Research Brief

Profiles of criminogenic need among Aboriginal and non-Aboriginal men and women in prison

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AIMS To develop a series of profiles examining the prevalence and risk relevance of criminogenic needs, as assessed by the Level of Service Inventory – Revised (LSI-R), among Aboriginal and non-Aboriginal men and women serving custodial sentences in New South Wales (NSW).

FINDINGS AND CONCLUSIONS A total of 38685 LSI-R assessments were examined, including assessments carried out for 26591 non-Aboriginal men, 8109 Aboriginal men, 2598 non-Aboriginal women, and 1387 Aboriginal women. Profiles of LSI-R domain scores for each group were explored in reference to a 'hierarchy' of needs within that group, and how their scores compared to those of the general population, represented here by the total sample of assessments.

Results indicated various commonalities across groups. Needs on the Leisure/Recreation, Education/Employment, Finance, and Alcohol/Drug domains tended to be most prevalent, whereas people were least likely to register needs on the Accommodation and Companions domains. On average, needs on the Attitudes/Orientation and Accommodation domains consistently showed some of the strongest associations with recidivism outcomes, and large effect sizes were also observed for the Alcohol/Drug and Education/Employment domains. Each group was found to have domains that were not significantly related to recidivism, and the Emotional/Personal domain was not predictive of recidivism in all cases.

The series of profiles also showed a number of subgroup-specific patterns of needs. Detailed examination of each profile indicated that in many cases, individual population groups had distinct experiences of the frequency or severity of needs, and the strength of relationships between those needs and recidivism outcomes. In some cases, these appeared to be indicative of cross-culture or gender effects; for example, both Aboriginal men and women showed lower risk relevance of the Alcohol/Drug domain, and both Aboriginal and non-Aboriginal women tended to have higher prevalence and risk relevance of the Finance domain. The profile of needs for non-Aboriginal men largely followed that of the total sample, with some exceptions, which is consistent with their majority representation.

We concluded that while there are caveats to interpreting the results, this study gives insights into how criminogenic needs are distributed among, and experienced by, priority groups within the NSW prison population. Consideration of the prevalence and risk relevance of needs, taking into account both commonalities at the population level and distinct patterns arising as a function of Aboriginal cultural background and gender, may inform tailored allocation of limited resources to address risk of recidivism among people in prison.

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INTRODUCTION

With over 12000 adult inmates in NSW custody (Australian Bureau of Statistics, 2022; NSW Bureau of Crime Statistics and Research, 2023), a key challenge for correctional agencies is to allocate limited intervention resources to meet the needs of people involved in the criminal justice system and address their likelihood of reoffending. In Corrective Services NSW (CSNSW) and elsewhere, this decision-making process is typically guided by assessments of the individual's recidivism risk as well as their dynamic risk factors, or criminogenic needs. Dynamic risk factors are variables that have a causal relationship with a person's reoffending and are amenable to change (Andrews & Bonta, 2010).

Categories and characteristics of criminogenic needs have been established in an extensive body of literature over recent decades. Primary amongst them are the Central Eight risk factors, which include antisocial attitudes, antisocial peers, antisocial personality patterns, a history of antisocial behaviour, family / marital issues, lack of achievement in education and employment, lack of prosocial leisure activities, and substance use (Andrews et al., 2006; Bonta & Andrews, 2007).

Correspondingly, a number of psychometric instruments have been developed to assess the severity of these factors and their associations with overall likelihood of reoffending. The Level of Service Inventory-Revised (LSI-R; Andrews & Bonta, 1995) is one of the most commonly used actuarial risk tools, and has been adopted by CSNSW as a routine risk assessment since 2001[1]. The tool consists of 54 items that measure one static domain related to criminal history and nine domains assessing dynamic risk factors: Education/Employment, Finance, Family/Marital, Accommodation, Leisure/Recreation, Companions, Alcohol/Drug problems, Emotional/Personal problems, and Attitudes/Orientation. Numerous studies and meta-analytic reviews have been conducted to establish support for the validity of the tool in various correctional settings and populations (e.g., Campbell et al., 2009; Duwe & Rocque, 2016; Hollin & Palmer, 2006; Labrecque et al., 2014; Lowder et al., 2019; Gendreau et al., 1996;Hsu et al., 2009; Lowenkamp & Bechtel, 2007; Manchak et al., 2008; Persson et al., 2017; Simourd, 2004; Vose et al., 2013). There are also indications that the LSI-R can identify specific need patterns or profiles for certain offender groups, such as sex offenders and violent offenders (Gentry et al., 2005; Hollin & Palmer, 2003; Simourd & Malcolm, 1998).

