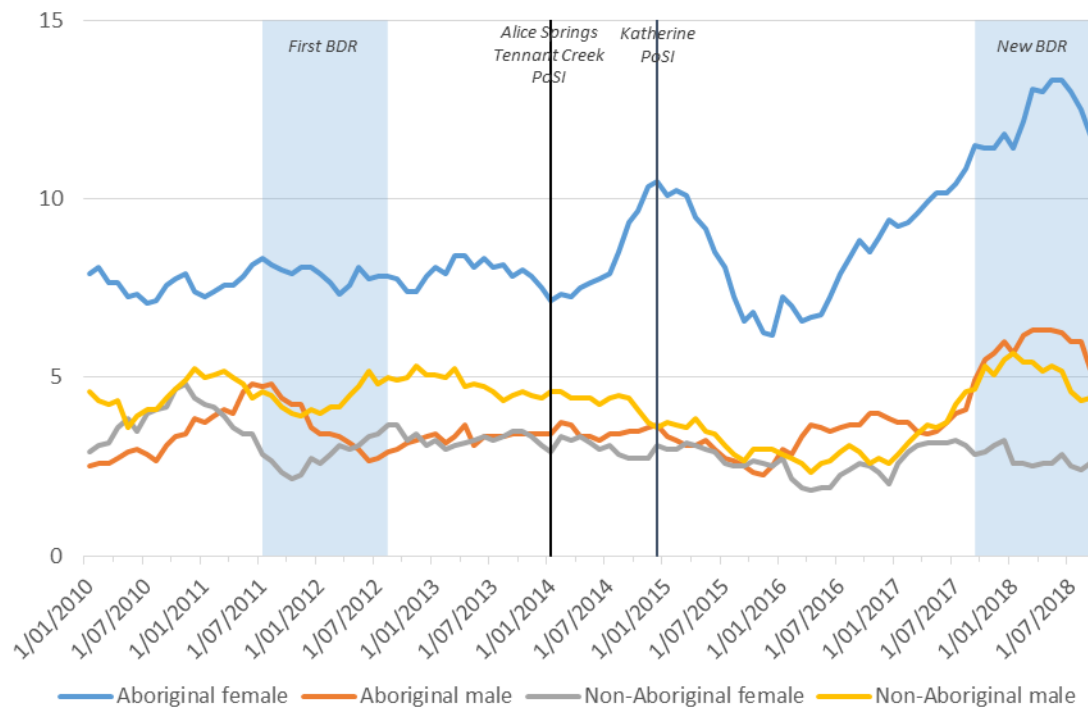


Figure 73. Monthly victims of alcohol-related assault by age group, Palmerston, 12-month rolling averages

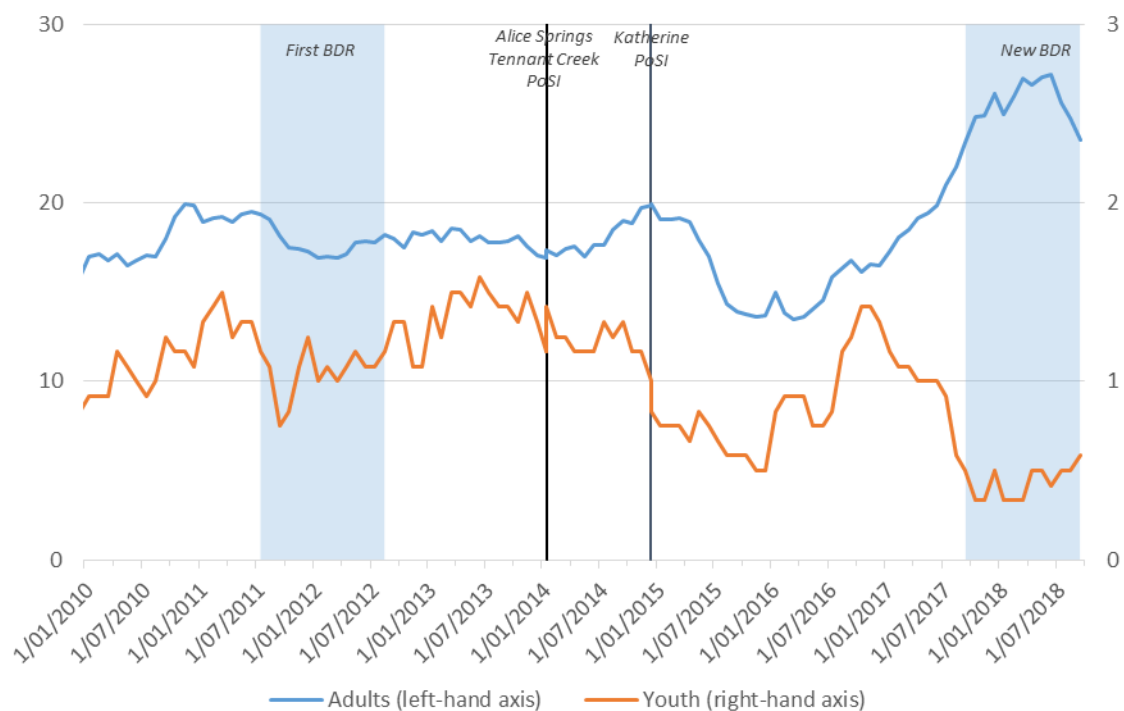


Figure 74. Number of drink-driving offences and 12-month rolling average, Palmerston

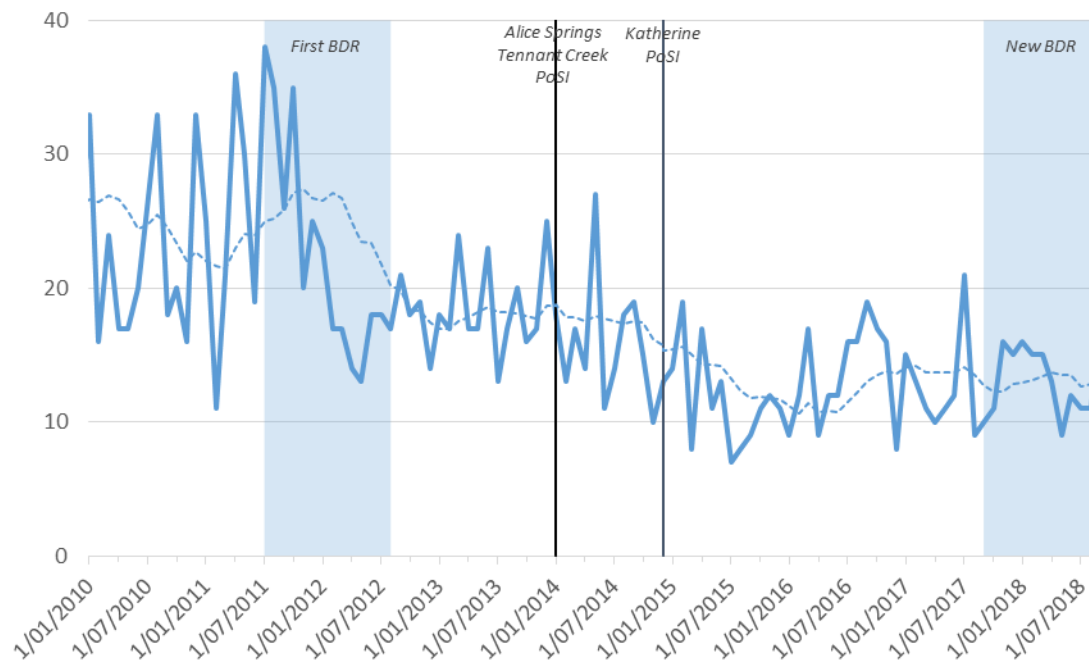


Figure 75. Number of drink-driving offences by type, Palmerston, 12-month rolling averages

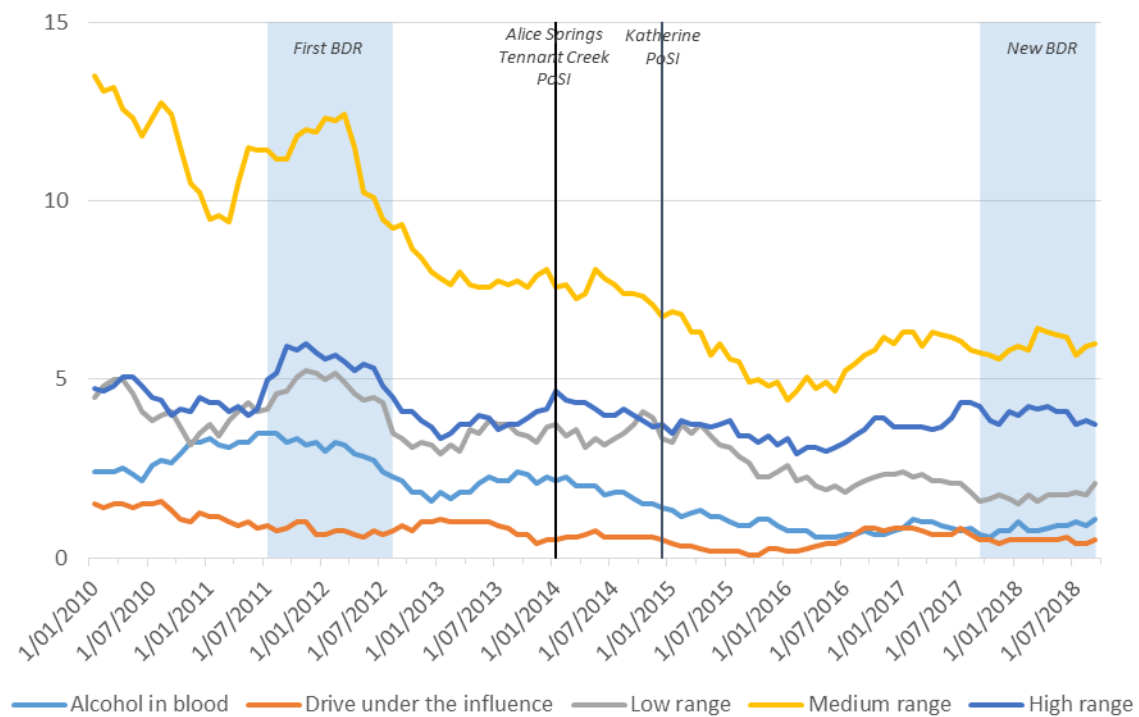


Figure 76. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Palmerston

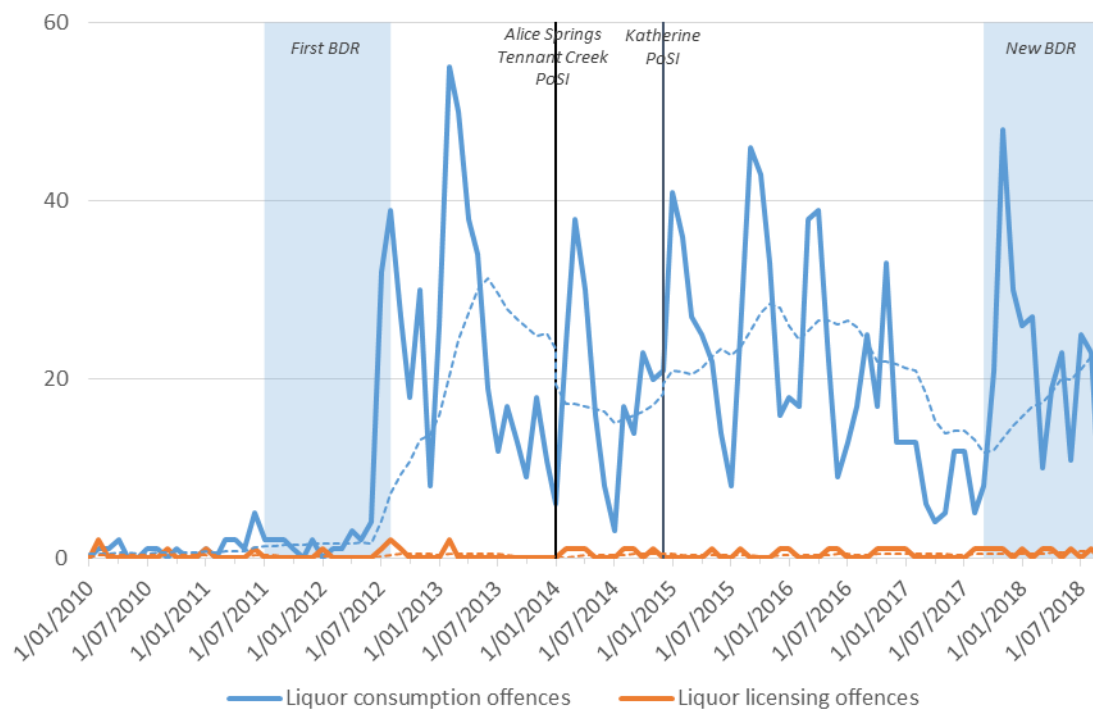


Figure 77. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Palmerston

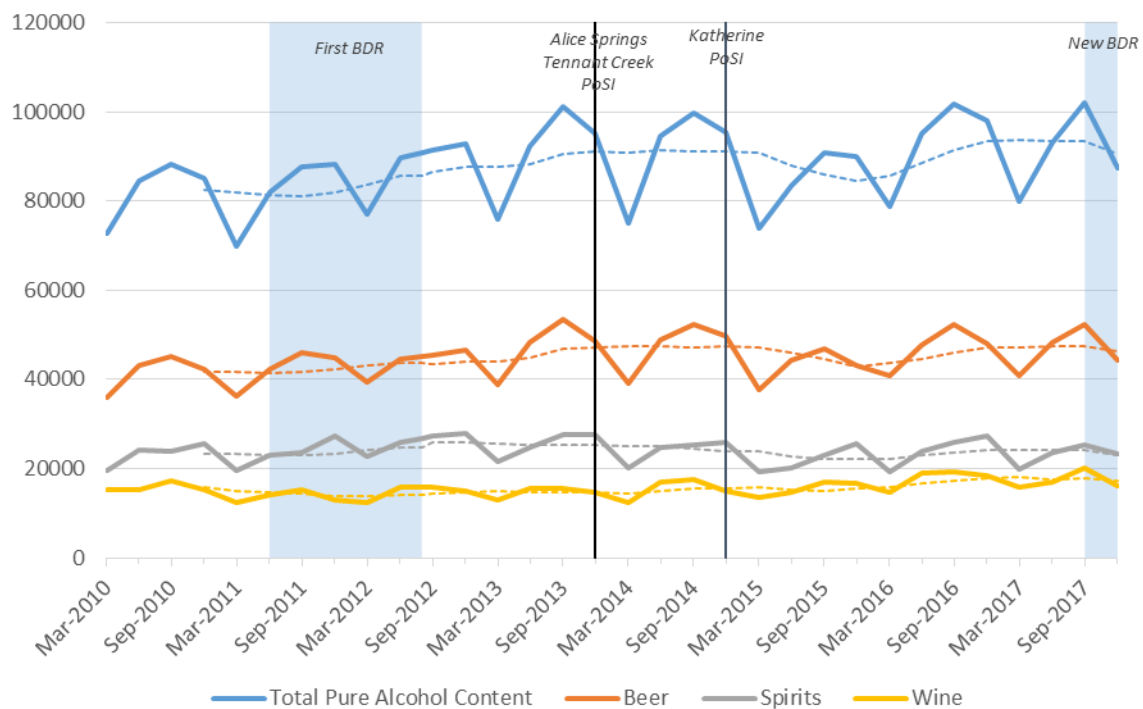


Figure 78. Monthly adult alcohol-related apprehensions and 12-month rolling average, Palmerston

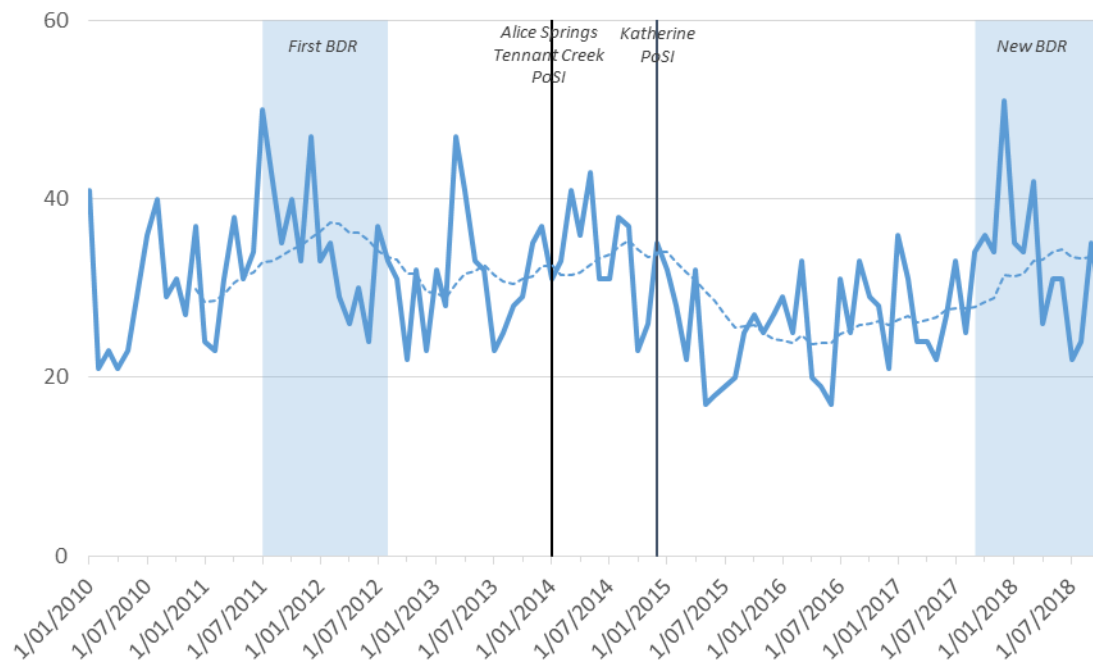


Figure 79. Number of alcohol-related infringement notices and 12-month rolling average, Palmerston

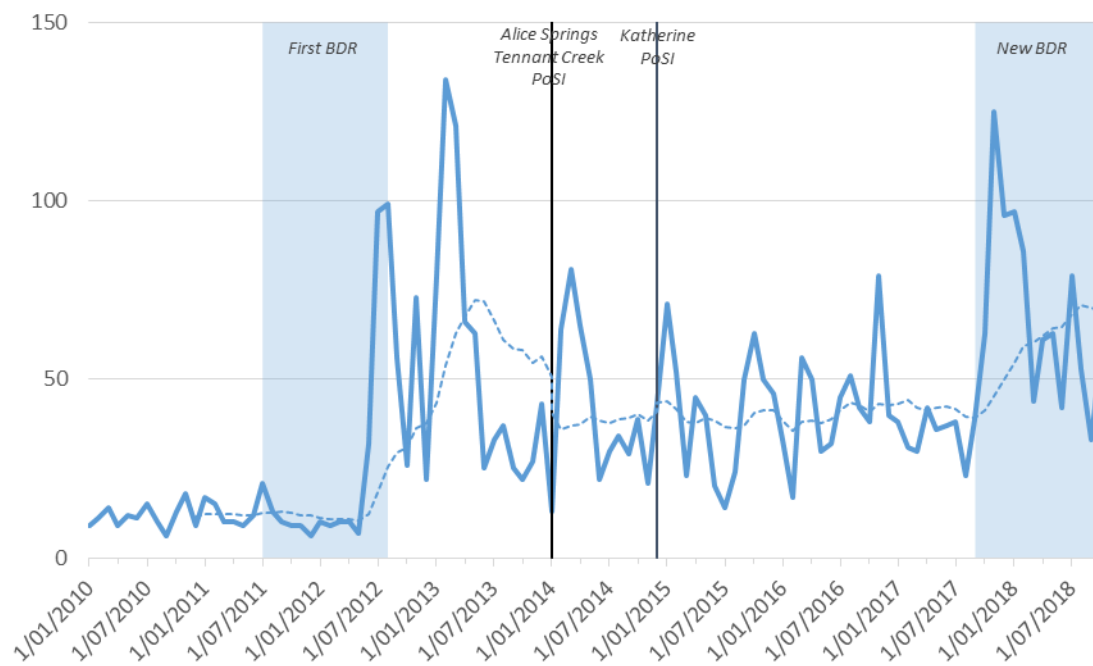
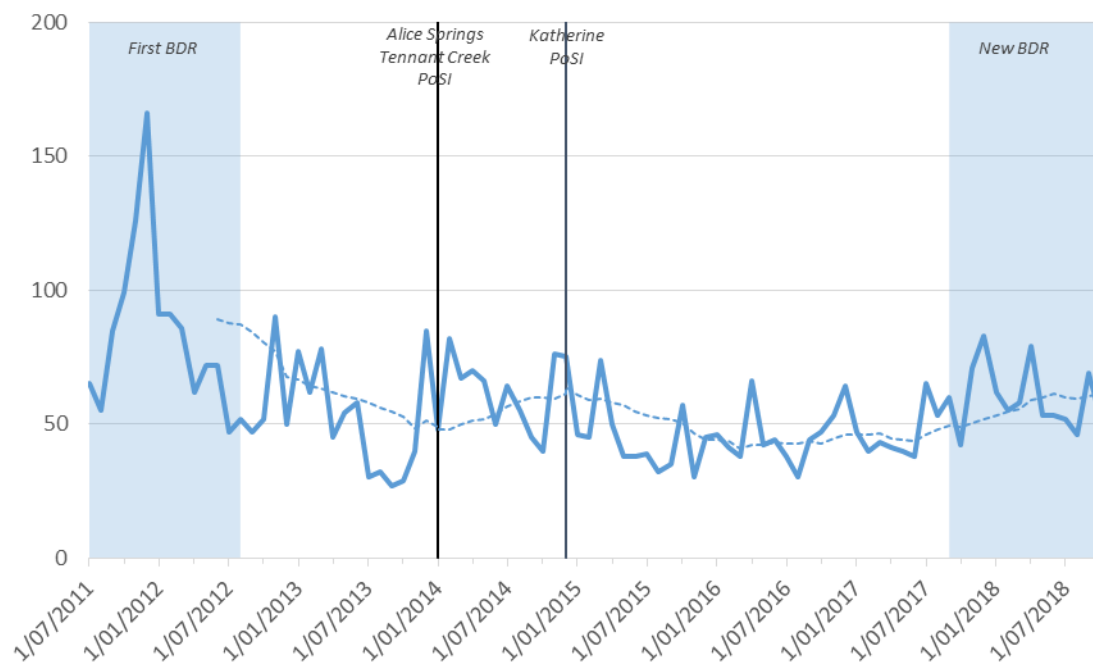


Figure 80. Number of alcohol-related protective custody episodes and 12-month rolling average, Palmerston



6.4.3 Alice Springs

Figure 81. Number of alcohol-related assault offences and 12-month rolling average, Alice Springs

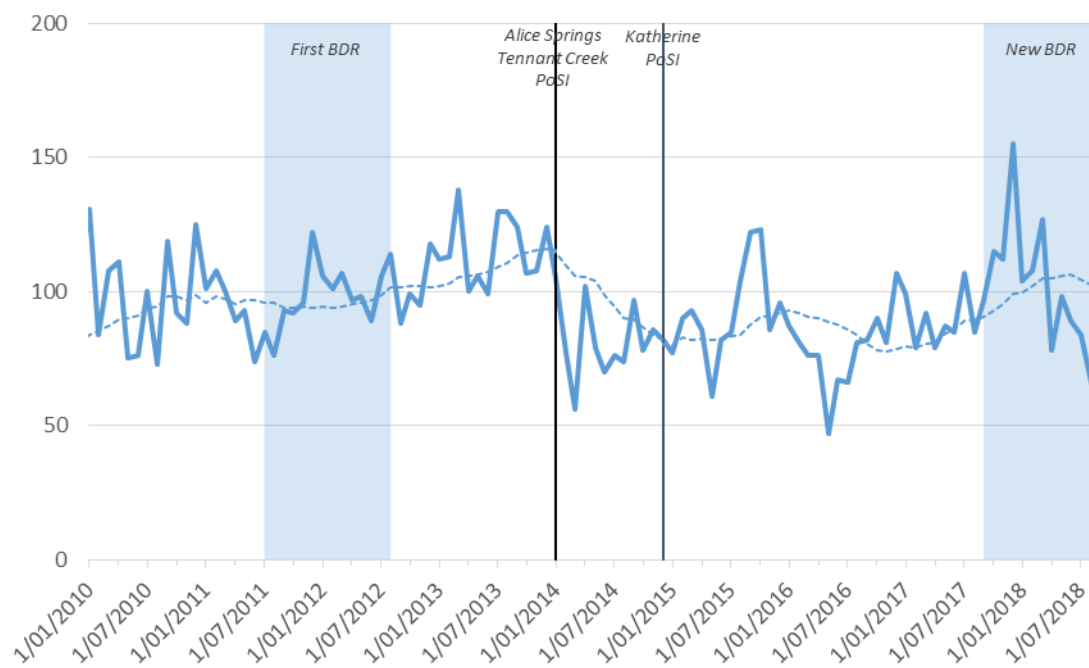


Figure 82. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Alice Springs

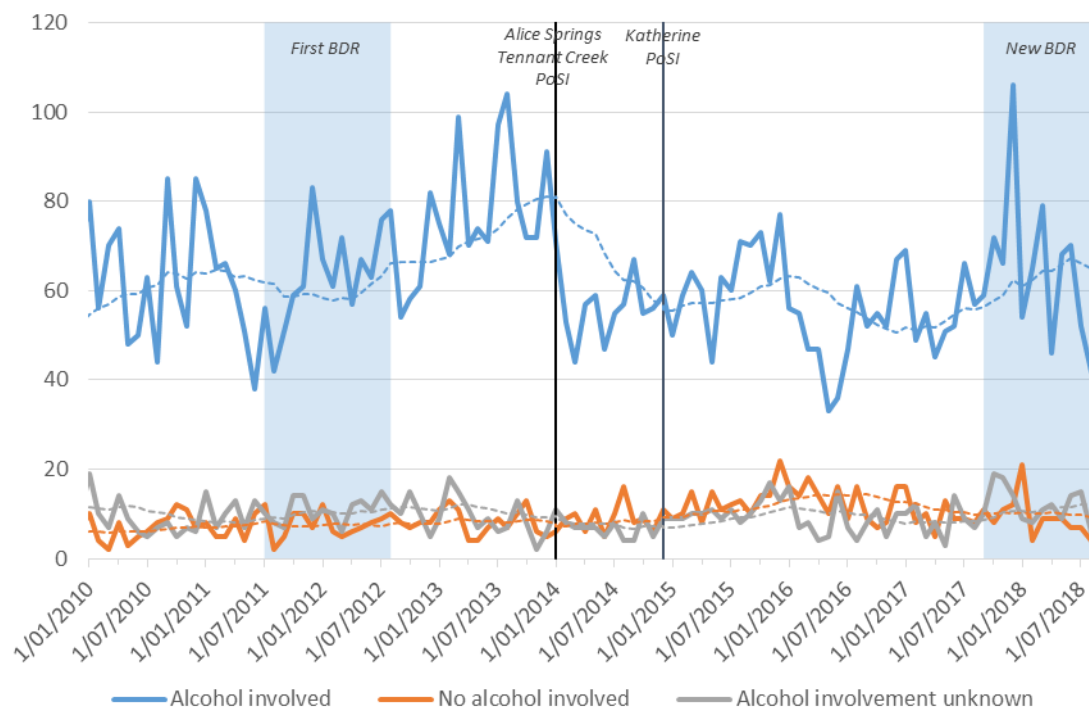


Figure 83. Monthly domestic violence applications and 12-month rolling averages, Alice Springs court

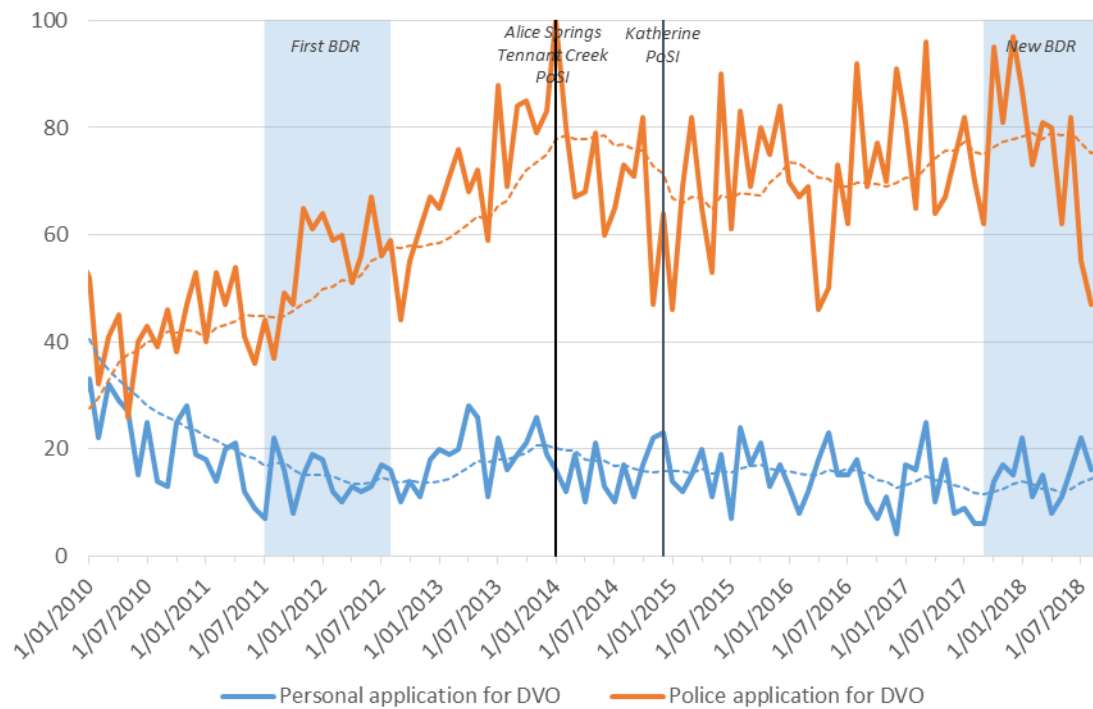


Figure 84. Monthly victims of alcohol-related assault by demographic group, Alice Springs, 12-month rolling averages

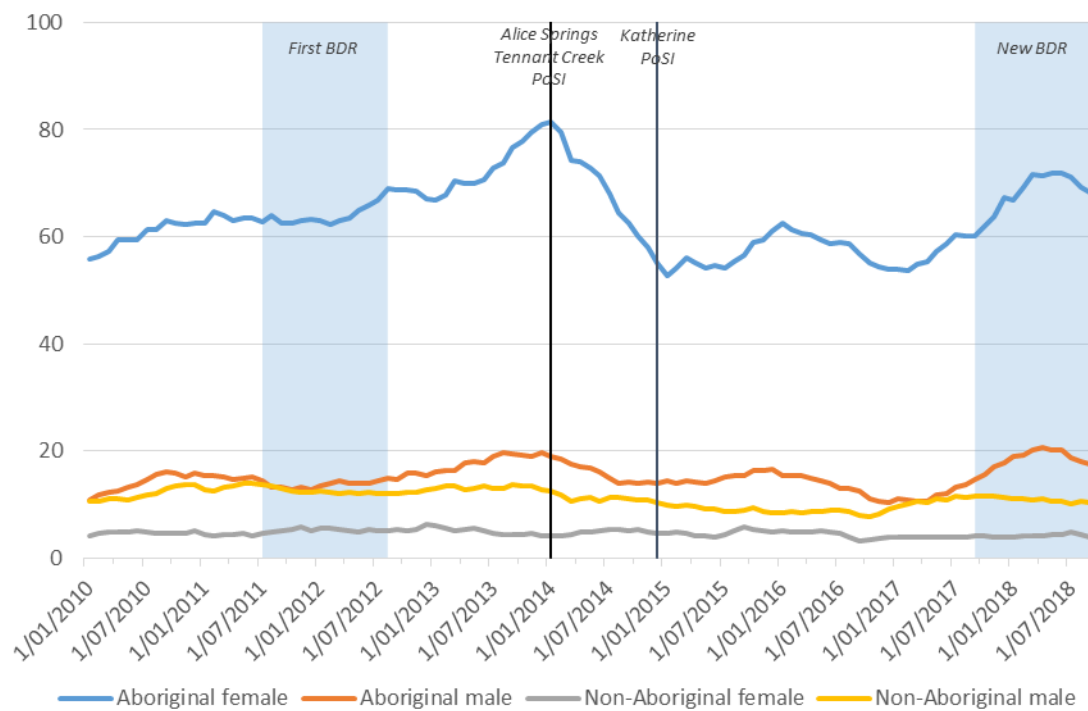


Figure 85. Monthly victims of alcohol-related assault by age group, Alice Springs, 12-month rolling averages

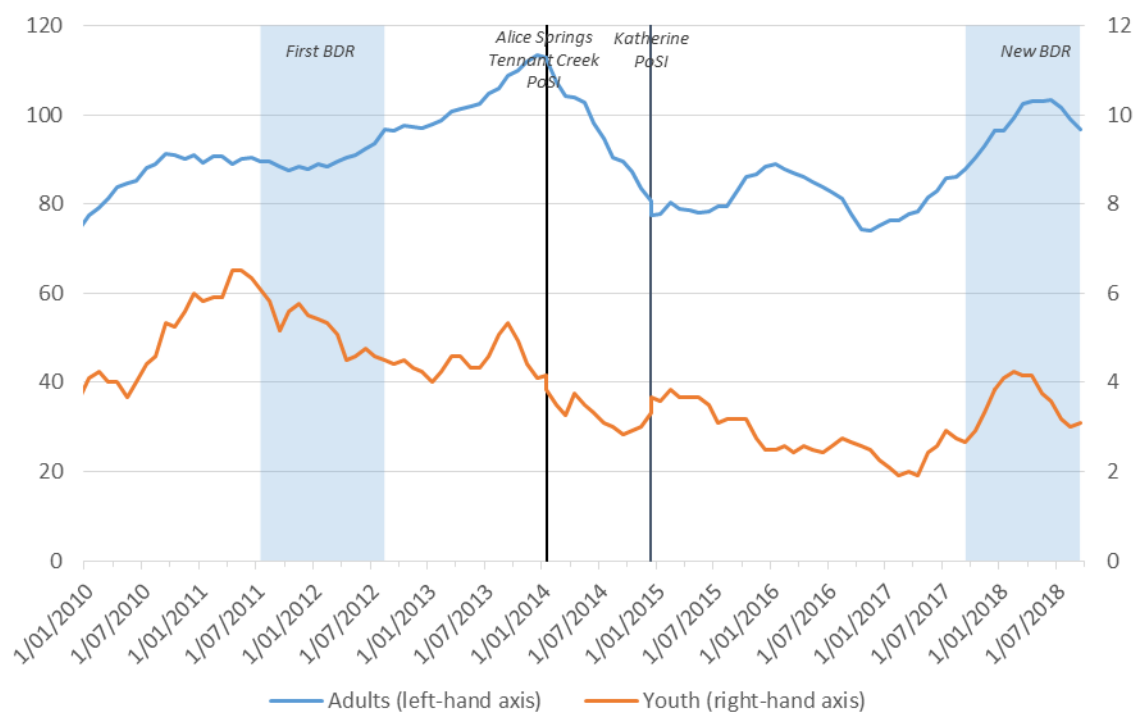


Figure 86. Number of drink-driving offences and 12-month rolling average, Alice Springs

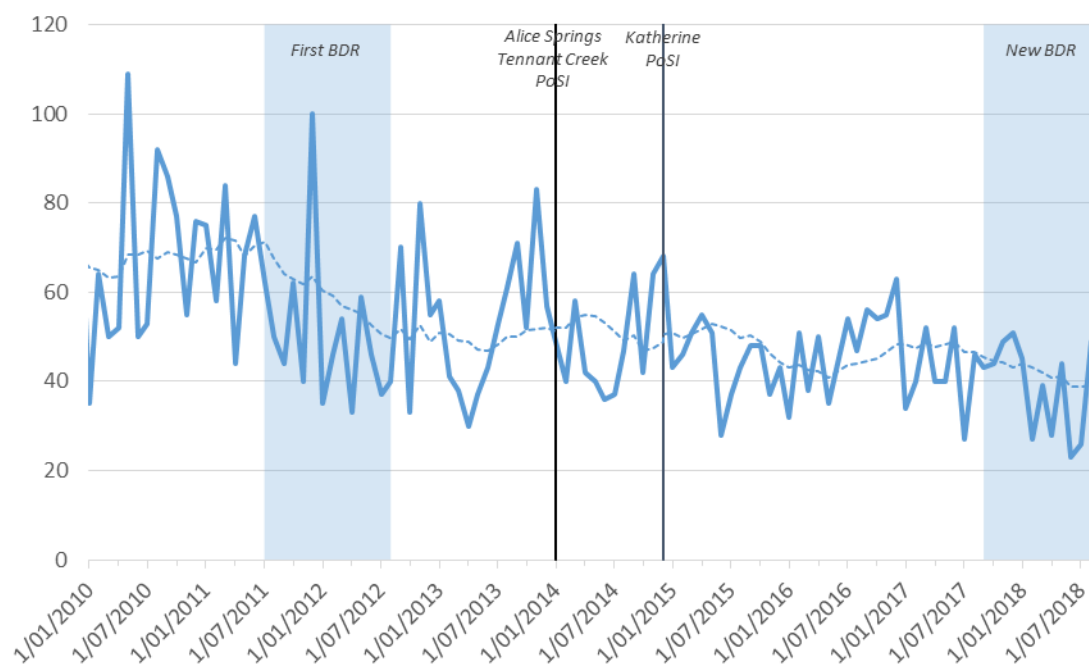


Figure 87. Number of drink-driving offences by type, Alice Springs, 12-month rolling averages

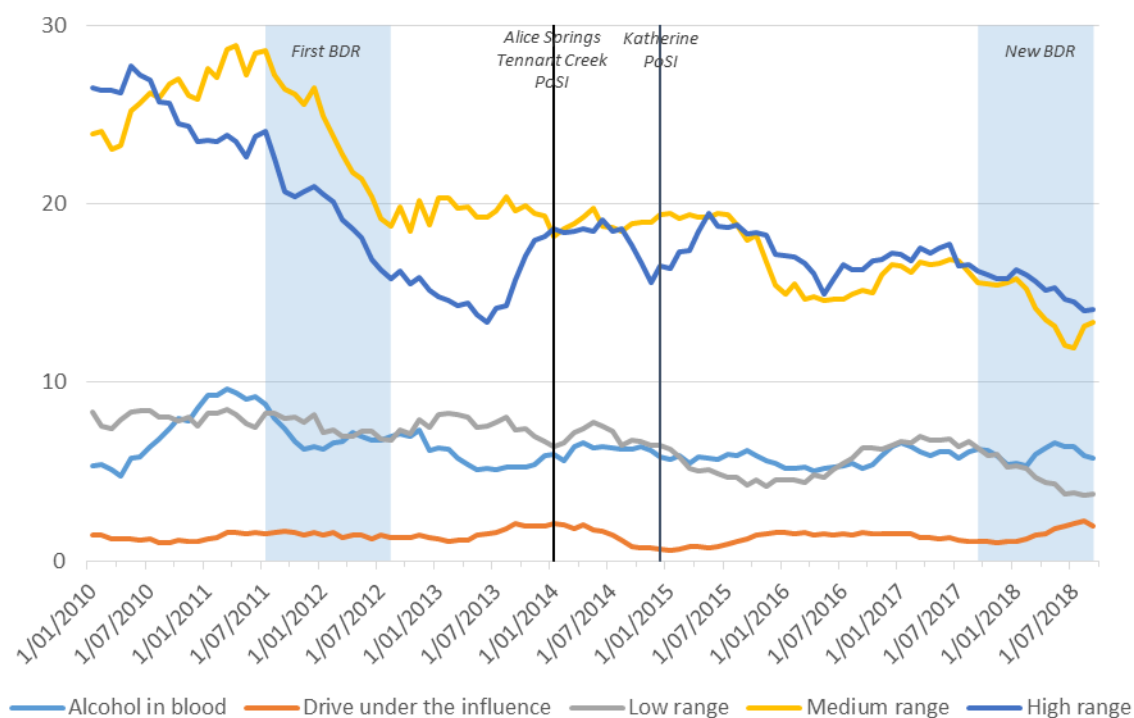


Figure 88. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Alice Springs

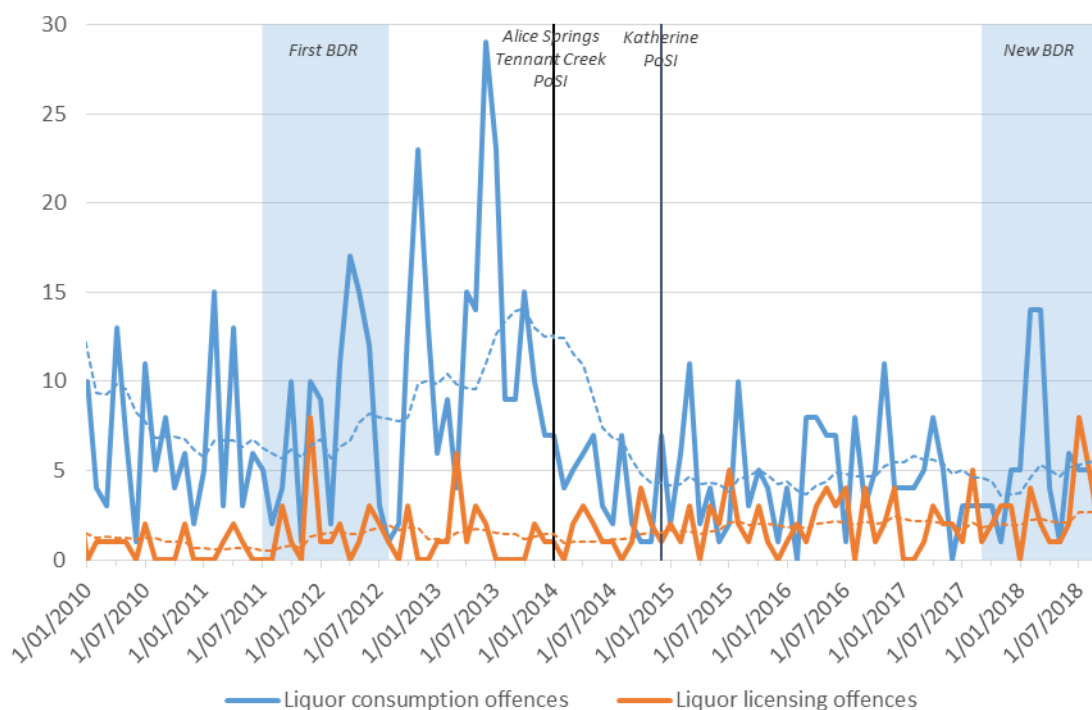


Figure 89. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Alice Springs

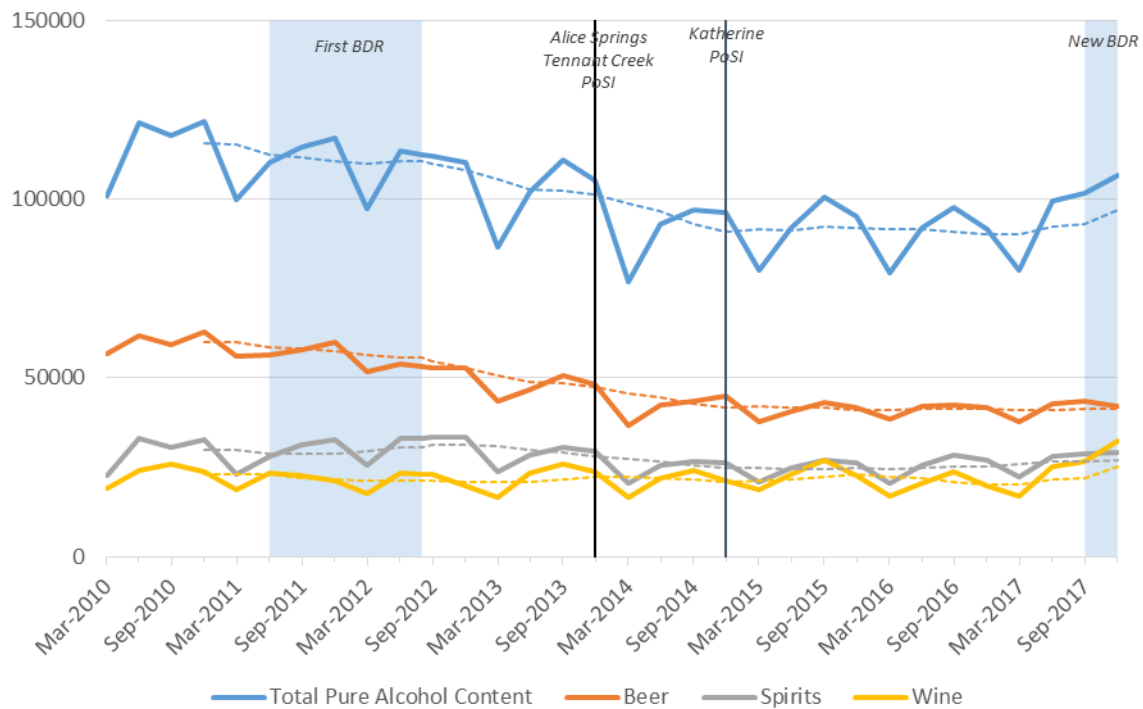


Figure 90. Monthly adult alcohol-related apprehensions and 12-month rolling average, Alice Springs

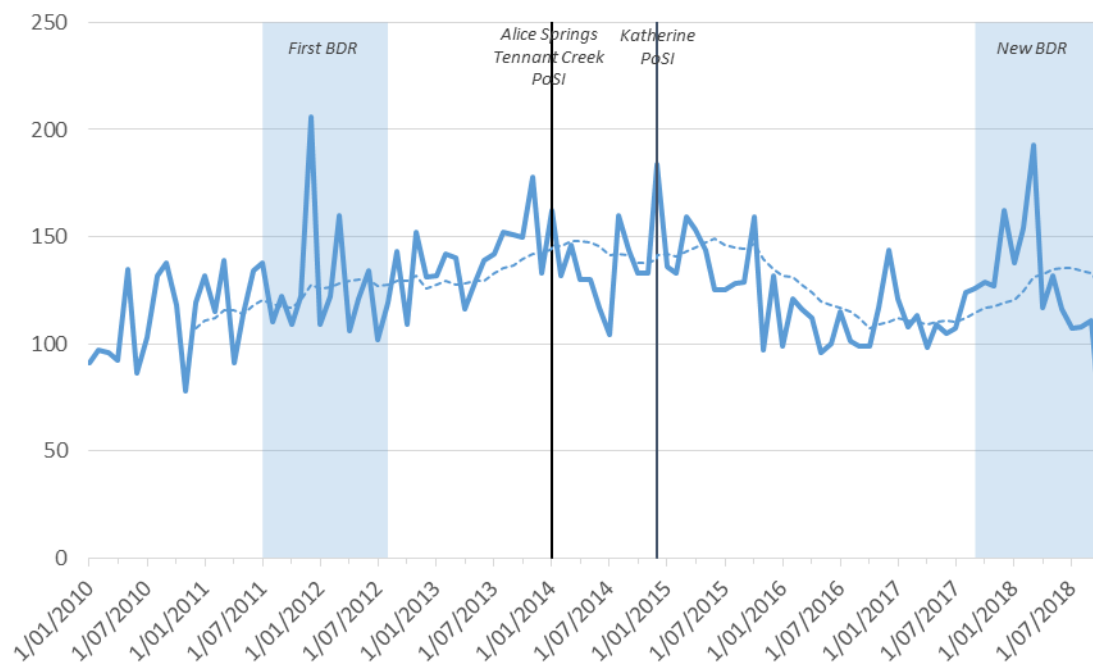


Figure 91. Number of alcohol-related infringement notices and 12-month rolling average, Alice Springs

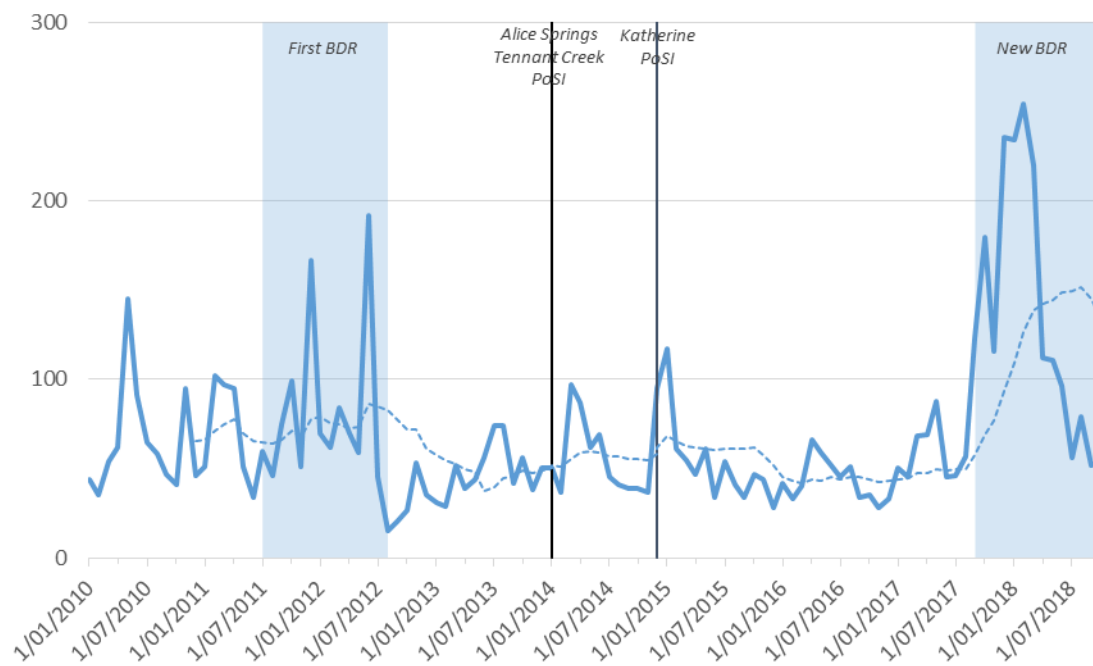
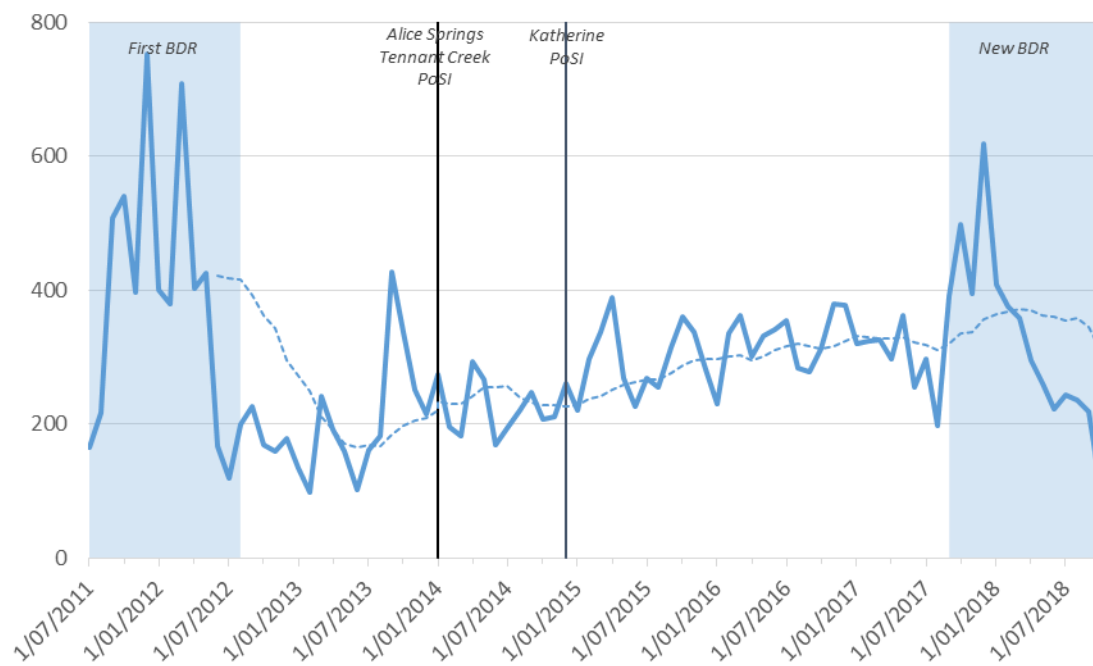


Figure 92. Number of alcohol-related protective custody episodes and 12-month rolling average, Alice Springs



6.4.4 Katherine

Figure 93. Number of alcohol-related assault offences and 12-month rolling average, Katherine

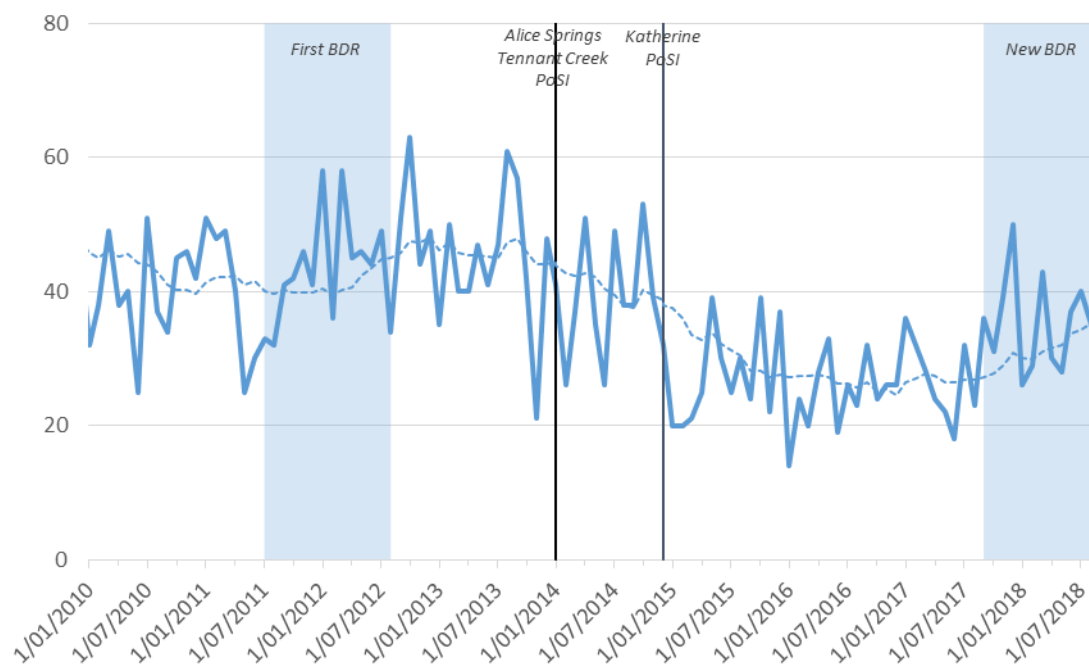


Figure 94. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Katherine

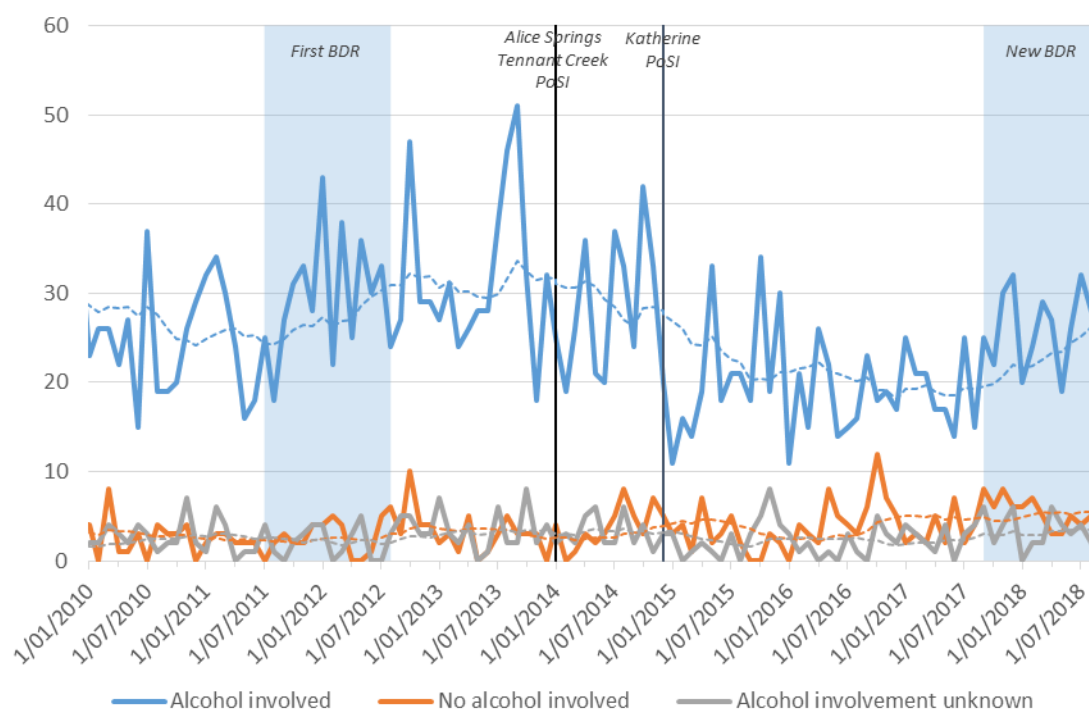


Figure 95. Monthly domestic violence applications and 12-month rolling averages, Katherine court

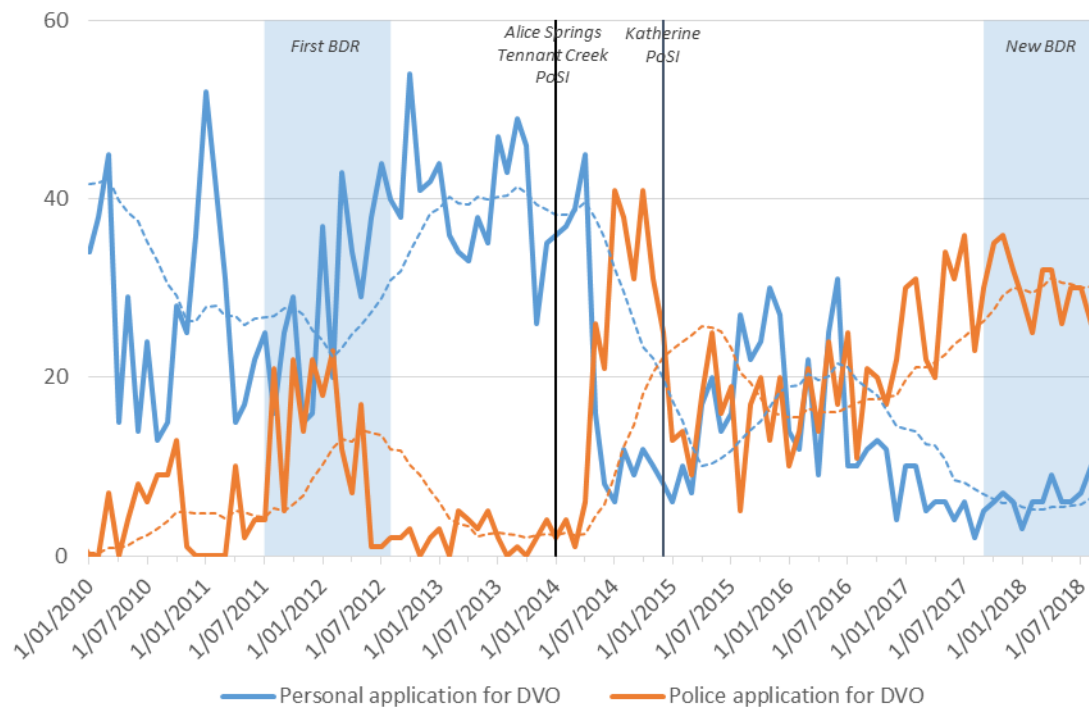


Figure 96. Monthly victims of alcohol-related assault by demographic group, Katherine, 12-month rolling averages

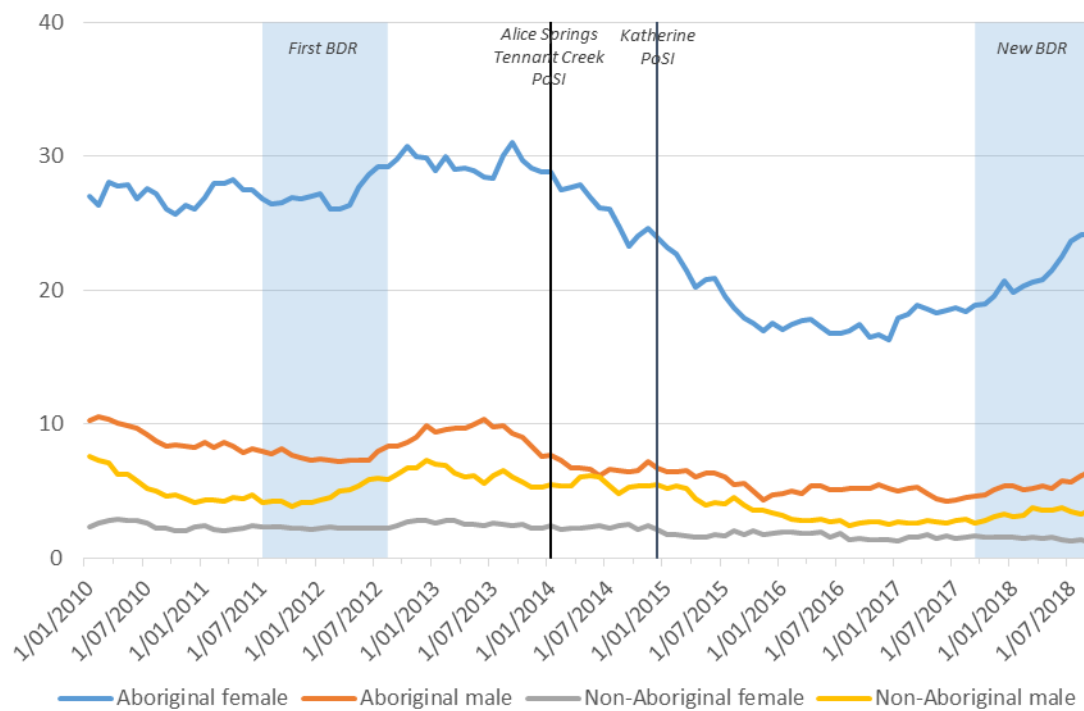


Figure 97. Monthly victims of alcohol-related assault by age group, Katherine, 12-month rolling averages

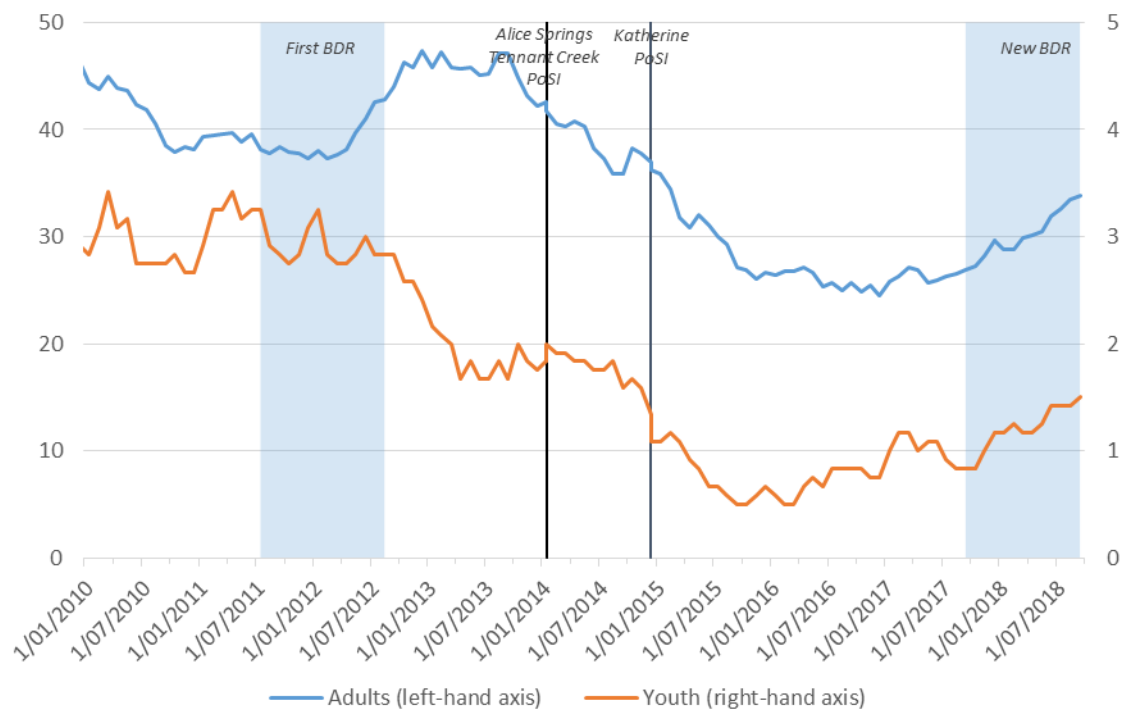


Figure 98. Number of drink-driving offences and 12-month rolling average, Katherine

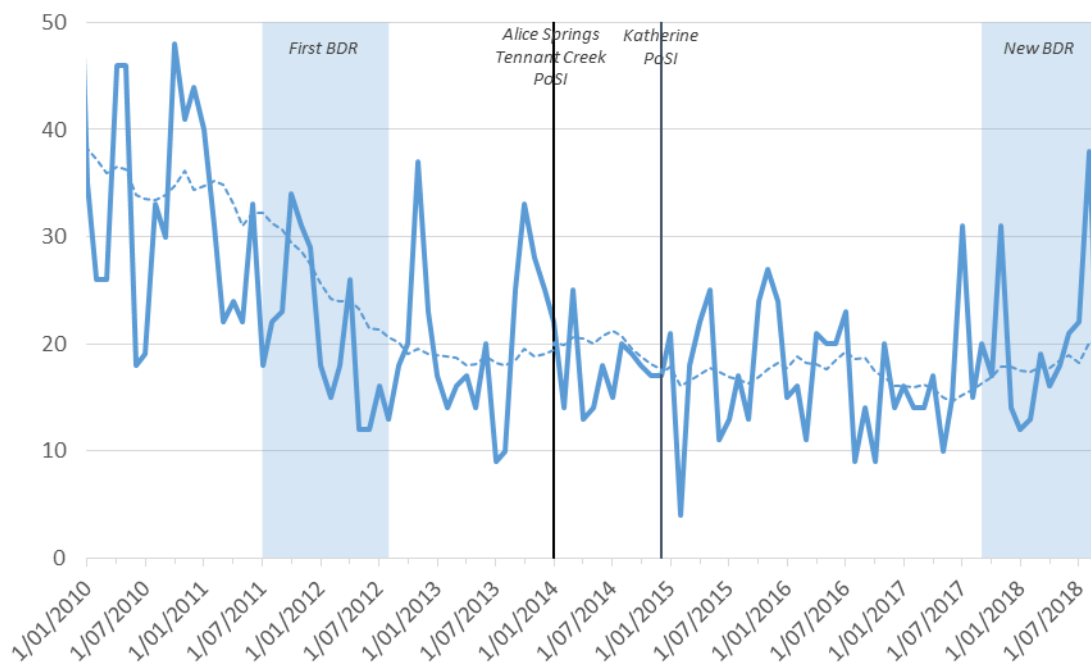


Figure 99. Number of drink-driving offences by type, Katherine, 12-month rolling averages

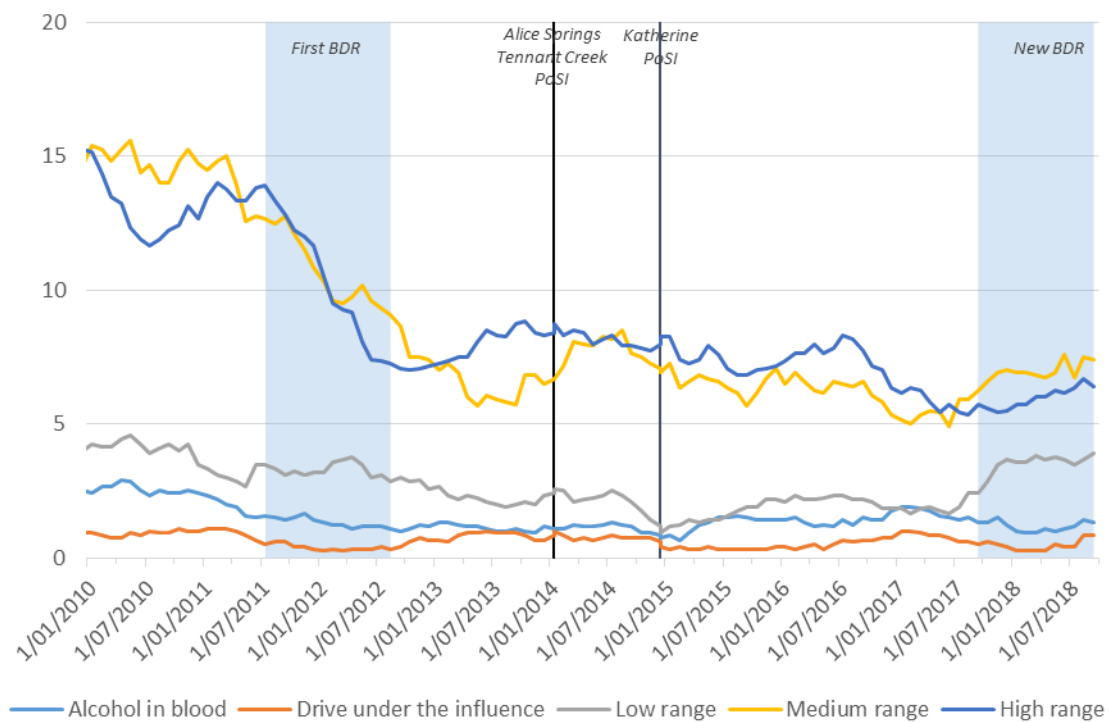


Figure 100. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Katherine

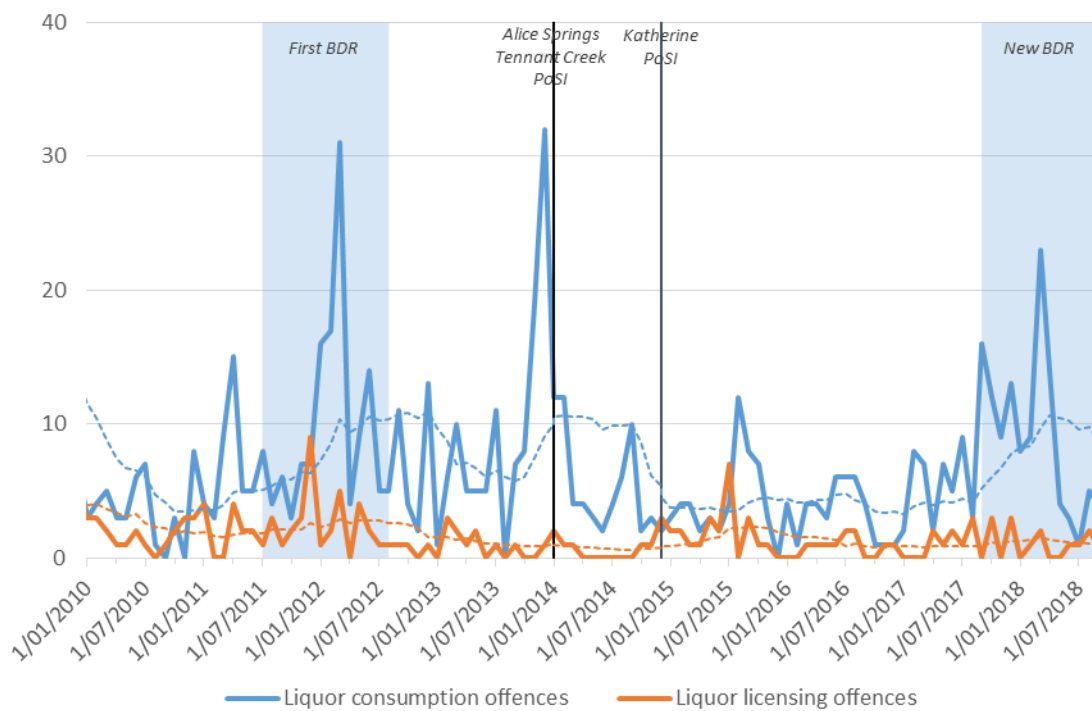


Figure 101. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Katherine

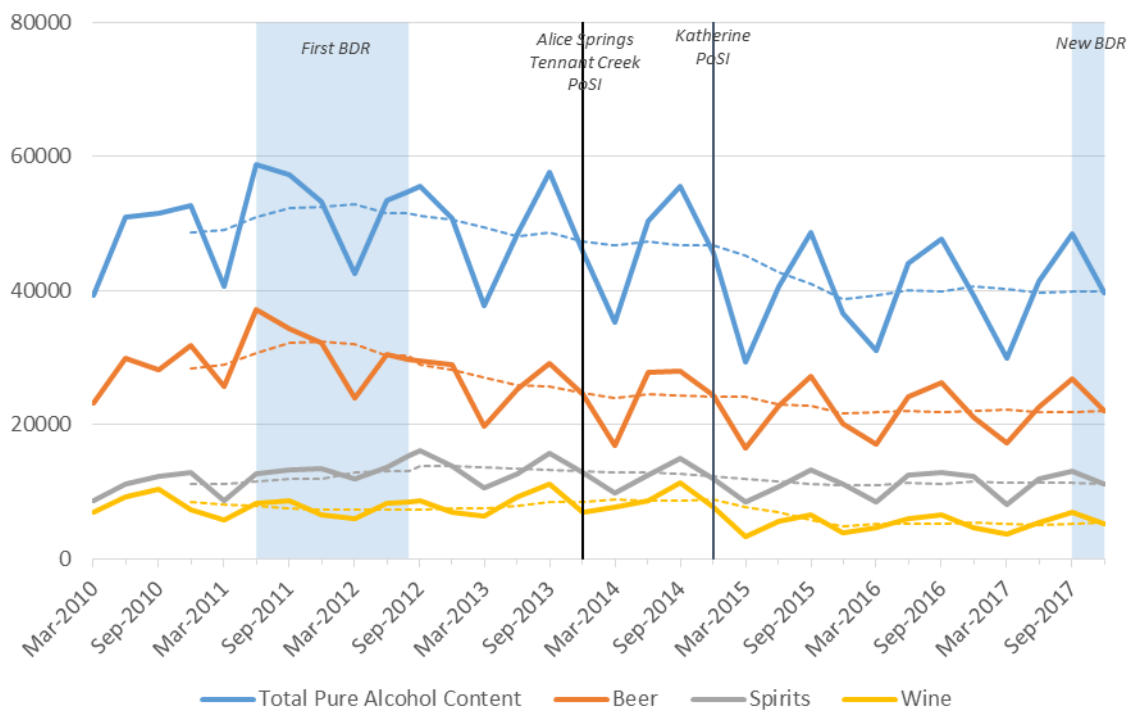


Figure 102. Monthly adult alcohol-related apprehensions and 12-month rolling average, Katherine

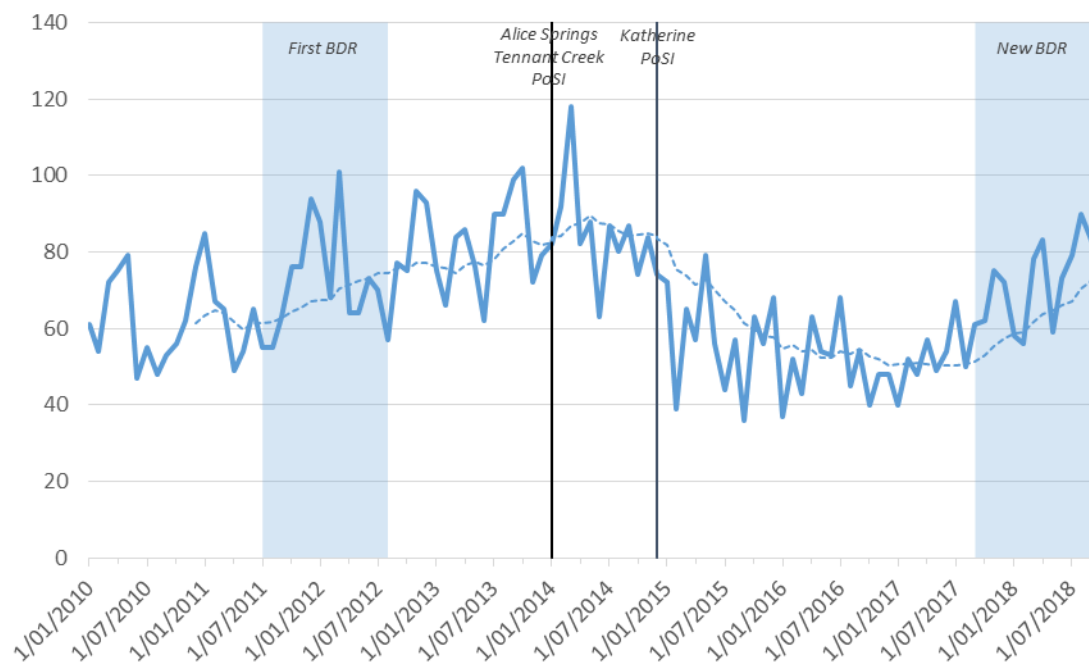


Figure 103. Number of alcohol-related infringement notices and 12-month rolling average, Katherine

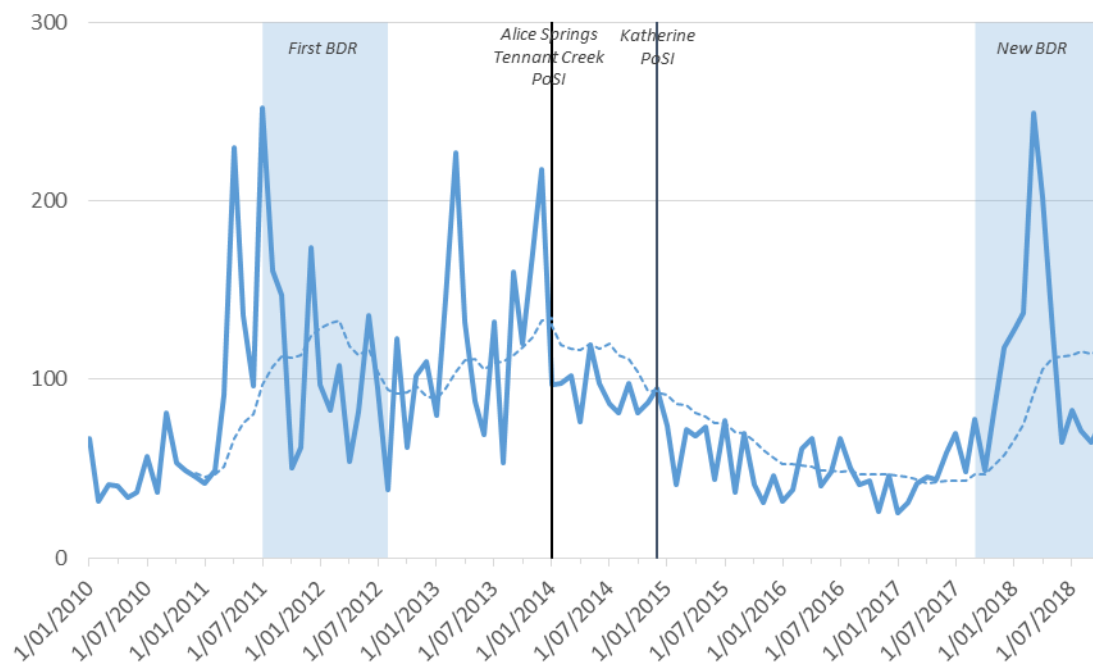
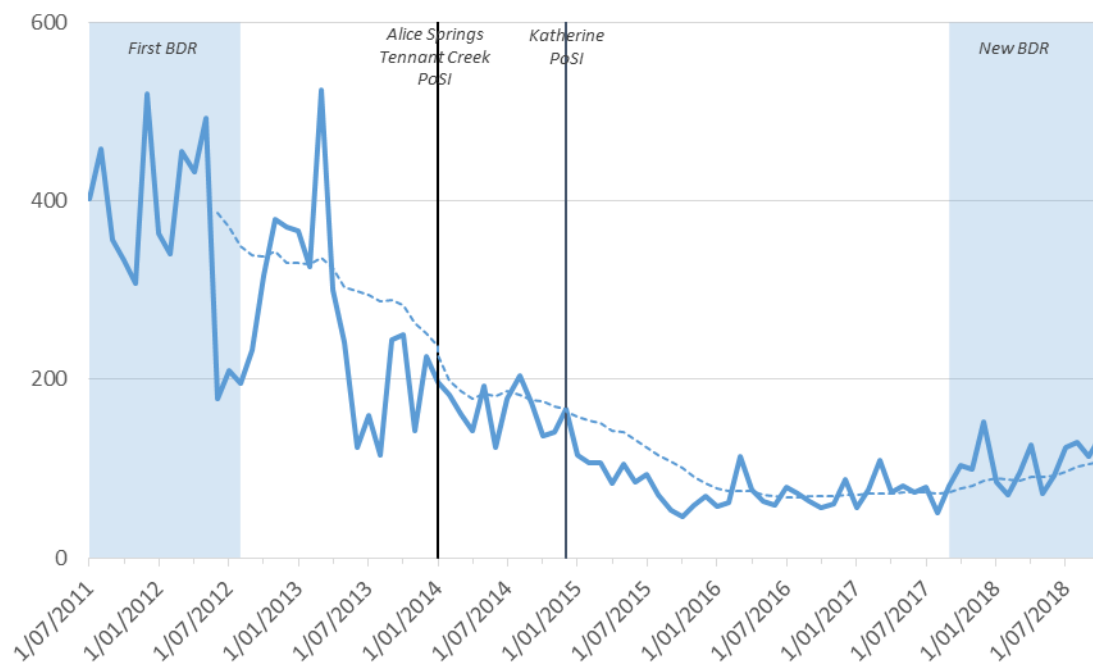


Figure 104. Number of alcohol-related protective custody episodes and 12-month rolling average, Katherine



6.4.5 Tennant Creek

New alcohol restrictions were introduced on a temporary basis in Tennant Creek on 28 February 2018. These were extended for a further seven days on 7 March, and then for a further three months on 14 March, and then further modified and put in place for a 6-month period on 13 June. Full-time Point of Sale Interventions were reinstated in Tennant Creek in April 2018, with the new Police Auxiliary Liquor Inspectors taking up this function in August 2018.

Following the change in restrictions, the 12-month rolling average in several data series (alcohol-related assault offences and victims, high-range drink driving, liquor consumption offences, alcohol-related apprehensions and infringement notices) have begun to decline.

Figure 105. Number of alcohol-related assault offences and 12-month rolling average, Tennant Creek

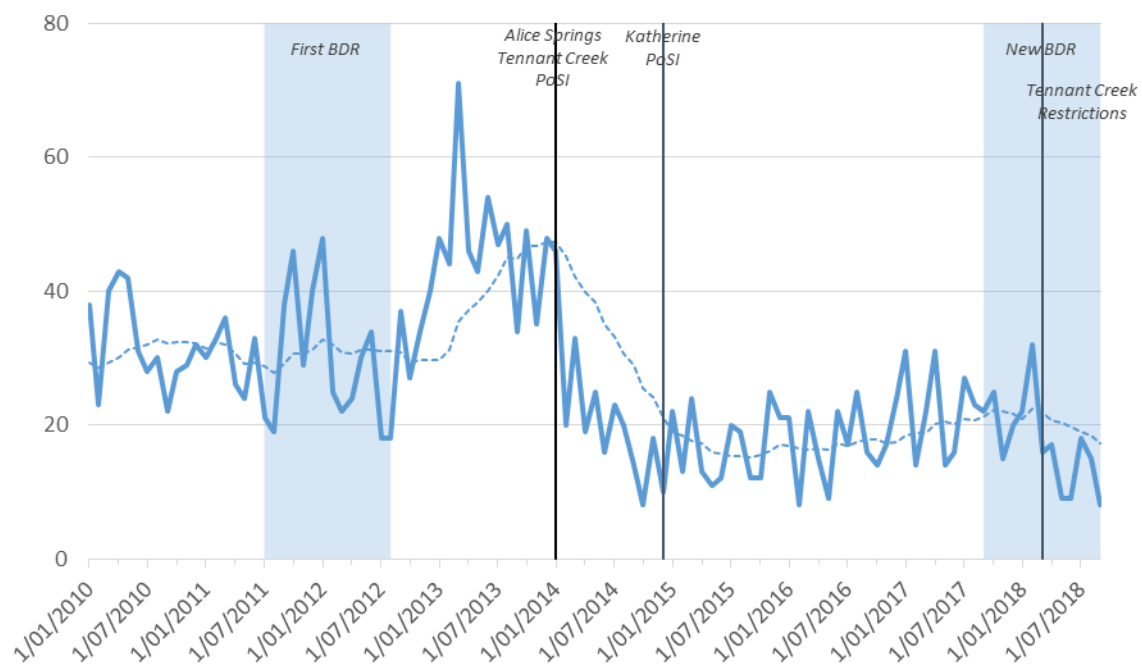


Figure 106. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Tennant Creek

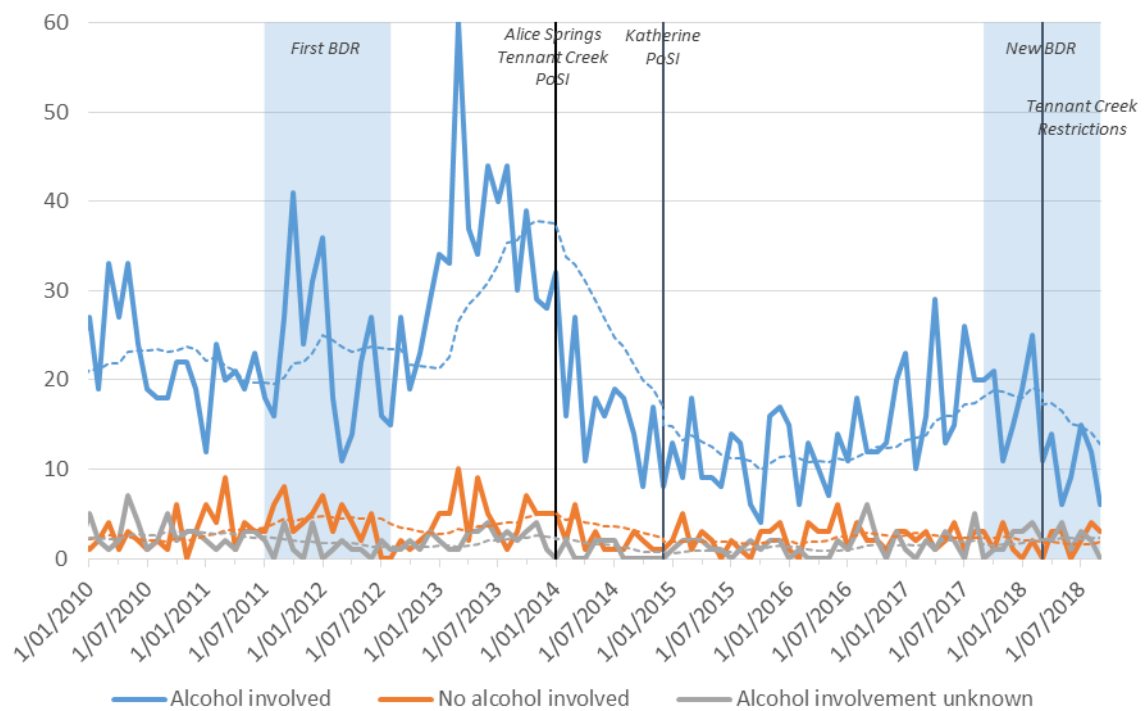


Figure 107. Monthly domestic violence applications and 12-month rolling averages, Tennant Creek court

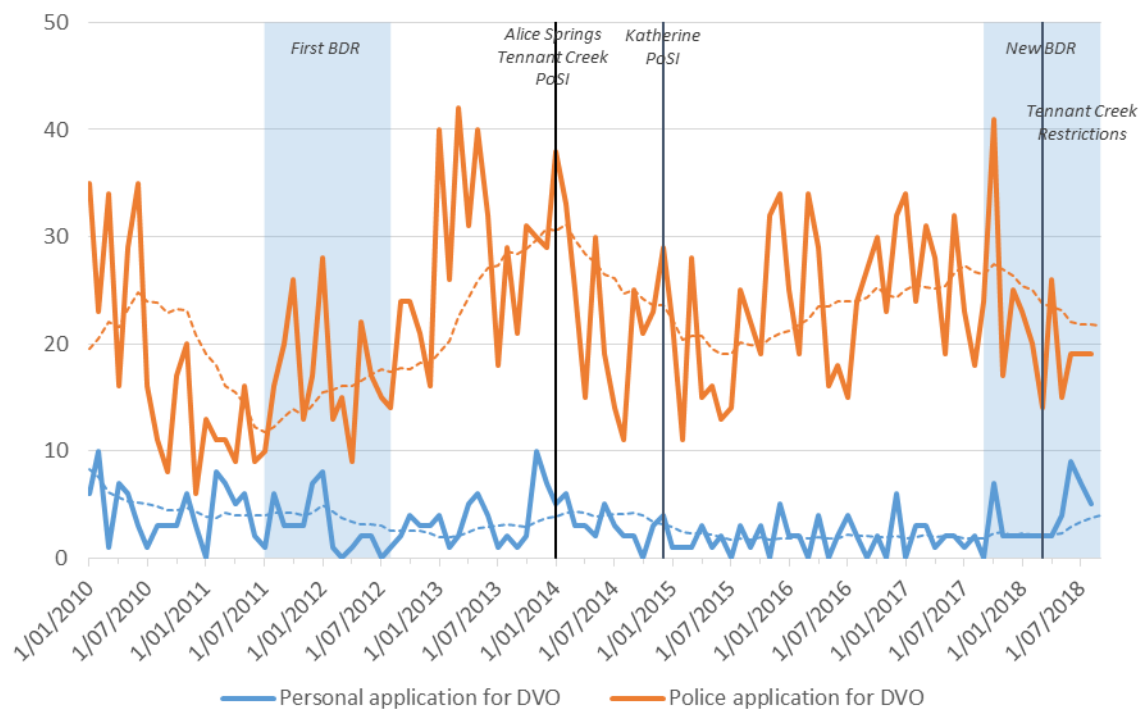


Figure 108. Monthly victims of alcohol-related assault by demographic group, Tennant Creek, 12-month rolling averages

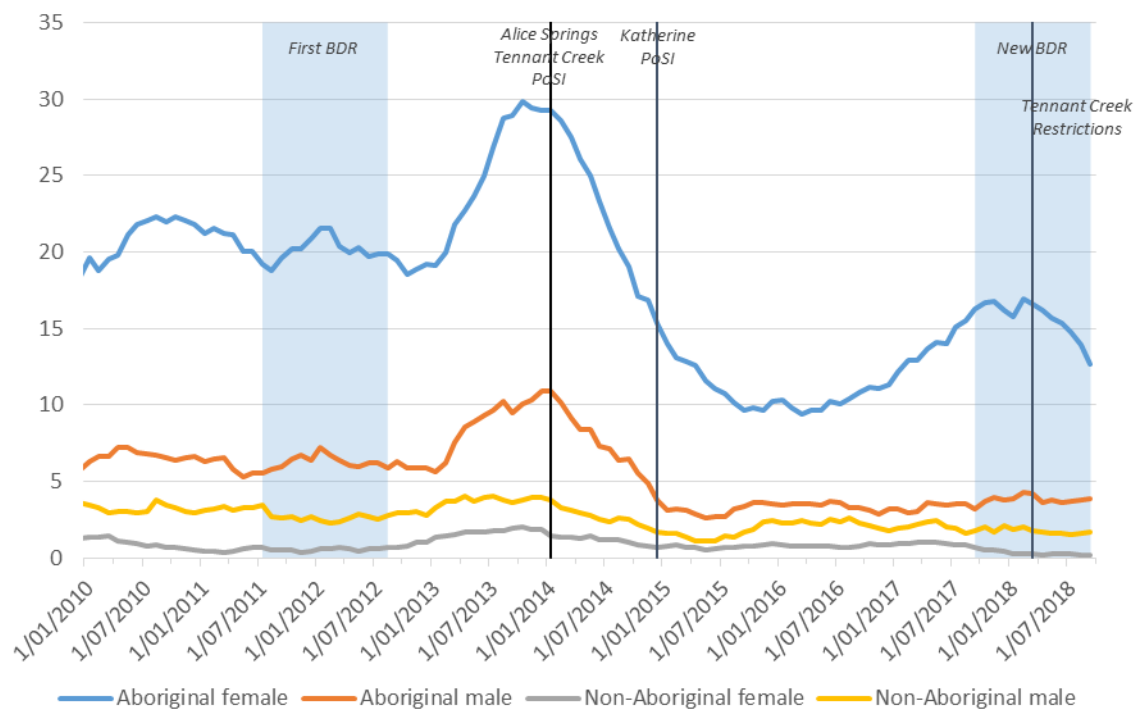


Figure 109. Monthly victims of alcohol-related assault by age group, Tennant Creek, 12-month rolling averages



Figure 110. Number of drink-driving offences and 12-month rolling average, Tennant Creek

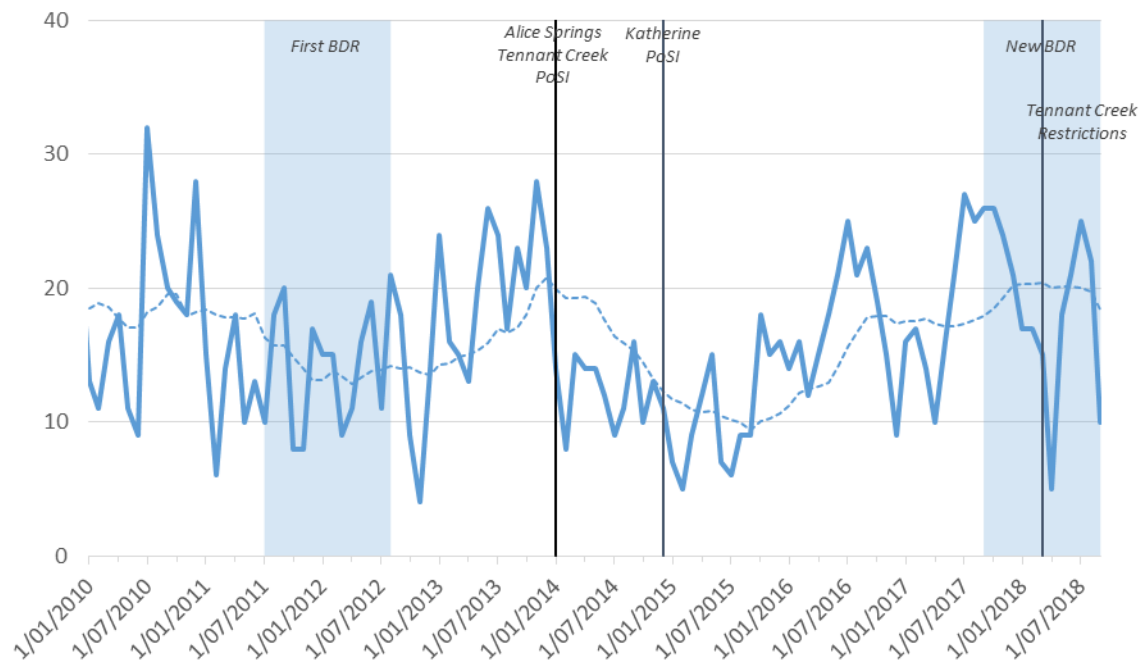


Figure 111. Number of drink-driving offences by type, Tennant Creek, 12-month rolling averages

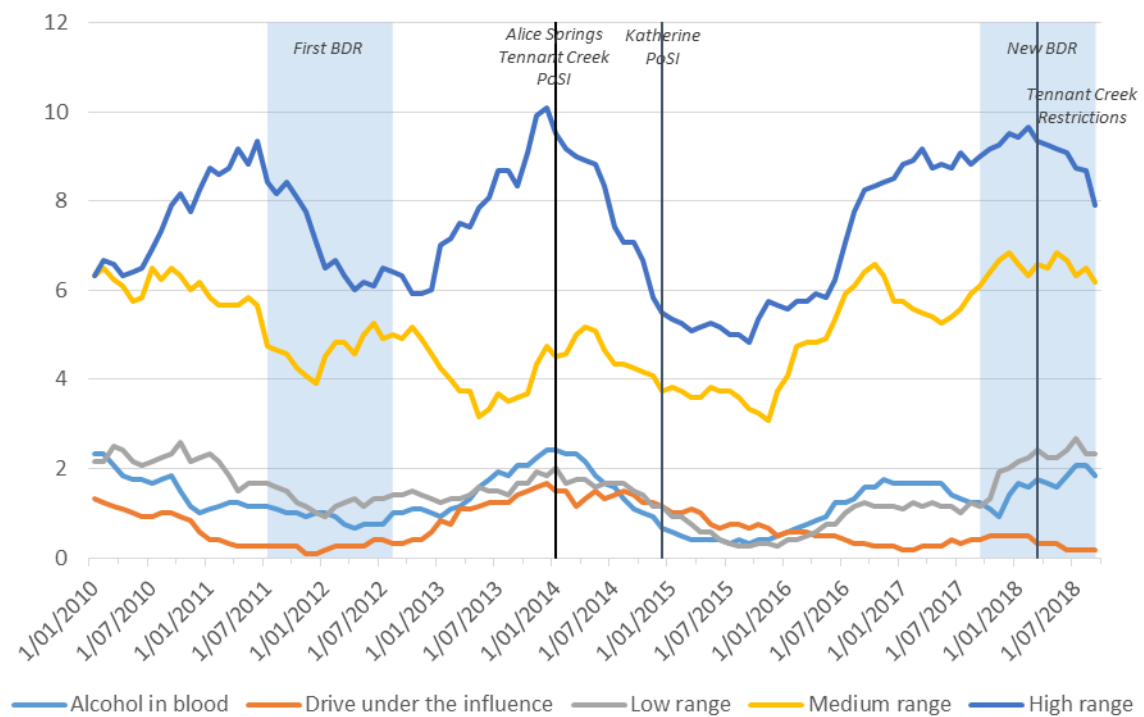


Figure 112. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Tennant Creek

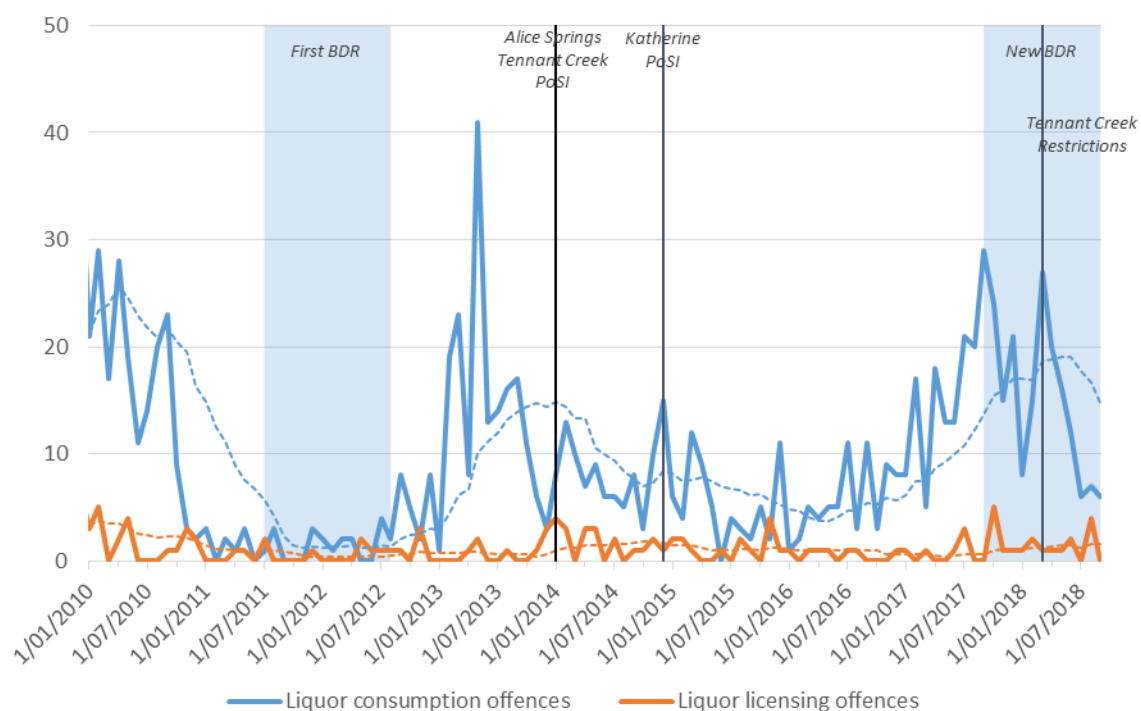


Figure 113. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Tennant Creek

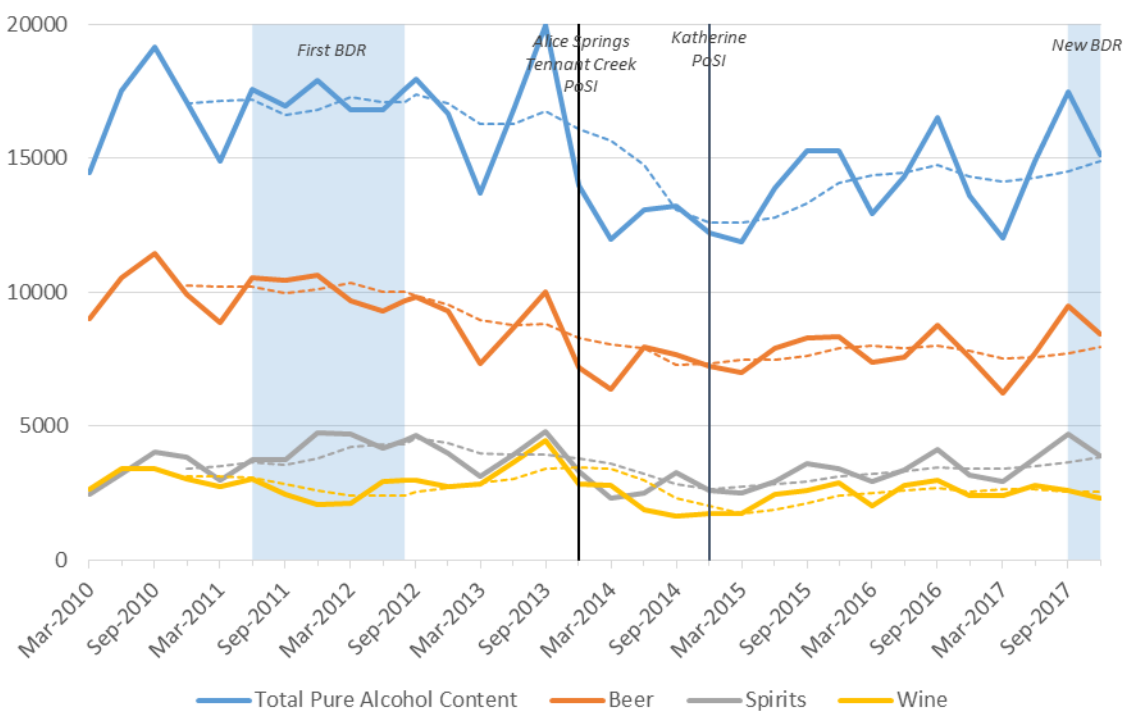


Figure 114. Monthly adult alcohol-related apprehensions and 12-month rolling average, Tennant Creek

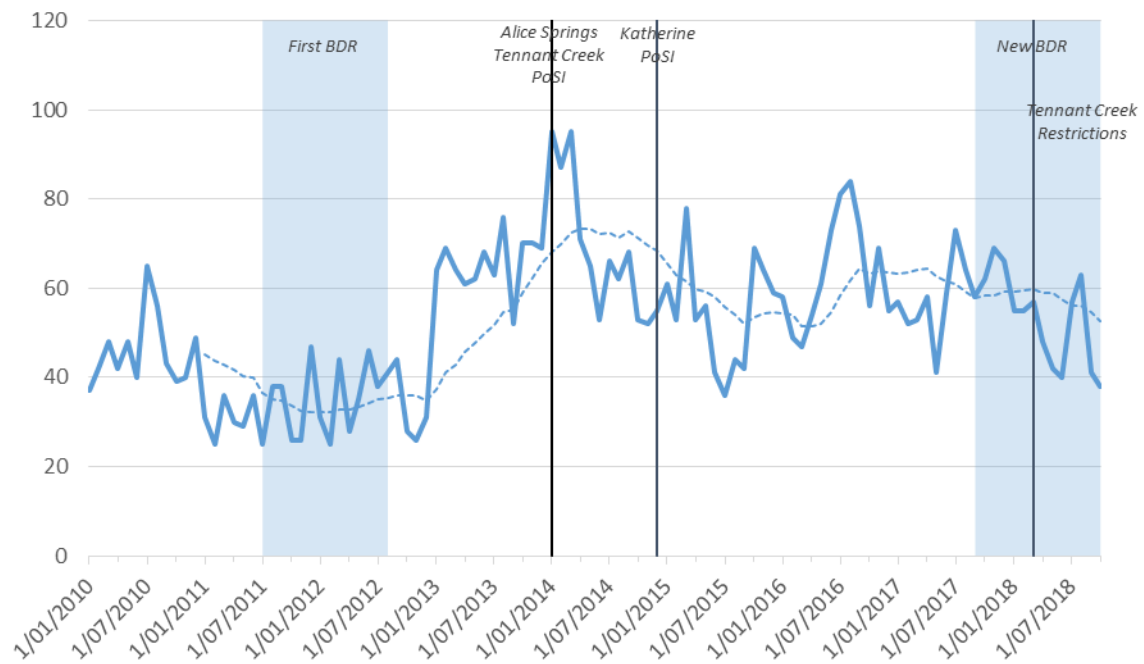


Figure 115. Number of alcohol-related infringement notices and 12-month rolling average, Tennant Creek

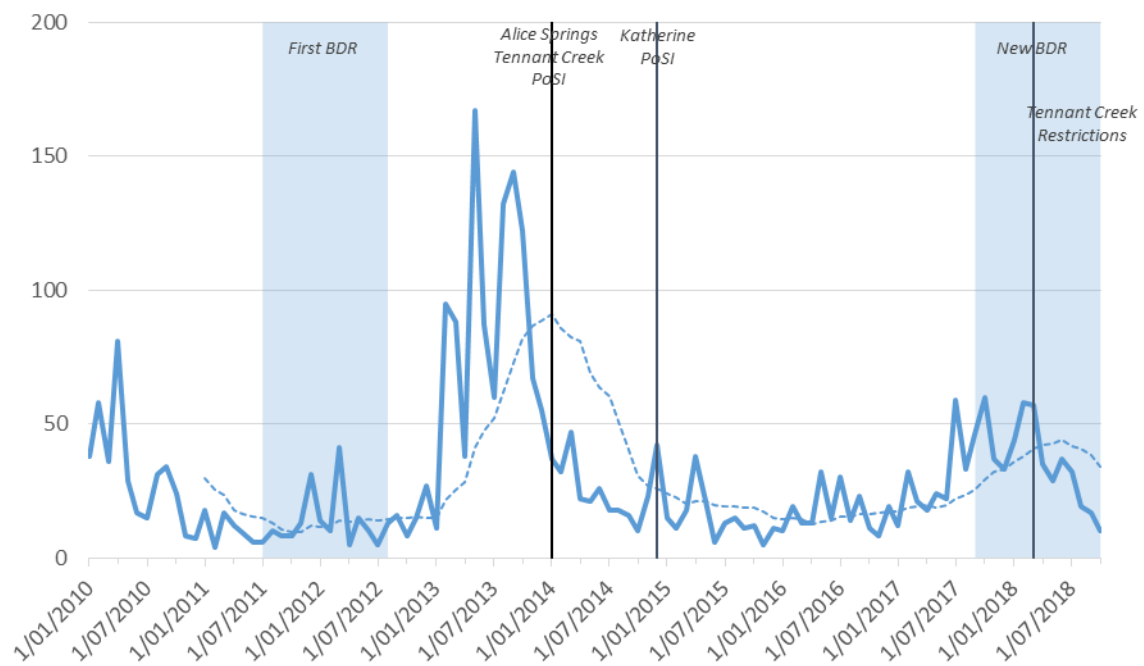
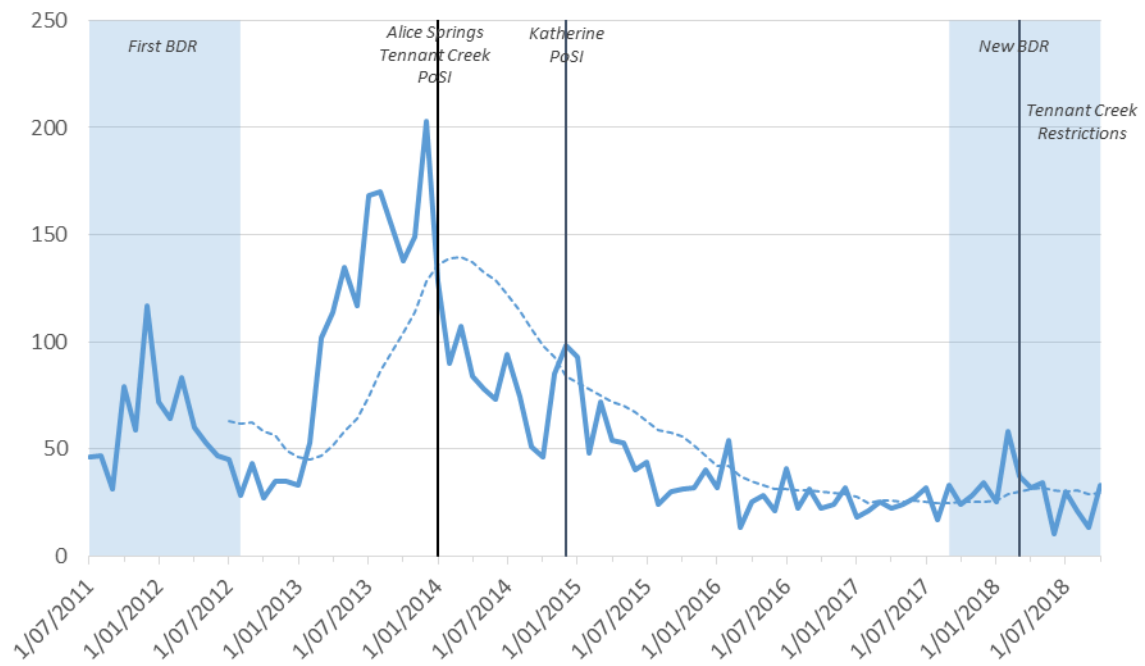


Figure 116. Number of alcohol-related protective custody episodes and 12-month rolling average, Tennant Creek



6.4.6 Nhulunbuy

Figure 117. Number of alcohol-related assault offences and 12-month rolling average, Nhulunbuy

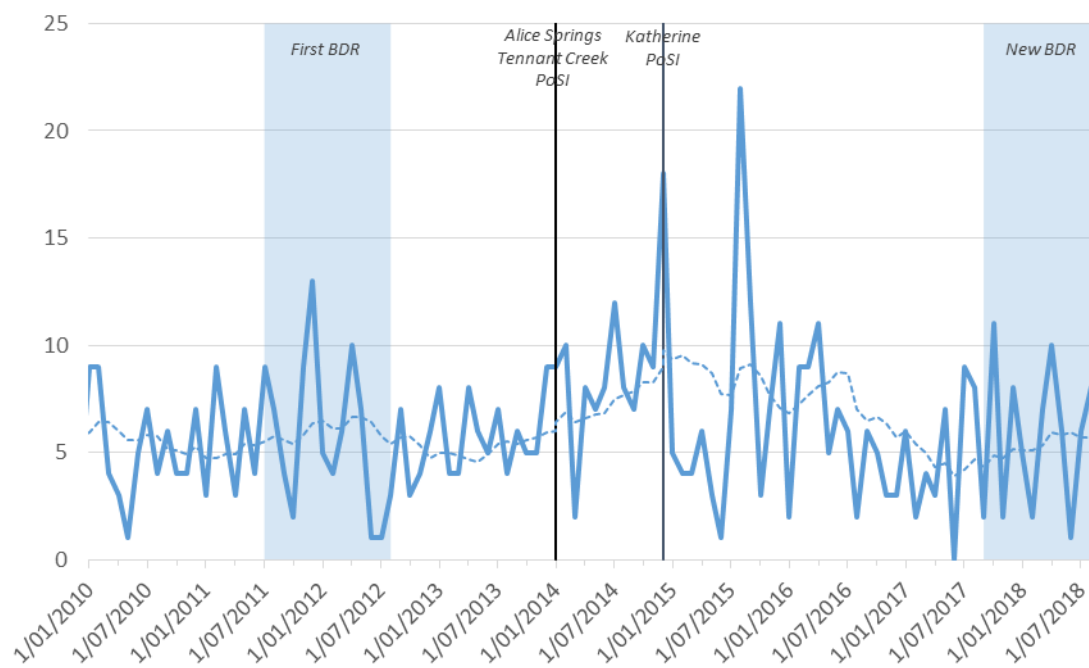


Figure 118. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, Nhulunbuy

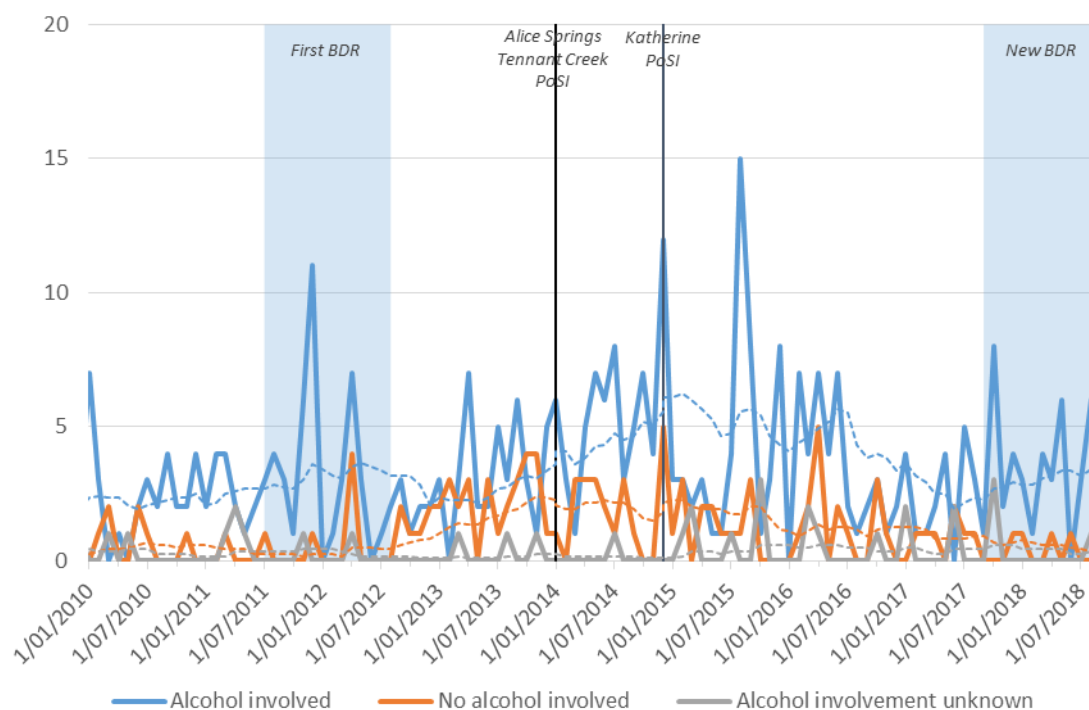


Figure 119. Monthly domestic violence applications and 12-month rolling averages, Nhulunbuy court

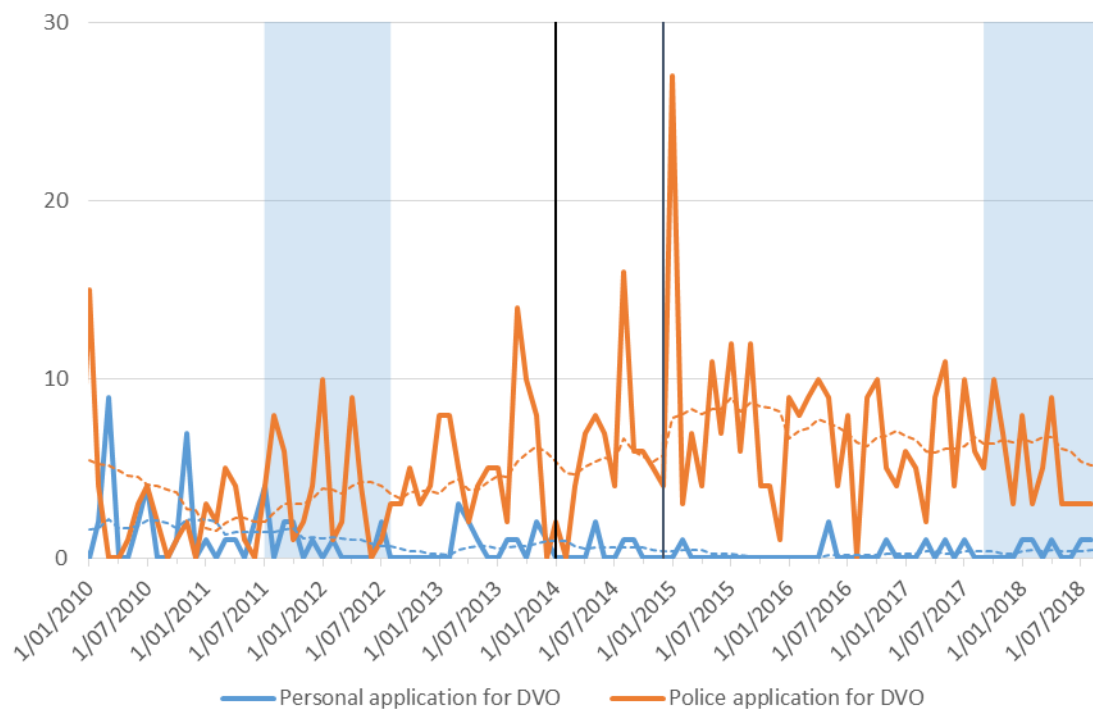


Figure 120. Monthly victims of alcohol-related assault by demographic group, Nhulunbuy, 12-month rolling averages

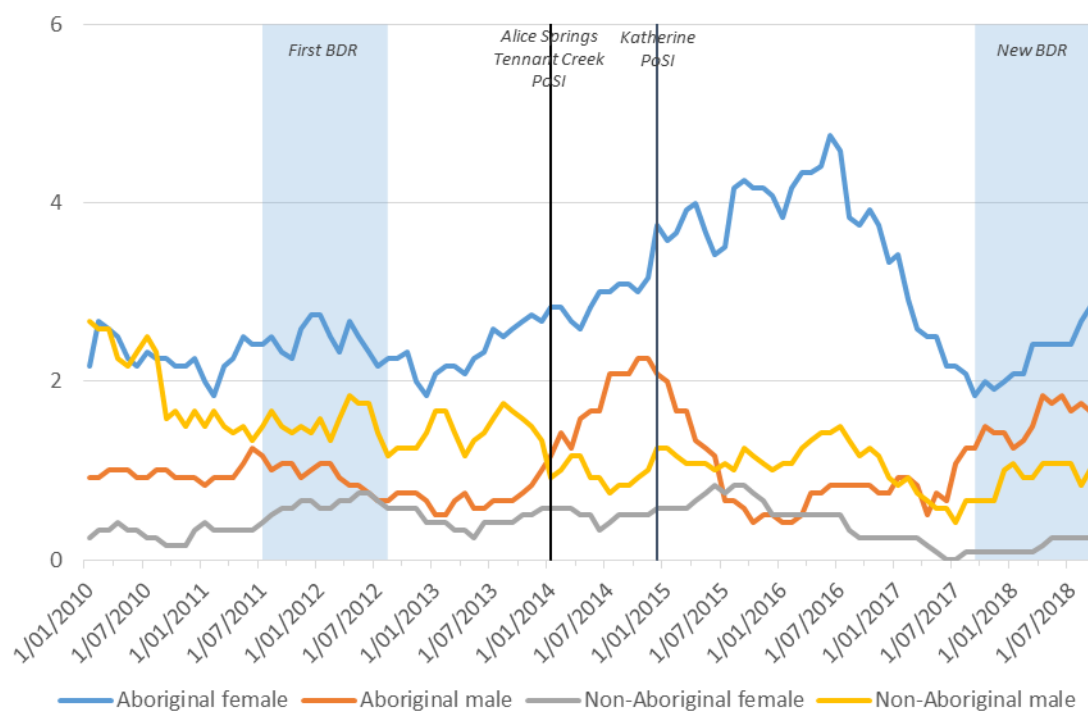


Figure 121. Monthly victims of alcohol-related assault by age group, Nhulunbuy, 12-month rolling averages

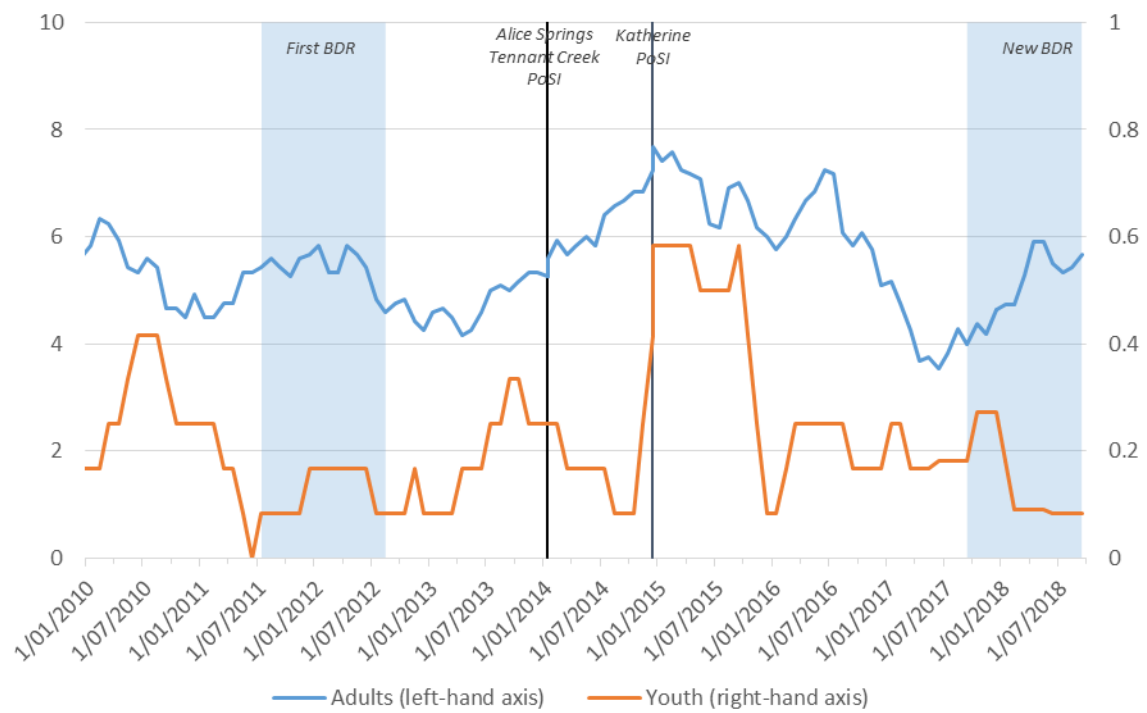


Figure 122. Number of drink-driving offences and 12-month rolling average, Nhulunbuy

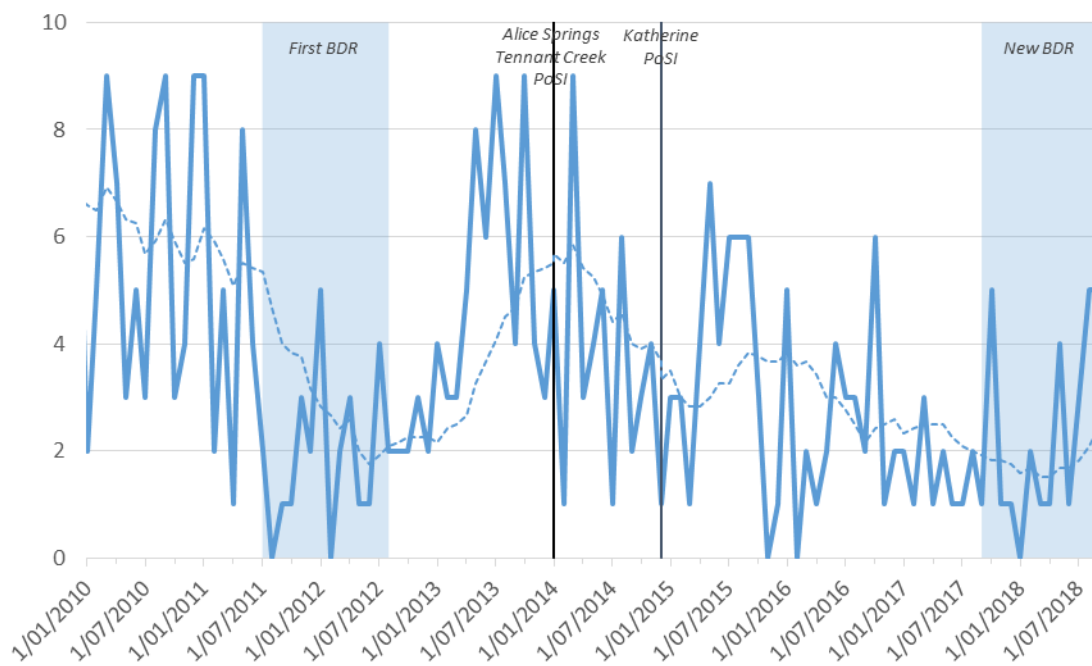


Figure 123. Number of drink-driving offences by type, Nhulunbuy, 12-month rolling averages

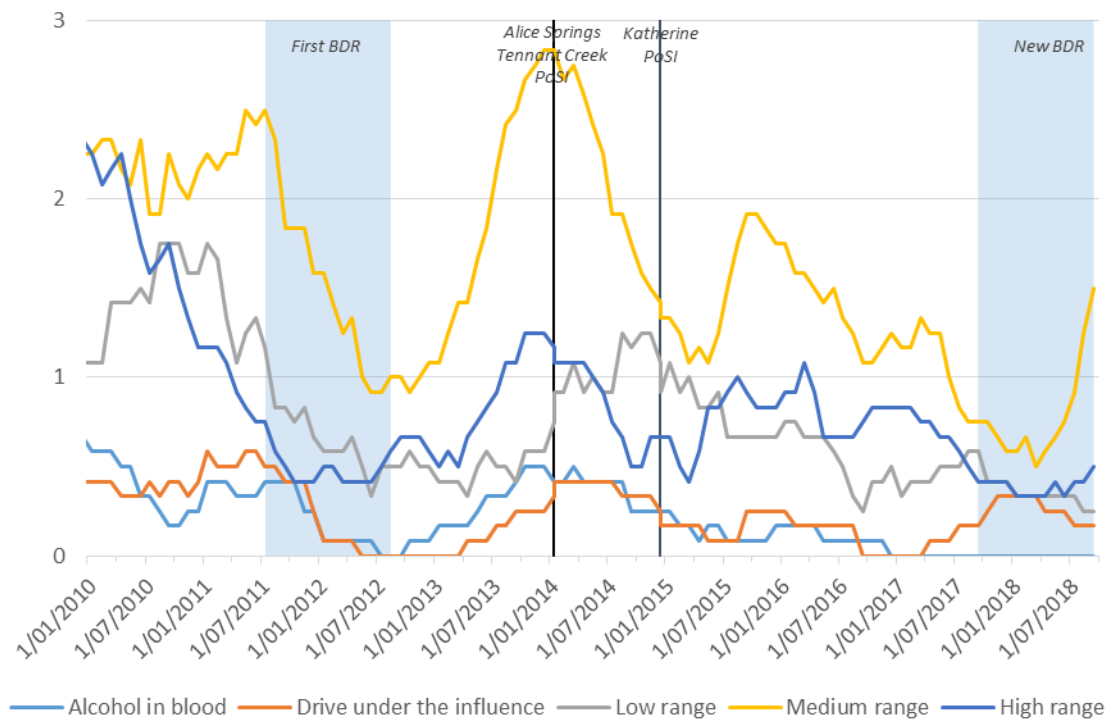


Figure 124. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, Nhulunbuy

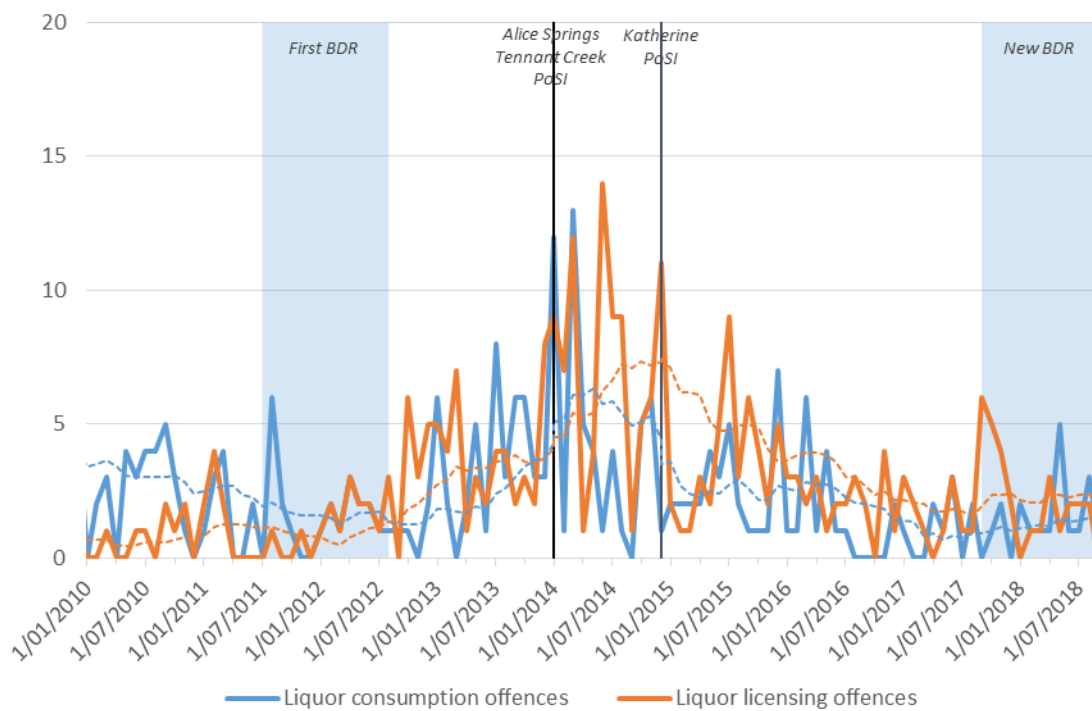


Figure 125. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, Nhulunbuy

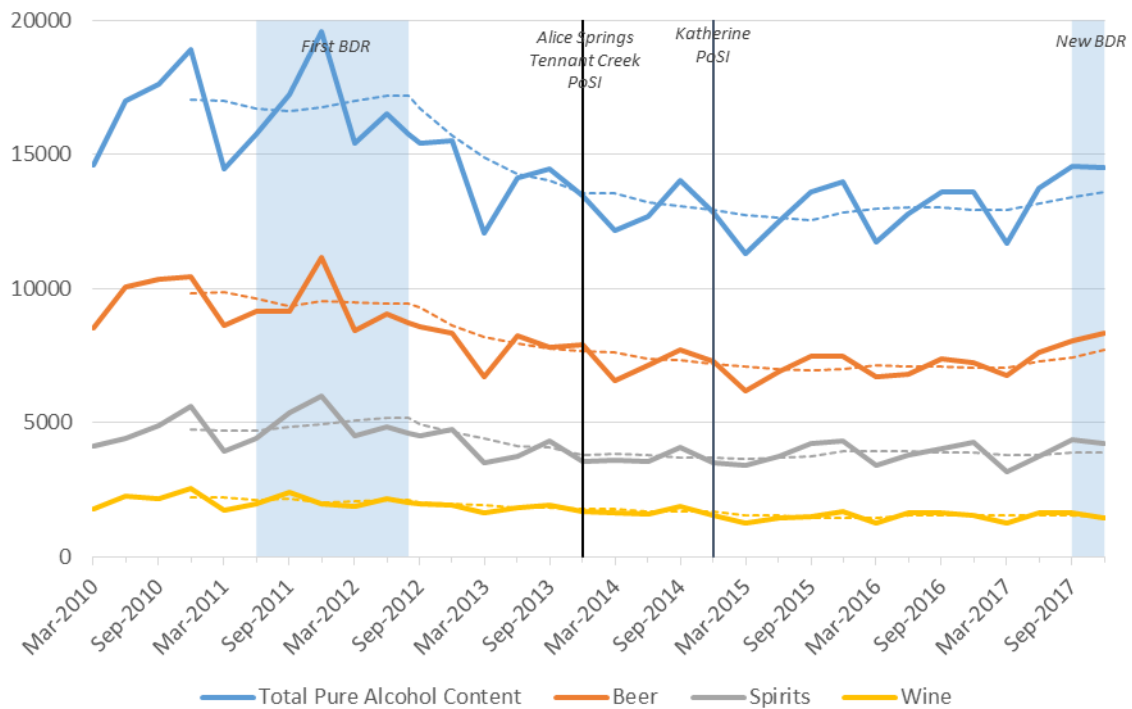


Figure 126. Monthly adult alcohol-related apprehensions and 12-month rolling average, Nhulunbuy

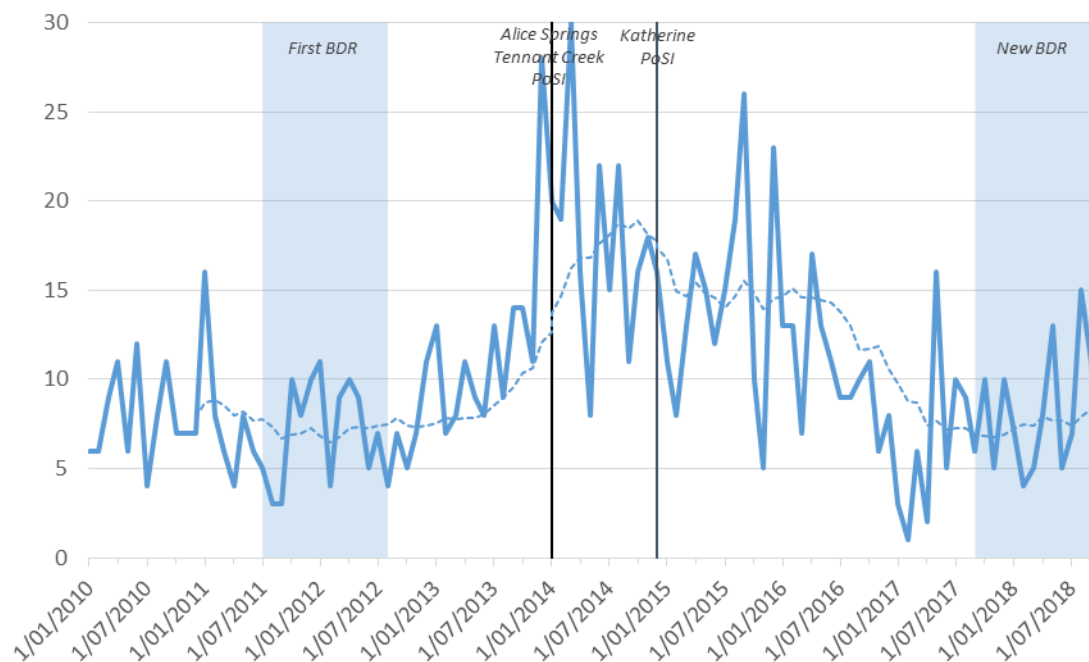


Figure 127. Number of alcohol-related infringement notices and 12-month rolling average, Nhulunbuy

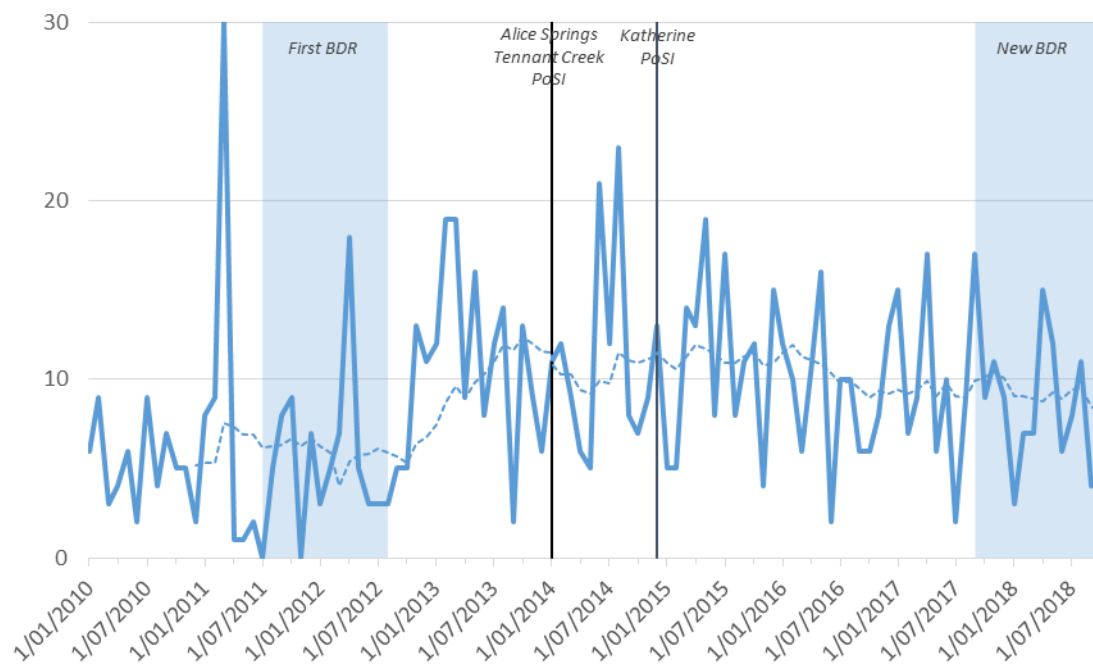
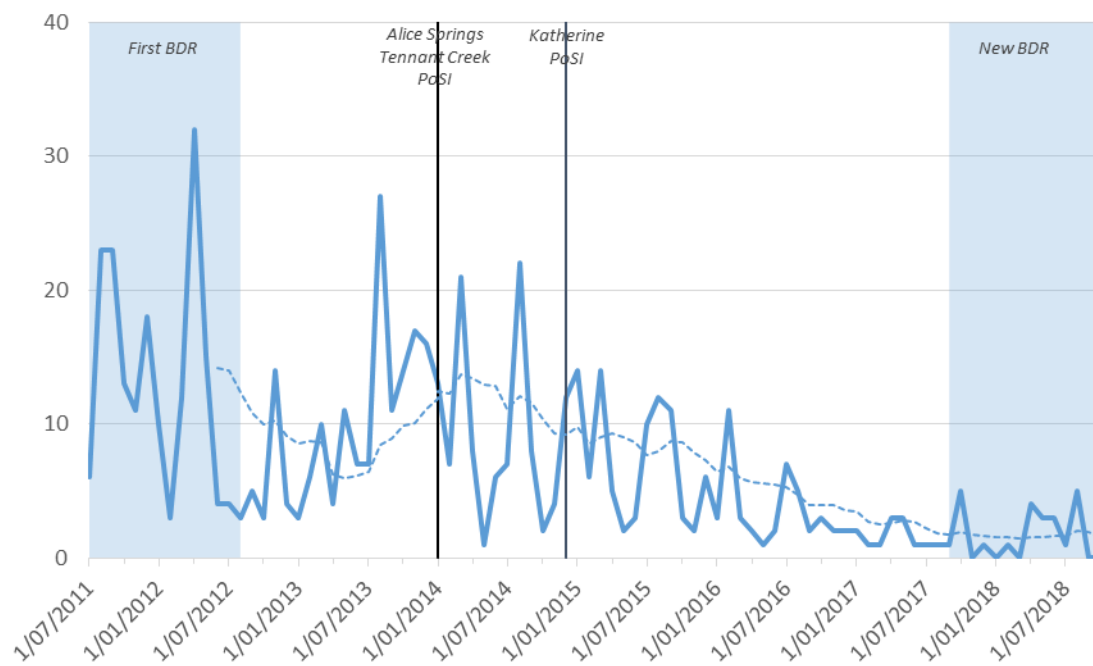


Figure 128. Number of alcohol-related protective custody episodes and 12-month rolling average, Nhulunbuy



6.4.7 NT Balance

Figure 129. Number of alcohol-related assault offences and 12-month rolling average, NT Balance

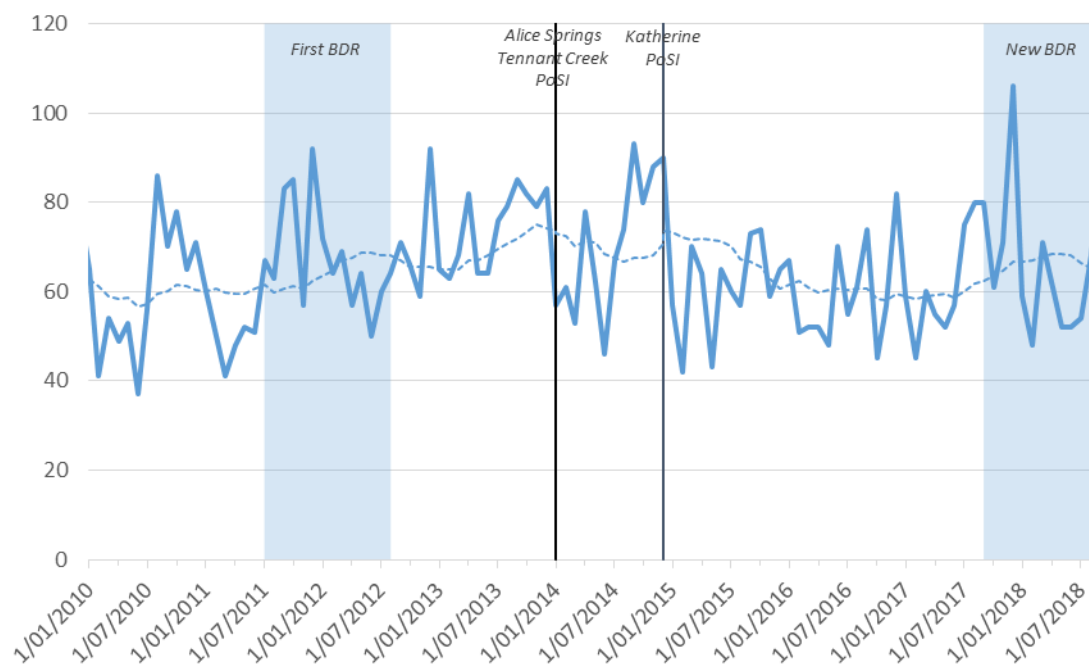


Figure 130. Monthly domestic violence assault offences by alcohol involvement and 12-month rolling averages, NT Balance

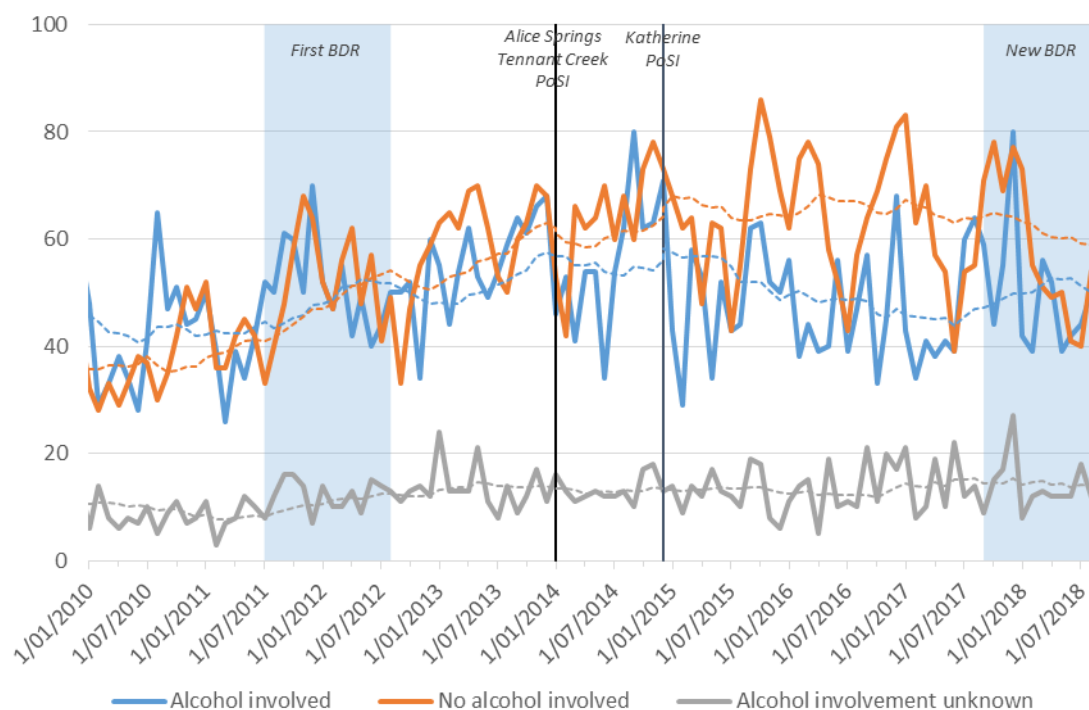


Figure 131. Monthly domestic violence applications and 12-month rolling averages, NT Balance courts

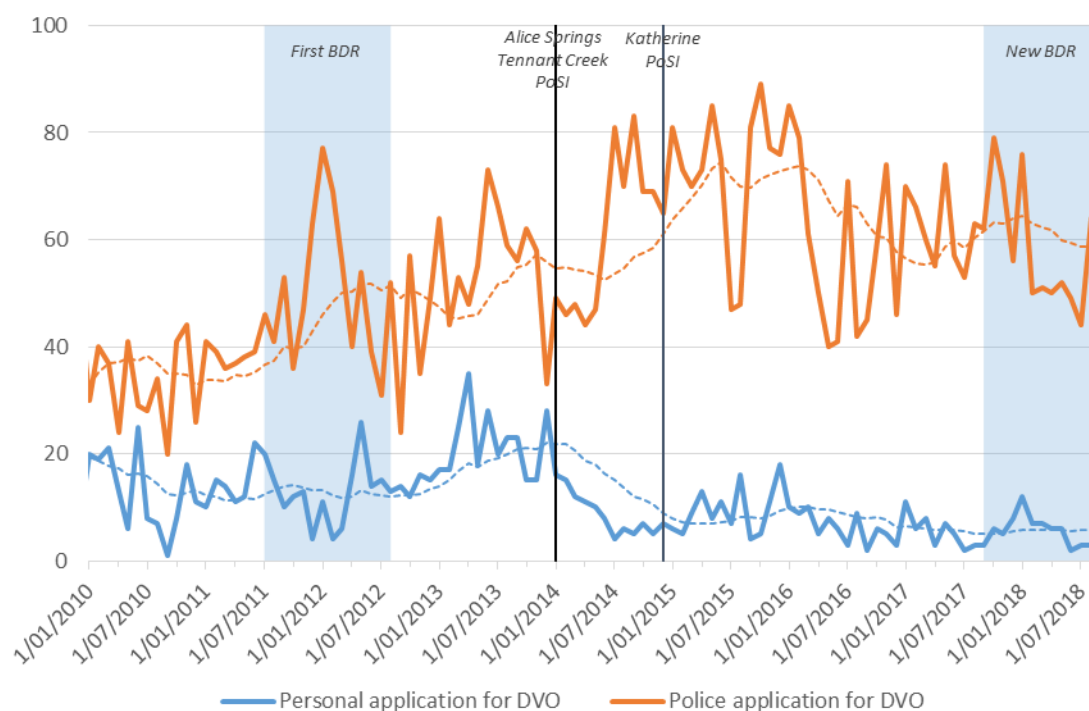


Figure 132. Monthly victims of alcohol-related assault by demographic group, NT Balance, 12-month rolling averages

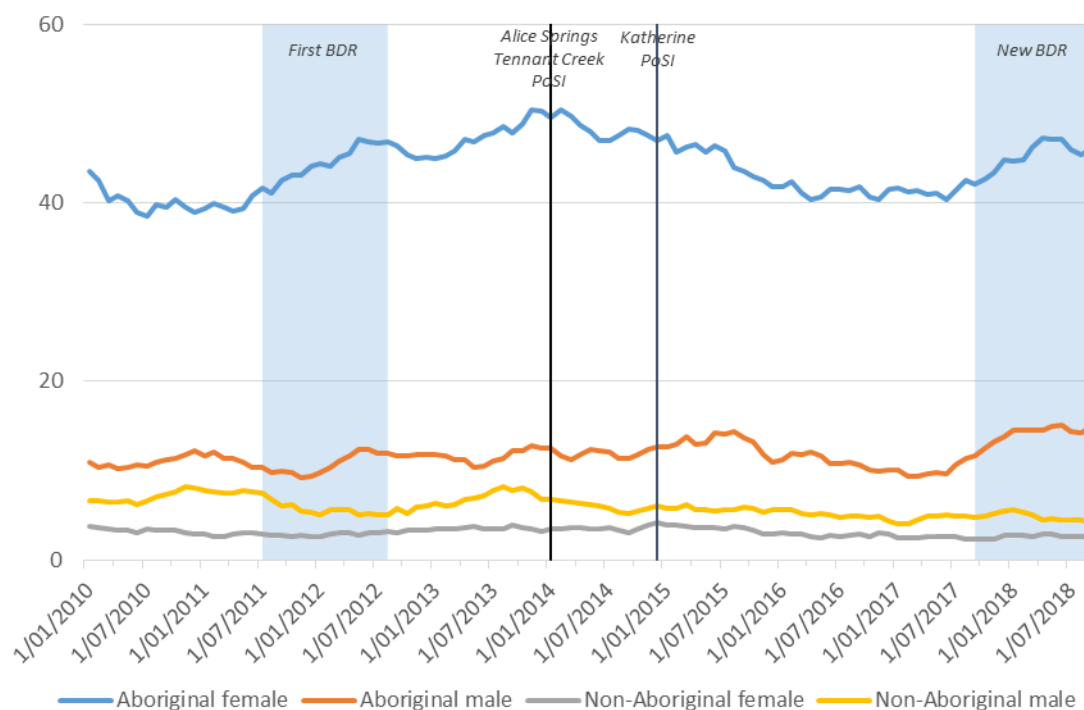


Figure 133. Monthly victims of alcohol-related assault by age group, NT Balance, 12-month rolling averages

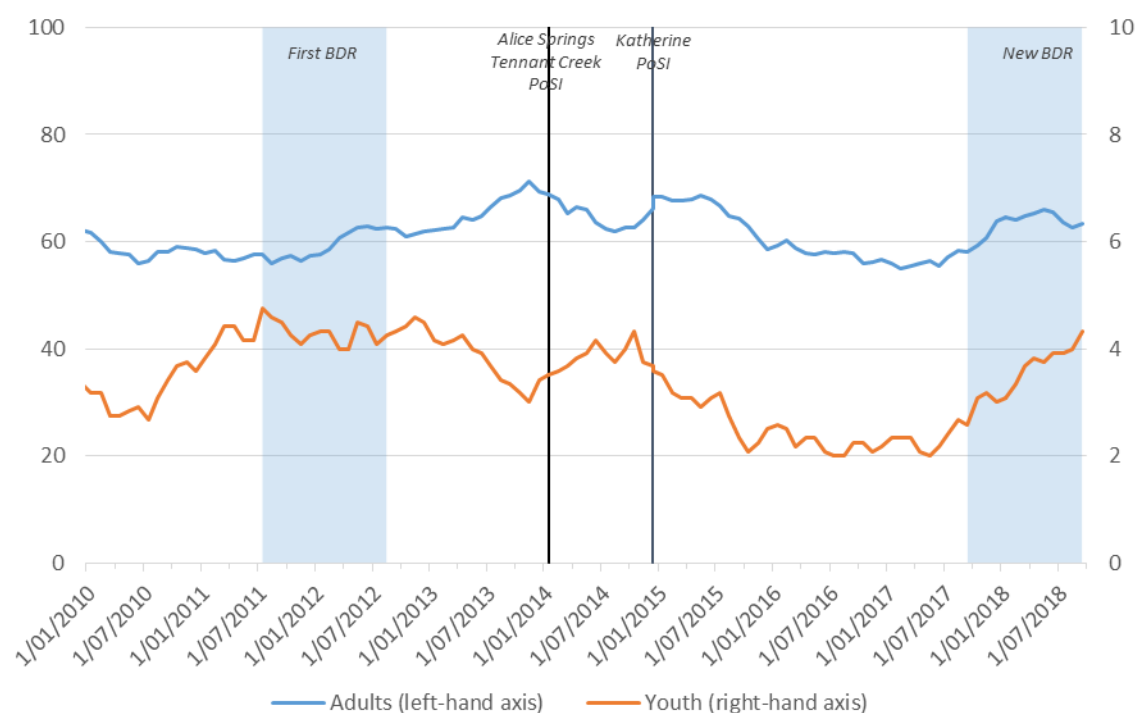


Figure 134. Number of drink-driving offences and 12-month rolling average, NT Balance

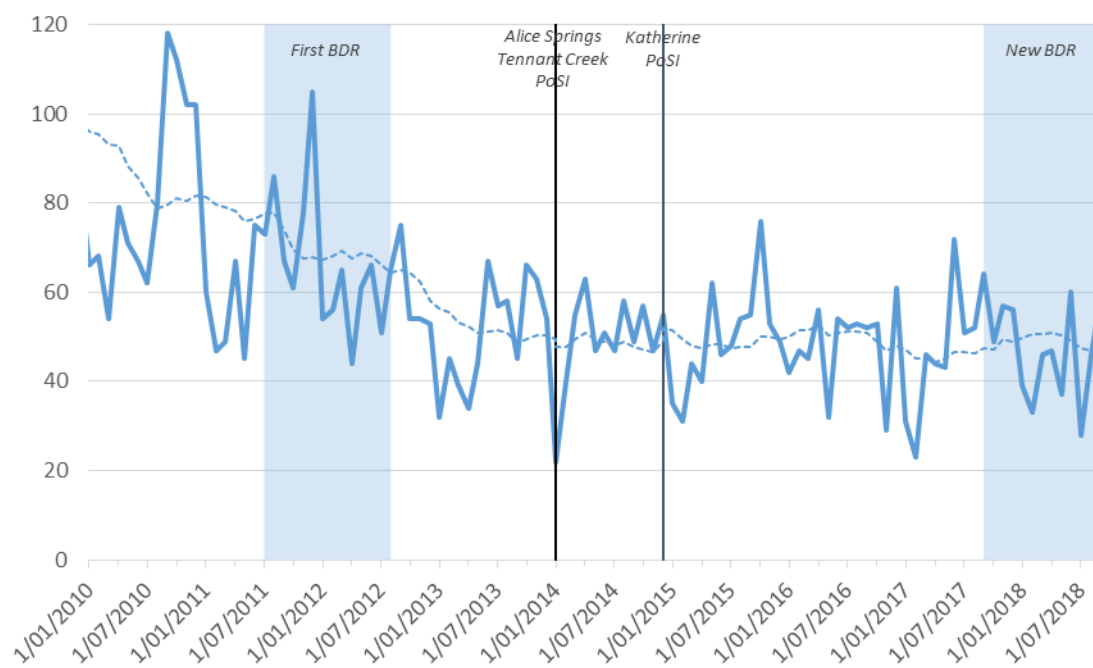


Figure 135. Number of drink-driving offences by type, NT Balance, 12-month rolling averages

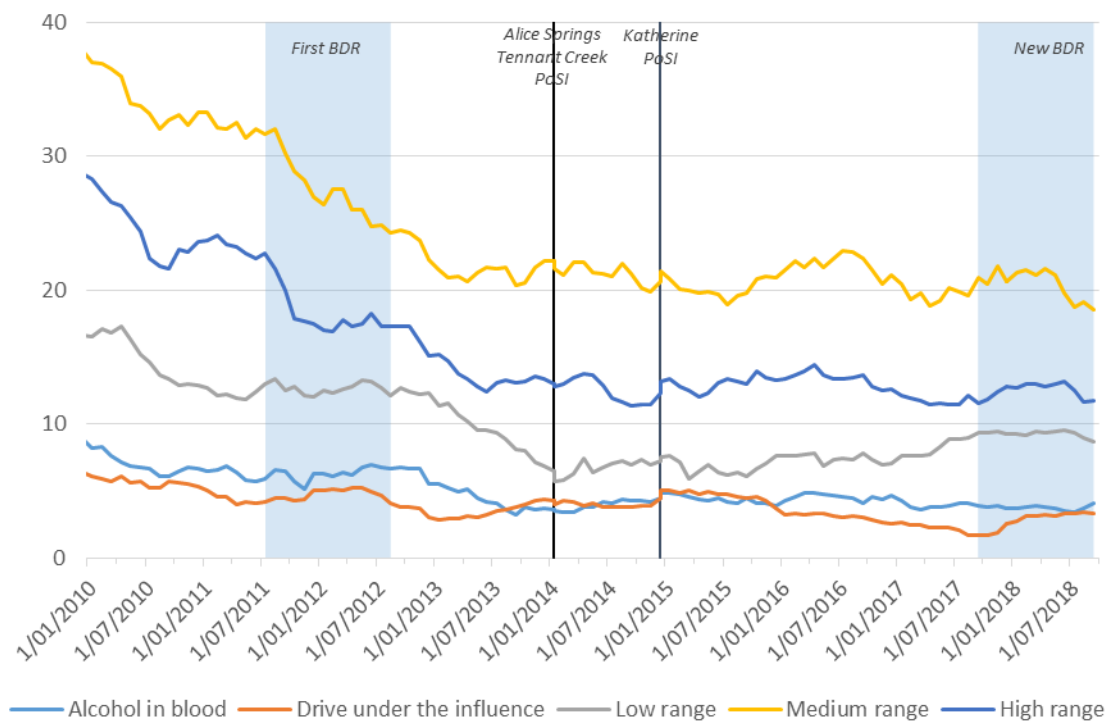


Figure 136. Monthly liquor consumption and liquor licensing offences and 12-month rolling averages, NT Balance

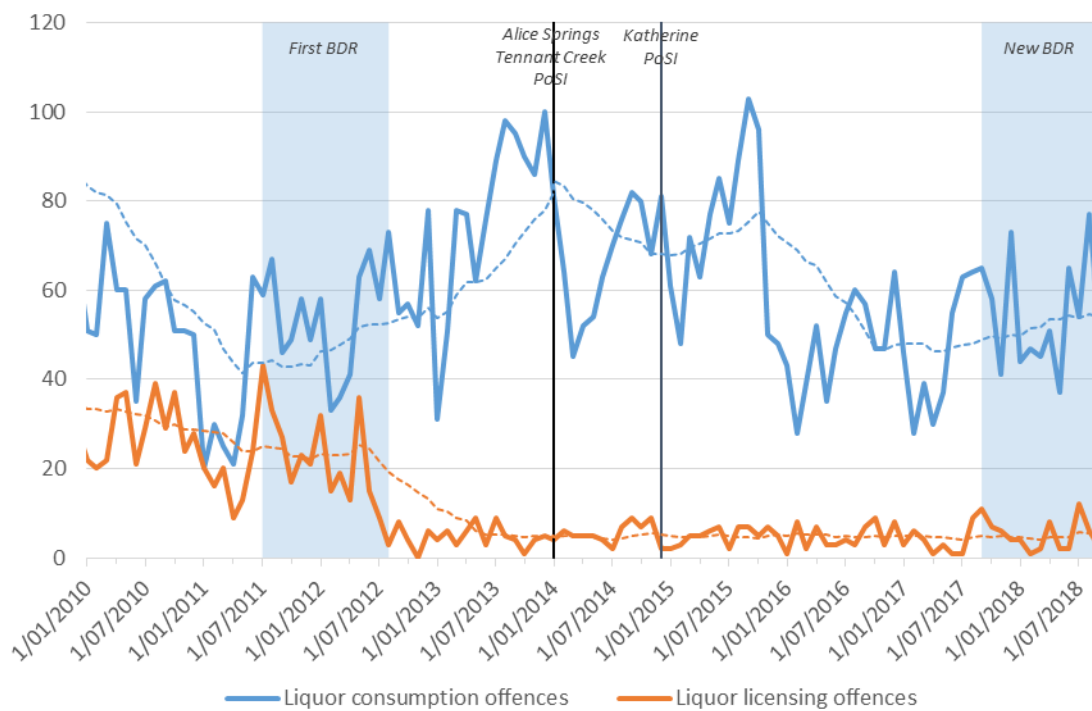


Figure 137. Quarterly wholesale alcohol supply (litres pure alcohol content) and 4-quarter rolling averages by type, NT Balance

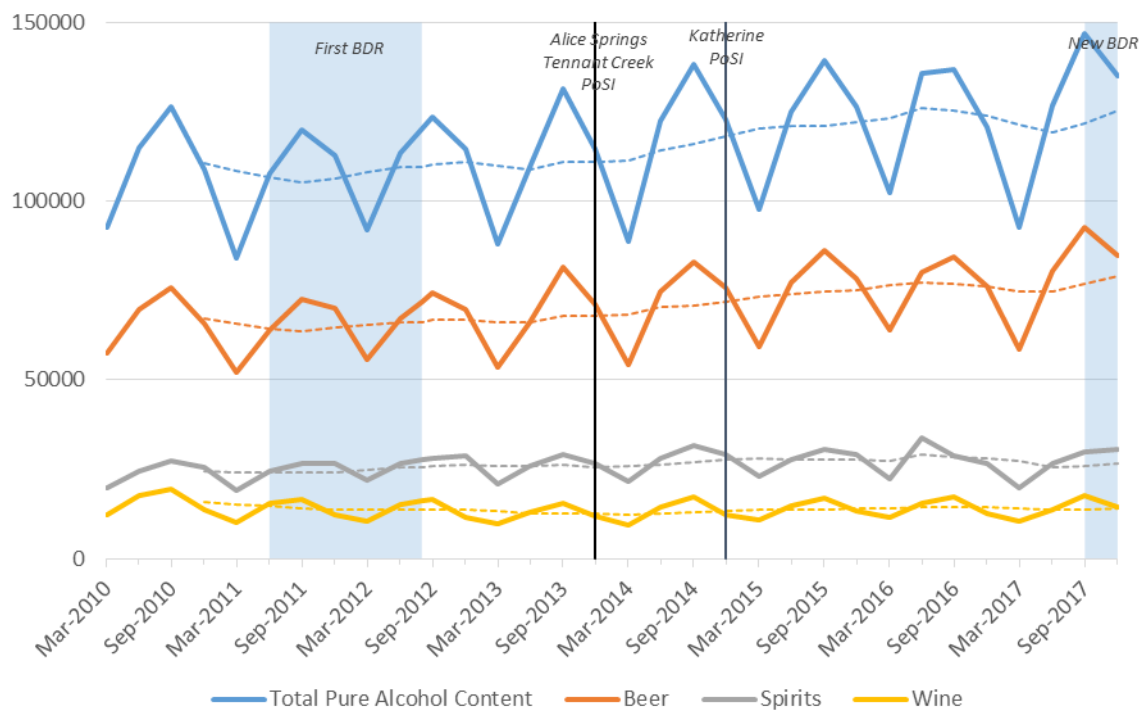


Figure 138. Monthly adult alcohol-related apprehensions and 12-month rolling average, NT Balance

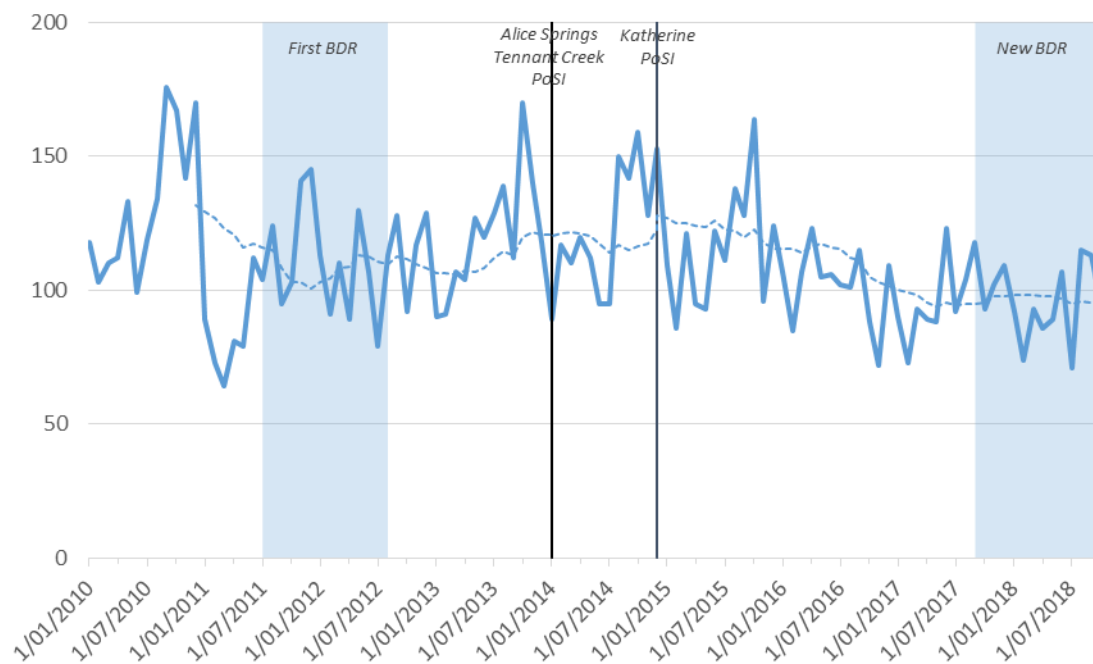


Figure 139. Number of alcohol-related infringement notices and 12-month rolling average, NT Balance

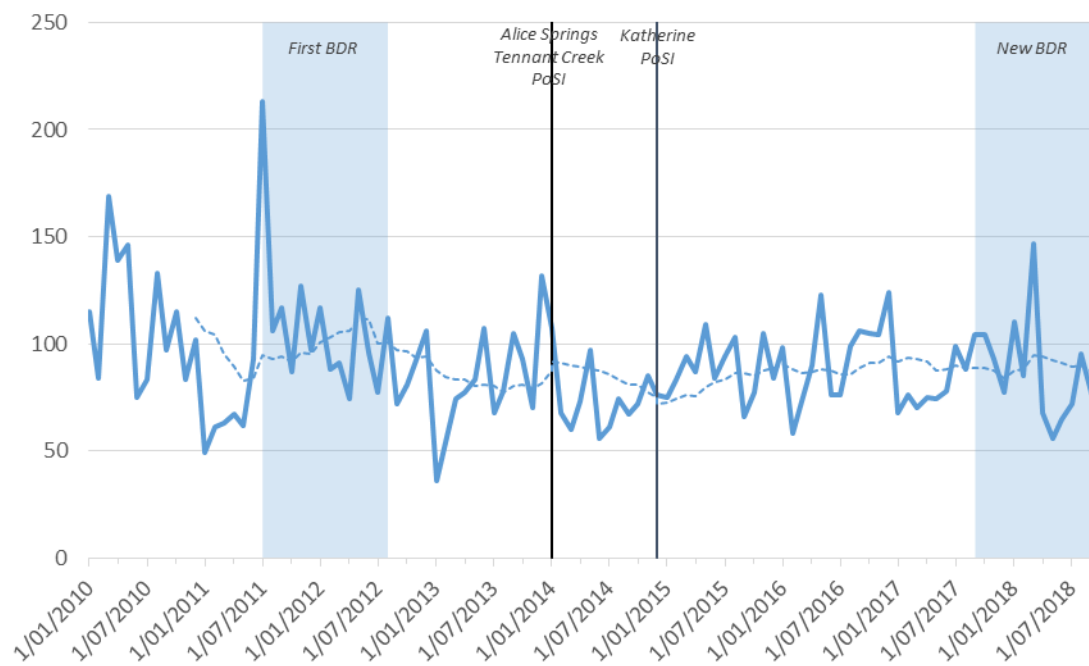
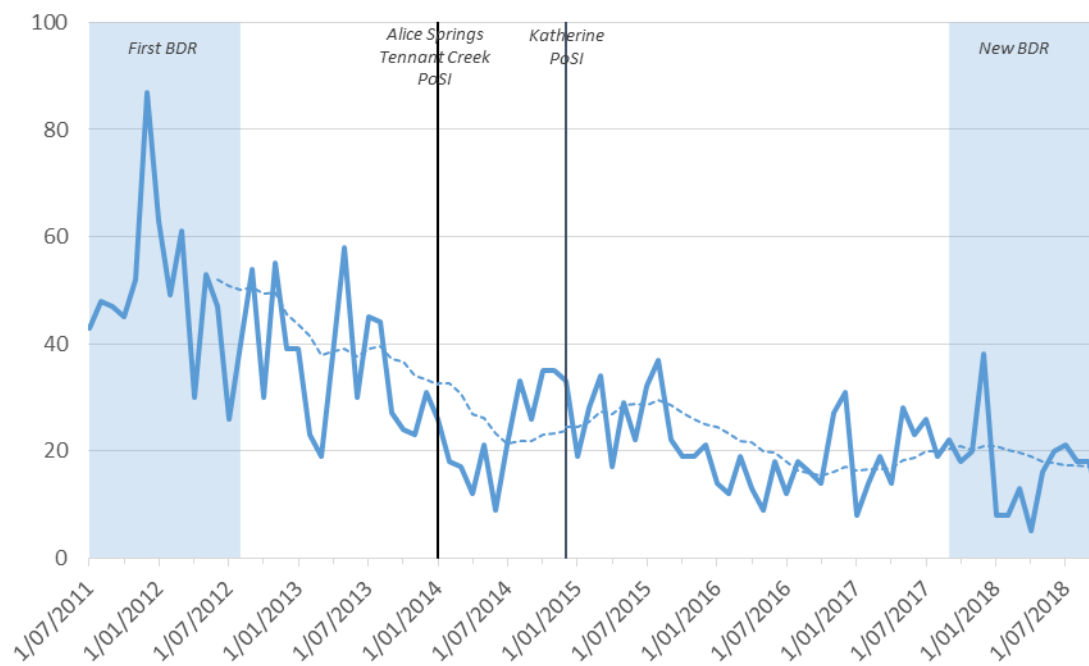


Figure 140. Number of alcohol-related protective custody episodes and 12-month rolling average, NT Balance



6.5 Appendix 4: Additional health-service related tables and charts

6.5.2 Sobering Up Shelter additional tables

Table 16: Count of admissions to NT SUS by year, month and region.

Year	Month	Alice Springs	Darwin	Katherine	Nhulunbuy	Tennant Creek
2009	Jan	548	684	343	22	189
	Feb	494	810	348	24	202
	Mar	512	678	370	12	258
	Apr	437	711	310	45	232
	May	417	637	371	41	211
	Jun	449	485	316	61	225
	Jul	324	515	327	11	185
	Aug	161	548	284	25	122
	Sep	373	564	388	--	137
	Oct	527	585	449	--	165
	Nov	466	435	403	--	128
	Dec	630	686	371	--	166
2010	Jan	640	909	338	14	159
	Feb	729	761	366	67	164
	Mar	897	879	408	74	148
	Apr	702	694	351	85	165
	May	663	629	305	21	138
	Jun	652	493	277	9	85
	Jul	588	551	283	31	97
	Aug	388	517	272	15	124
	Sep	526	536	374	53	136
	Oct	435	766	376	55	161
	Nov	482	619	372	72	101
	Dec	409	695	306	85	111
2011	Jan	422	602	282	17	130
	Feb	666	551	228	11	177
	Mar	871	731	262	46	115
	Apr	600	552	272	79	97
	May	457	451	251	41	35
	Jun	398	322	210	52	40
	Jul	311	297	209	73	55
	Aug	364	484	249	102	51
	Sep	395	411	365	88	29
	Oct	537	447	351	90	60
	Nov	583	514	324	81	53
	Dec	610	482	368	50	41
2012	Jan	581	425	363	30	50
	Feb	600	557	318	46	71
	Mar	987	572	383	42	162
	Apr	679	369	260	33	71
	May	862	399	271	32	88
	Jun	577	261	277	36	79

Year	Month	Alice Springs	Darwin	Katherine	Nhulunbuy	Tennant Creek
	Jul	401	288	243	11	79
	Aug	486	267	281	15	51
	Sep	597	269	249	11	51
	Oct	902	463	326	24	54
	Nov	701	543	355	28	101
	Dec	529	495	322	13	117
2013	Jan	578	627	322	36	151
	Feb	629	534	352	12	110
	Mar	883	662	365	40	203
	Apr	626	500	341	29	165
	May	746	500	375	24	167
	Jun	518	354	218	36	164
	Jul	809	252	302	57	235
	Aug	693	340	238	31	216
	Sep	789	437	289	49	234
	Oct	749	472	275	54	212
	Nov	537	517	273	57	193
	Dec	616	579	355	35	197
2014	Jan	775	764	276	47	185
	Feb	546	595	289	46	200
	Mar	420	717	249	69	194
	Apr	608	593	205	30	116
	May	541	716	254	43	131
	Jun	431	408	163	60	80
	Jul	530	515	221	38	22
	Aug	363	398	177	54	21
	Sep	416	444	160	22	19
	Oct	480	565	173	23	39
	Nov	498	556	166	4	23
	Dec	658	701	132	1	62
2015	Jan	373	672	114	14	80
	Feb	645	612	118	20	53
	Mar	508	682	127	39	62
	Apr	315	524	74	44	43
	May	226	602	78	21	26
	Jun	280	515	51	27	22
	Jul	336	561	63	33	27
	Aug	306	474	38	21	26
	Sep	336	577	41	11	11
	Oct	331	644	36	22	24
	Nov	222	504	75	8	58
	Dec	282	633	109	26	51
2016	Jan	302	599	63	3	58
	Feb	264	636	96	16	56
	Mar	180	646	101	13	63
	Apr	159	540	58	9	51

Year	Month	Alice Springs	Darwin	Katherine	Nhulunbuy	Tennant Creek
	May	169	482	55	7	40
	Jun	200	404	39	6	36
	Jul	158	300	42	5	37
	Aug	155	351	41	4	42
	Sep	157	327	51	8	56
	Oct	144	356	57	6	37
	Nov	150	467	57	3	39
	Dec	160	492	71	14	55
2017	Jan	233	472	54	6	60
	Feb	172	432	64	11	63
	Mar	192	451	52	8	101
	Apr	132	428	37	7	77
	May	198	331	33	6	71
	Jun	180	260	41		50
	Jul	204	330	31	3	48
	Aug	184	409	38	2	54
	Sep	166	406	20	7	79
	Oct	254	430	50	4	132
	Nov	214	461	44	16	183
	Dec	320	451	52	33	139
2018	Jan	335	439	46	18	122
	Feb	300	521	64	14	170
	Mar	354	491	71	1	209
	Apr	254	442	72	8	145
	May	243	426	64	2	102
	Jun	229	424	51	6	98
	Jul	237	423	85	6	56
	Aug	173	439	121	4	103

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Table 17: Count and proportions of admissions to NT SUS by source of referral by region, selected months.

Shelter	Source	Count		Percentage	
		Sep16-Aug17	Sep17-Aug18	Sep16-Aug17	Sep17-Aug18
Alice Springs	Police	1,294	2,214	61%	72%
	Patrol	375	571	18%	19%
	Self	421	215	20%	7%
	Other	16	79	1%	3%
	Total	2,106	3,079	100%	100%
Darwin	Police	3,264	3,425	69%	64%
	Patrol	1,390	1,818	29%	34%
	Self	89	101	2%	2%
	Other	12	9	0%	0%
	Total	4,755	5,353	100%	100%
Katherine	Police	280	417	48%	56%
	Patrol	238	211	41%	29%
	Self	66	111	11%	15%
	Other	2	1	0%	0%
	Total	586	740	100%	100%
Nhulunbuy	Police	31	27	42%	23%
	Patrol	41	86	55%	72%
	Self				
	Other	2	6	3%	5%
	Total	74	119	100%	100%
Tennant Creek	Police	226	290	32%	19%
	Patrol	182	183	26%	12%
	Self	300	1,053	42%	68%
	Other	3	12	0%	1%
	Total	711	1,538	100%	100%
Unknown	Other	1		100%	
	Total	1		100%	
Total	Police	5,095	6,373	62%	59%
	Patrol	2,226	2,869	27%	26%
	Self	876	1,480	11%	14%
	Other	36	107	0%	1%
	Total	8,233	10,829	100%	100%

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Table 18: Count and proportions of admissions to NT SUS by sex by region, selected months.

Shelter	Sex	Count		Percentage	
		Sep16-Aug17	Sep17-Aug18	Sep16-Aug17	Sep17-Aug18
Alice Springs	Female	1165	1617	55%	53%
	Male	941	1462	45%	47%
	Total	2106	3079	100%	100%
Darwin	Female	1948	2099	41%	39%
	Male	2807	3254	59%	61%
	Total	4755	5353	100%	100%
Katherine	Female	274	338	47%	46%
	Male	312	402	53%	54%
	Total	586	740	100%	100%
Nhulunbuy	Female	43	54	58%	45%
	Male	31	65	42%	55%
	Total	74	119	100%	100%
Tennant Creek	Female	155	519	22%	34%
	Male	556	1019	78%	66%
	Total	711	1538	100%	100%
Unknown	Male	1	--	100%	--
	Total	1	--	100%	--
Total	Female	3585	4627	44%	43%
	Male	4648	6202	56%	57%
	Total	8233	10829	100%	100%

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

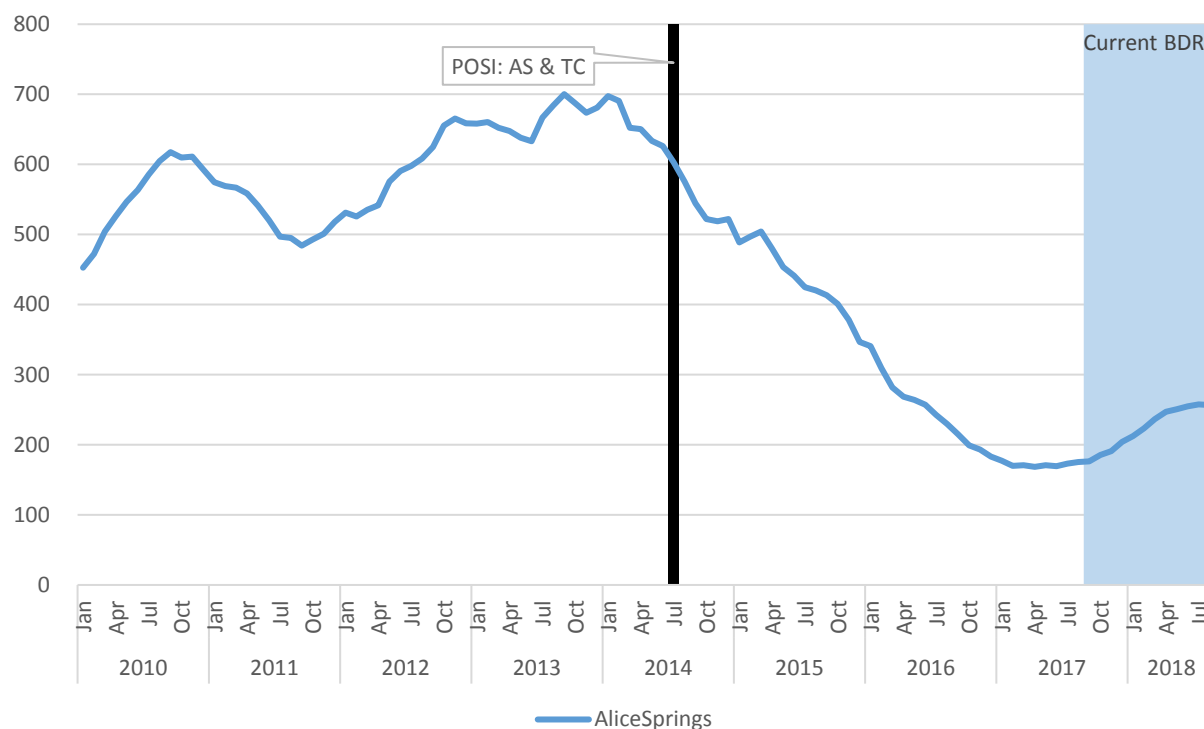
Table 19: Count and proportions of admissions to NT SUS by Indigenous status by region, selected months.

Shelter	Aboriginal status	Count		Percentage	
		Sep16-Aug17	Sep17-Aug18	Sep16-Aug17	Sep17-Aug18
Alice Springs		--	1	--	0%
	Aboriginal	2,075	3,058	99%	99%
	Aboriginal / TSI	--	1	--	0%
	Not Aboriginal / TSI	31	17	1%	1%
	Not stated	--	1	--	0%
	TSI	--	1	--	0%
	Total	2,106	3,079	100%	100%
Darwin		7	1	0%	0%
	Aboriginal	4,695	5,292	99%	99%
	Aboriginal / TSI	9	13	0%	0%
	Not Aboriginal / TSI	32	29	1%	1%
	Not stated	9	17	0%	0%
	TSI	3	1	0%	0%
	Total	4,755	5,353	100%	100%
Katherine		--	1	--	0%
	Aboriginal	582	733	99%	99%
	Aboriginal / TSI	1	2	0%	0%
	Not Aboriginal / TSI	3	4	1%	1%
	Not stated	--	--	--	--
	TSI	--	--	--	--
	Total	586	740	100%	100%
Nhulunbuy	Aboriginal	74	118	100%	99%
	Aboriginal / TSI	--	--	--	--
	Not Aboriginal / TSI	--	1	--	1%
	Total	74	119	100%	100%
Tennant Creek		--	2	--	0%
	Aboriginal	695	1,497	98%	97%
	Aboriginal / TSI	11	18	2%	1%
	Not Aboriginal / TSI	5	19	1%	1%
	Not stated	--	2	--	0%
	Total	711	1,538	100%	100%
Unknown/Unspecified	Aboriginal / TSI	1	--	100%	--
	Total	1	--	100%	--
Total		7	5	0%	0%
	Aboriginal	8,121	10,698	99%	99%
	Aboriginal / TSI	22	34	0%	0%
	Not Aboriginal / TSI	71	70	1%	1%
	Not stated	9	20	0%	0%
	TSI	3	2	0%	0%
	Total	8,233	10,829	100%	100%

Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

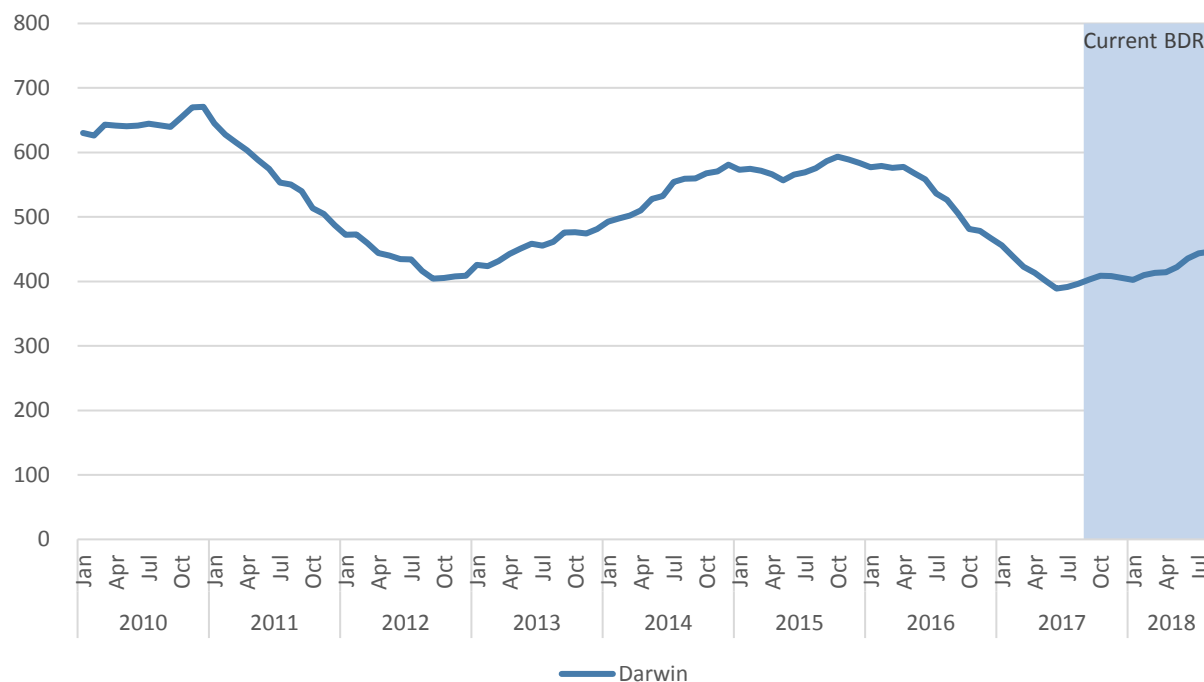
6.5.3 Sobering Up Shelter regional charts

Figure 141: Count of admissions to Alice Springs Sobering Up Shelter by year and month, 12 month prior moving average.



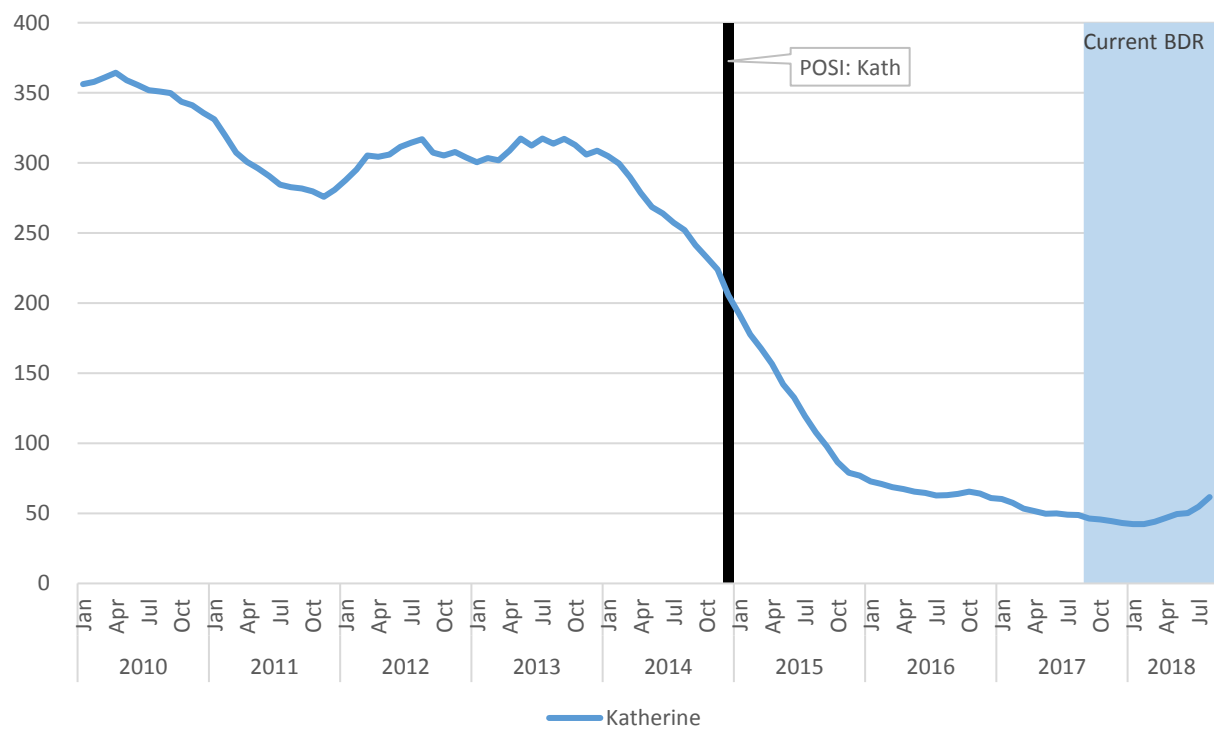
Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Figure 142: Count of admissions to Darwin Sobering Up Shelter by year and month, 12 month prior moving average.



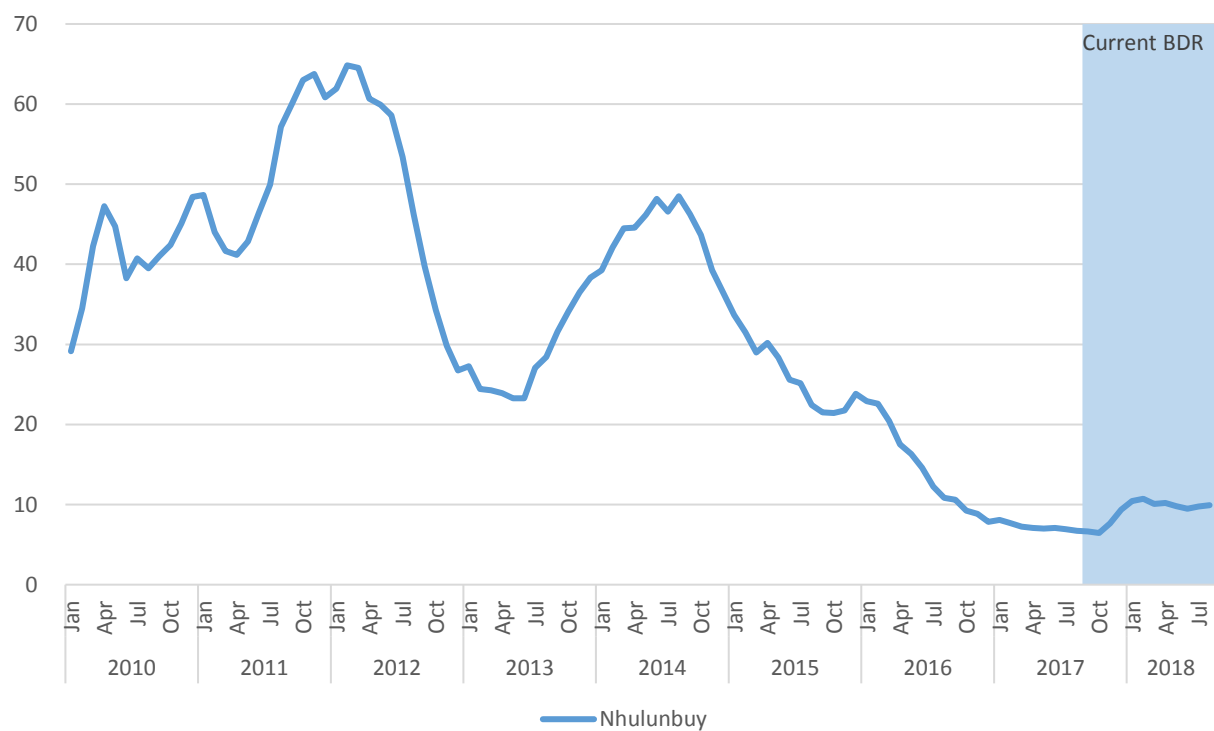
Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Figure 143: Count of admissions to Katherine Sobering Up Shelter by year and month, 12 month prior moving average.



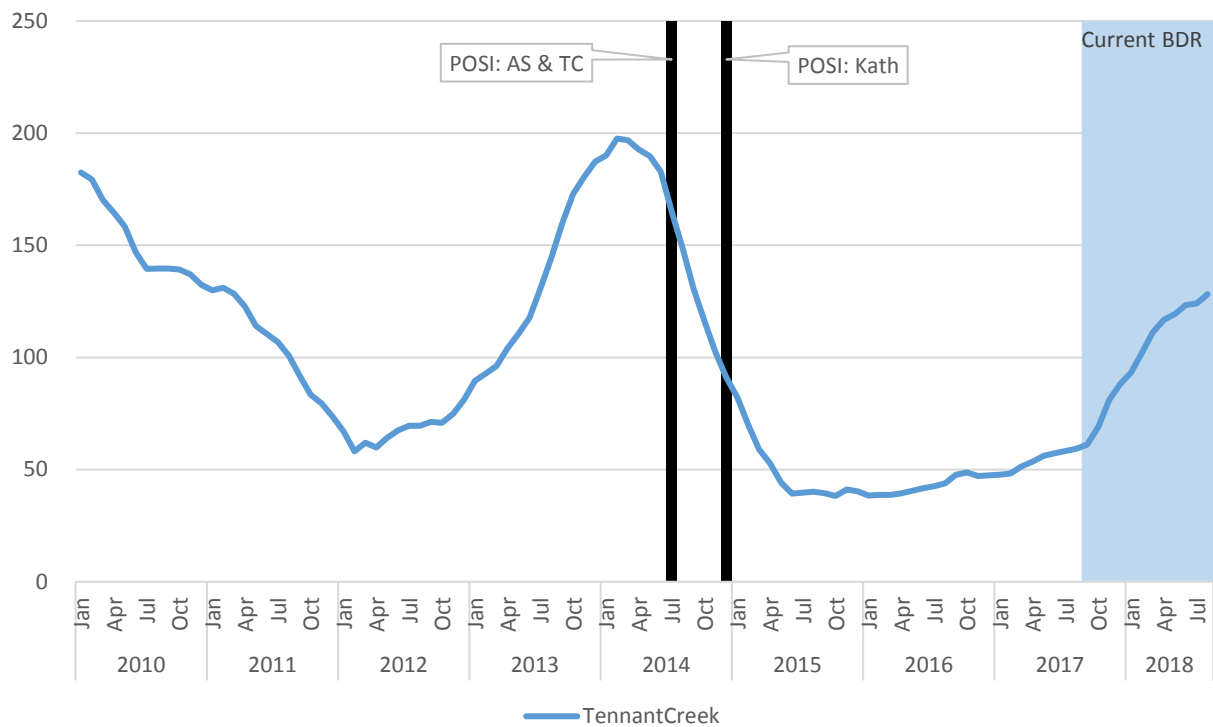
Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Figure 144: Count of admissions to Nhulunbuy Sobering Up Shelter by year and month, 12 month prior moving average.



Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

Figure 145: Count of admissions to Tennant Creek Sobering Up Shelter by year and month, 12 month prior moving average.



Source: Department of Health, Mental Health, Alcohol and Other Drugs Branch, Sobering Up Shelter System

6.5.4 Emergency Department presentation table

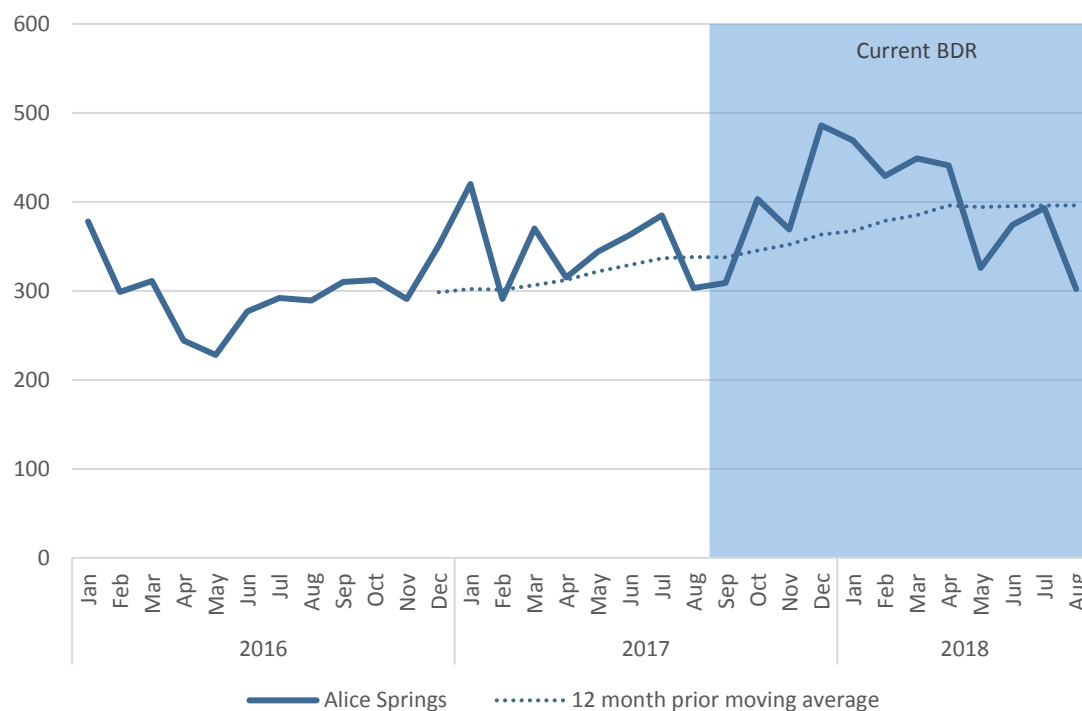
Table 20: Count of selected alcohol-attributable presentations to NT hospital Emergency Departments

Year	Month	Alice Springs	Royal Darwin	Katherine	Tennant Creek	Gove District	NT Total
2016	Jan	378	349	72	68	17	884
	Feb	299	287	64	70	18	738
	Mar	311	343	61	62	13	790
	Apr	244	278	61	61	23	667
	May	228	331	60	55	15	689
	Jun	277	301	58	66	20	722
	Jul	292	285	74	72	14	737
	Aug	289	312	61	60	10	732
	Sep	310	302	71	64	18	765
	Oct	312	261	58	49	18	698
	Nov	291	360	78	43	18	790
	Dec	351	376	67	83	19	896
2017	Jan	420	365	96	71	15	967
	Feb	291	292	69	65	11	728
	Mar	370	348	87	70	19	894
	Apr	315	306	72	65	25	783
	May	344	279	56	46	26	751
	Jun	363	246	50	62	30	751
	Jul	385	332	66	70	21	874
	Aug	303	318	77	57	26	781
	Sep	309	280	74	57	16	736
	Oct	403	318	76	56	24	877
	Nov	369	310	83	55	18	835
	Dec	486	366	106	67	23	1048
2018	Jan	469	304	71	77	27	948
	Feb	429	269	64	86	23	871
	Mar	449	343	98	48	32	970
	Apr	441	274	103	34	39	891
	May	326	277	81	44	35	763
	Jun	374	250	101	26	24	775
	Jul	393	285	101	38	32	849
	Aug	302	250	79	45	38	714

Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches

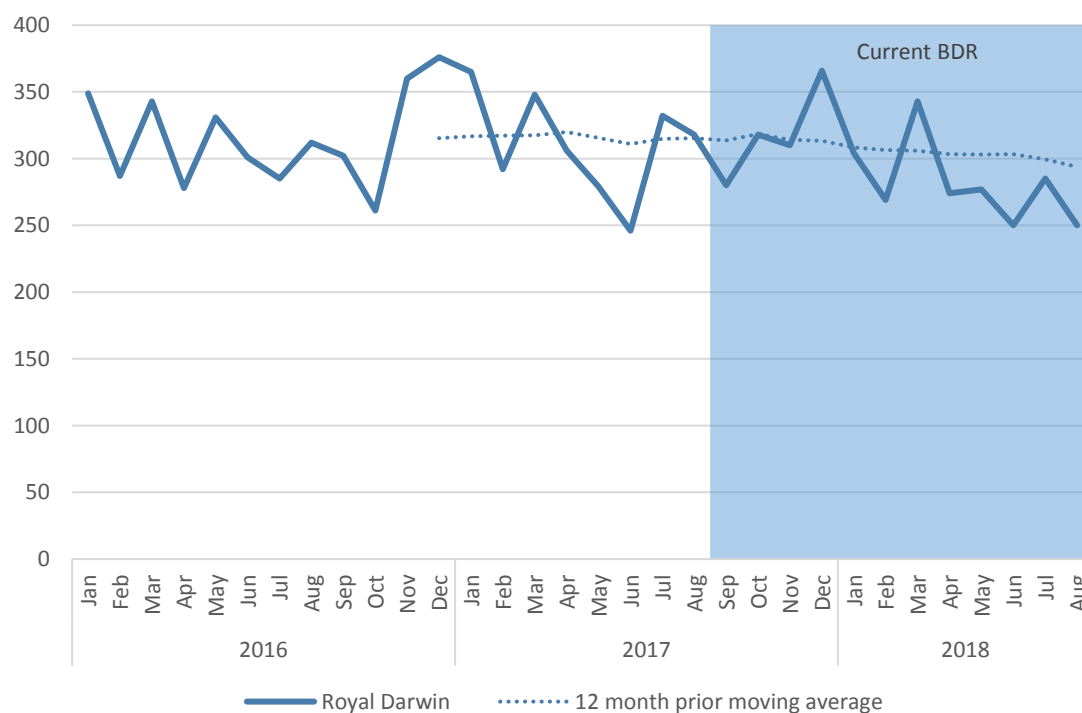
6.5.5 Emergency Department presentation regional charts

Figure 146: Count of selected alcohol-attributable presentations to Alice Springs hospital emergency department.



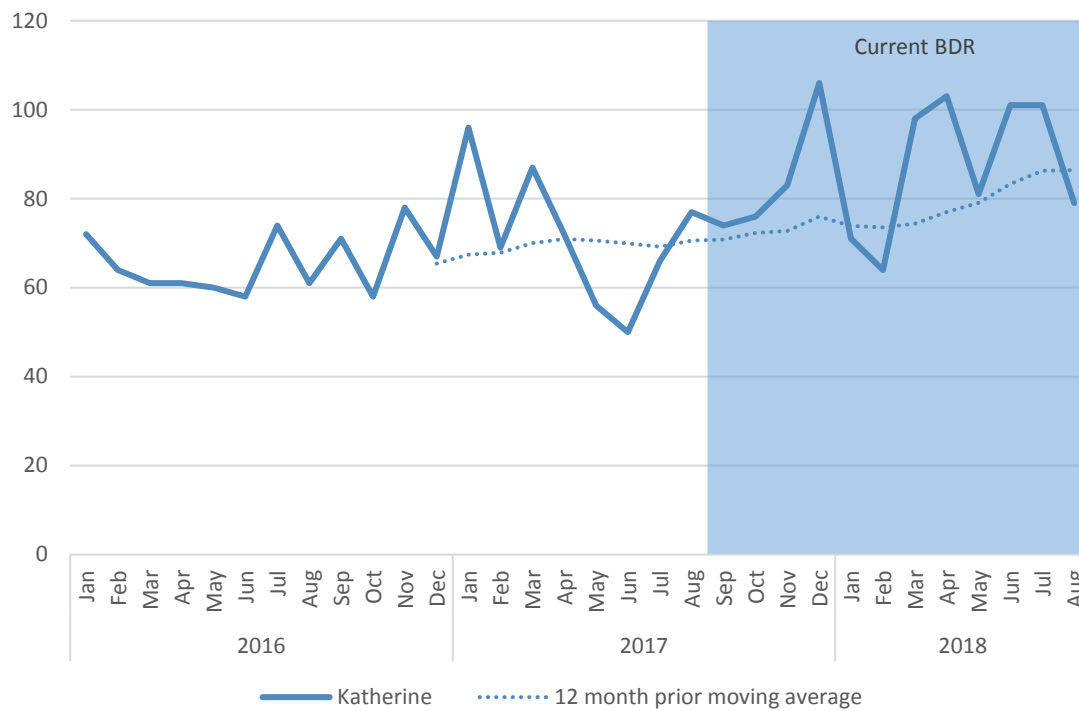
Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches

Figure 147: Count of selected alcohol-attributable presentations to Royal Darwin hospital emergency department.



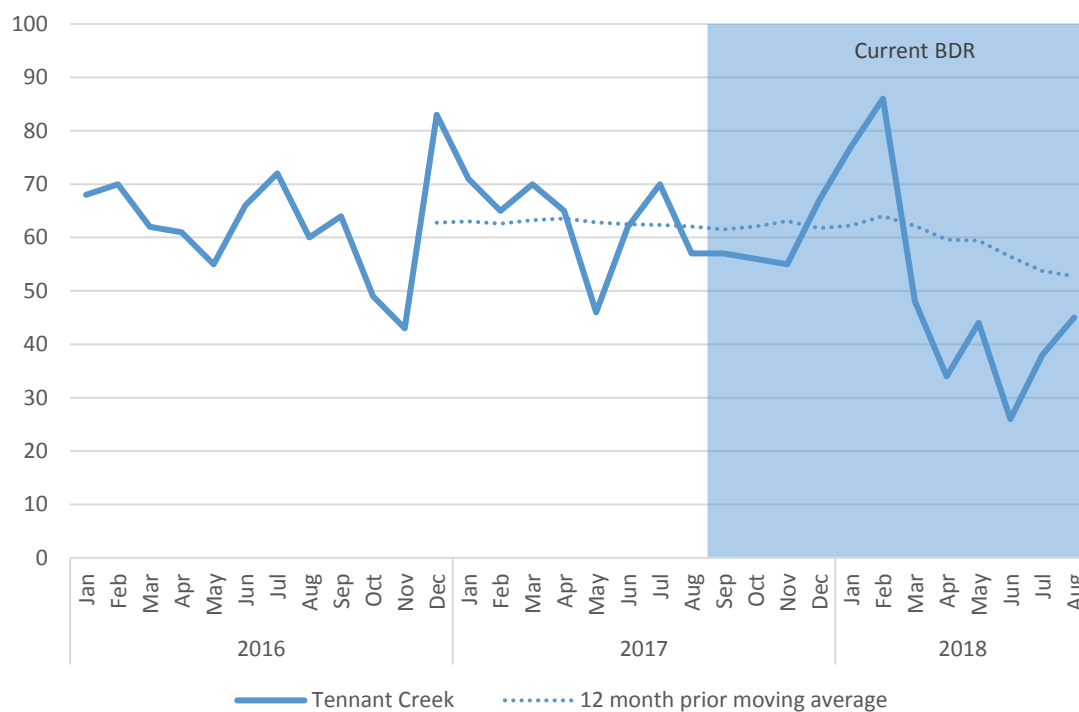
Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches

Figure 148: Count of selected alcohol-attributable presentations to Katherine hospital emergency department.



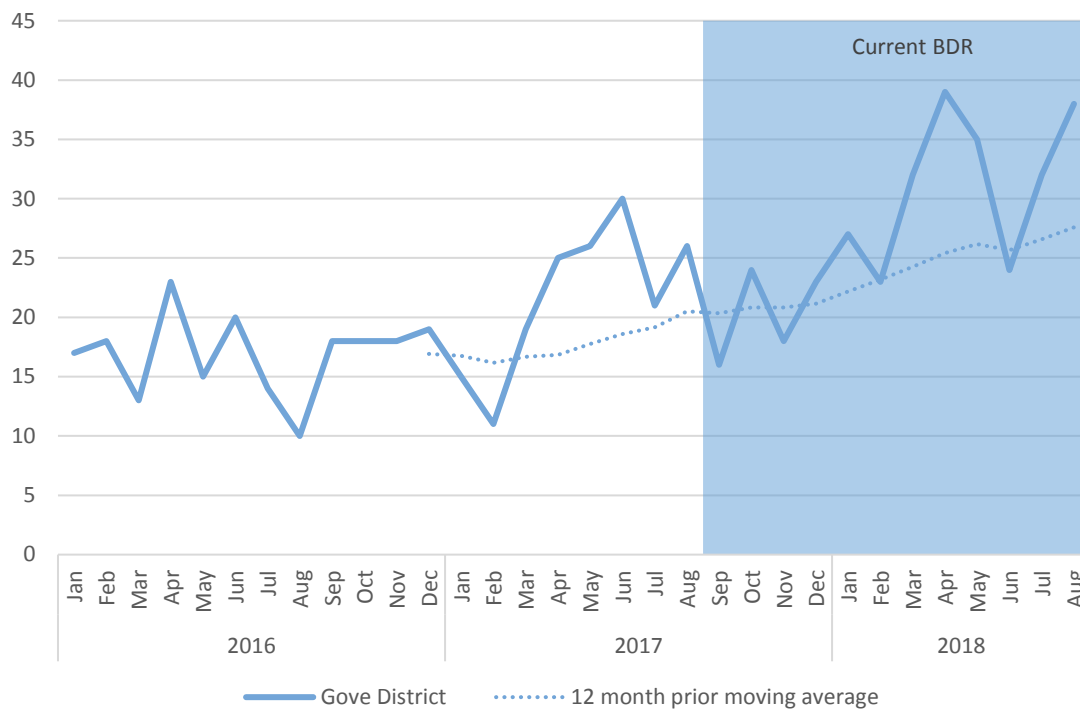
Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches

Figure 149: Count of selected alcohol-attributable presentations to Tennant Creek hospital emergency department.



Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches

Figure 150: Count of selected alcohol-attributable presentations to Gove District hospital emergency department.



Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches

6.6 Appendix 5: Definitions for the NGO treatment sector

Episode of care

The period of contact, with defined dates of commencement and cessation, between a client and a treatment provider or team of providers in which there is no change in the main treatment type or the principal drug of concern, and there has not been a non-planned absence of contact for greater than three months.

Main treatment type

Main treatment type for alcohol and other drugs is the main activity determined necessary at assessment by the treatment provider to treat the client's alcohol and/or drug problem for the principal drug of concern. Options are:

Withdrawal management (detoxification) - any form of withdrawal management, including medicated and non-medicated, in any delivery setting.

Counselling - any method of individual or group counselling directed towards identified problems with alcohol and/or other drug use or dependency.

Rehabilitation - an intensive treatment program that integrates a range of services and therapeutic activities that may include counselling, behavioural treatment approaches, recreational activities, social and community living skills, group work and relapse prevention. Rehabilitation treatment can provide a high level of support (i.e. up to 24 hours a day) and tends towards a medium- to longer-term duration. Rehabilitation activities can occur in residential or non-residential settings.

Support and case management - when there is no treatment provided to the client other than support and case management (e.g. treatment provided through youth alcohol and drug outreach services).

Information and education - when there is no treatment provided to the client other than information and education.

Assessment only - when there is no treatment provided to the client other than assessment.

Statistical Linkage Key (SLK)

Statistical linkage key 581 (SLK-581) is a code consisting of elements of an individual's name, date of birth and gender. The SLK-581 allows for records belonging to the same client to be identified in a manner that protects the privacy of the individual.

Reason for cessation

The reason for ending the treatment episode from an alcohol and other drug treatment service.

6.7 Appendix 6: Notes on alcohol-attributable conditions in Emergency Department presentations

Population attributable fractions are the proportion of a health condition or external cause that is attributable to the exposure of a specific risk factor (such as alcohol) in a given population. It depends on the relative risk of alcohol with that health condition and the prevalence of alcohol drinking at different levels.

Presentations to NT Emergency Departments are given principal diagnosis codes as per the International Classification of Disease, Tenth Revisions (ICD-10).

Table 21 lists the conditions included in this report. Wholly alcohol attributable conditions are marked with an asterisk.

Table 21: Emergency department wholly and partially alcohol-related conditions as principal diagnosis.

ICD code	Description	ICD code	Description
C002	malignant neoplasm lip	K729/3	hepatic encephalopathy
C069/1	malignant neoplasm mouth	K746/1	hepatic cirrhosis
C069/2	malignant neoplasm oral cavity	K766	cirrhosis with portal hypertension
C109	malignant neoplasm pharynx	K85	pancreatitis
C109/1	malignant neoplasm oropharynx	K861*	pancreatitis chronic
C159	malignant neoplasm oesophagus	K920/1	blood in vomitus
C229	malignant neoplasm liver	K920/2	haematemesis
C329	malignant neoplasm larynx	R780*	blood alcohol level elevated
E51.2	Wernicke's encephalopathy	S0260	fracture, mandible
F100/1*	alcohol intoxication in alcoholic	T510*	ethyl alcohol poisoning
F100/2*	alcohol intoxication	T518*	other alcohol poisoning
F101*	alcohol abuse disorder	T749/2	domestic assault
F102*	alcohol addiction	T749/3	assault (not domestic)
F104*	delirium tremens	T749/4	domestic violence
F105*	alcoholic psychosis	X990	stabbing by domestic partner
F105/1*	alcoholic hallucinosis	X991	stabbing, domestic, except by partner
F105/2*	alcohol withdrawal syndrome	X999	stabbing, other, not domestic
G405	alcohol related seizure	Z032/1	antisocial behaviour
G934	encephalopathy	Z032/2	violent behaviour
I850	oesophageal varices with bleeding	Z032/4	behavioural problems, adult
I859	oesophageal varices without bleeding	Z044	sexual assault examination
K292*	gastritis, alcoholic	Z045/1	observation following criminal assault
K701*	alcoholic hepatitis	Z045/3	observation of child or wife battering victim
K703*	cirrhosis with alcoholism	Z048/1	blood alcohol level only
K729/1	hepatic coma	Z048/2	police request for drug screen only
K729/2	hepatic decompensation		

Source: Department of Health, Innovation and Research and Mental Health, Alcohol and Other Drugs Branches