Whereas intervention to address criminogenic needs is a central tenet of the Risk Need Responsivity model (Andrews & Bonta, 2010), efforts to achieve this at the jurisdictional level are moderated by various practical considerations. Optimally, effective allocation of resources may be guided by principles such as the prevalence of needs within a population, as well as their risk relevance, or the extent to which needs influence an individual's likelihood of reoffending (amongst others, including the effectiveness and costs of available interventions). A compounding factor is the potential need to tailor considerations of prevalence and risk relevance to the local population, as well as priority subgroups within that population. Historically, research and development of assessments relating to criminogenic needs has largely occurred in Canada, the United States, and the United Kingdom, and tend to be representative of the majority groups of people involved in these criminal justice systems, namely white men. In the absence of further replication or validation, it is unclear whether findings are generalisable to different jurisdictions and societal groups (see Allan & Dawson, 2004; Howard et al., 2023; Shepherd & Lewis-Fernandez, 2016; Wilson & Gutierrez, 2014).

In the context of corrections in NSW and Australia more broadly, there is a particular need for more study to understand and tailor intervention strategies to the needs of Aboriginal and Torres Strait Islander peoples (we hereafter use the term 'Aboriginal' to refer to all First Nations Australians including Aboriginal and Torres Strait Islander peoples) and women. Aboriginal people are substantially overrepresented in the criminal justice system (NSW Bureau of Crime Statistics and Research, 2023a) and their rate of re-offending is significantly higher compared to non-Aboriginal offenders (Australian Law Reform Commission, 2017;

[1] At the time of writing, use of the LSI-R by CSNSW has been discontinued for people in custody although continues to be applied as a routine case management tool for people serving community orders.

Jones et al., 2006). Similarly, the rate of offending by women has steadily risen in Australia, at a rate of increase greater than for men (Australian Bureau of Statistics, 2023), with the result being that women are the most rapidly growing group of people being imprisoned in Australia over recent years (Australian Institute of Health and Welfare, 2020).

An emerging evidence base also indicates that there are gendered and cultural differences in how people experience criminogenic needs. Studies have indicated that pathways to crime, including the frequency with which risk factors are experienced and how they relate to reoffending outcomes, may be different for Australian Aboriginal, as well as female samples (Allan & Dawson, 2004; Day et al., 2008; Hsu et al., 2009; Hsu et al., 2010; Jones et al., 2002; Mals et al., 2000; Watkins, 2011). For example, gender responsive research has highlighted the roles of trauma, mental illness and comorbid substance use, dysfunctional relationships, and economic marginalisation in women's pathways into offending (e.g., McClellan et al., 1997; Strathopolous & Quadara, 2014). International studies of Indigenous peoples have also recognised the impacts of colonisation, intergenerational trauma, and structural racism as culturally-specific risk factors that may also exacerbate or qualitatively influence their experience of other established criminogenic needs (e.g., Allan & Dawson, 2004; Wilson & Gutierrez, 2014).

Correspondingly, a small number of studies conducted in Australia have indicated that both Aboriginal people and women score differently on the LSI-R compared to non-Aboriginal men. For example, Aboriginal people consistently score higher than non-Aboriginal offenders overall and on most, if not all, domain subscales (Hsu et al., 2010; Hsu et al., 2011), which is in line with higher detected recidivism rates on average (e.g., Pisani, 2022). Women, on the other hand, have been shown to obtain scores that are similar to, or lower than, those of men although may score higher on some subscales (Hsu et al., 2009; Mihailides et al., 2005; Watkins, 2011). There is also some evidence that the LSI-R subscales may be differentially predictive for Aboriginal and female people in Australia compared to non-Aboriginal men, albeit with some similarities (Hsu et al., 2009; Hsu et al., 2010; Watkins, 2011).

AIMS

There is an identified need for more research into differences in experience and assessment of criminogenic needs among Australian Aboriginal people and women, and particularly interactions between culture and gender (Olver et al., 2014; Thompson & McGrath, 2012), to better inform tailored intervention and support approaches. This study aims to develop a series of profiles of needs, as assessed by the LSI-R, for Aboriginal men and women as well as non-Aboriginal men and women serving custodial sentences in NSW. In developing these profiles, we aimed to consider both the prevalence and risk relevance of these needs as experienced by each group. To allow for an understanding of the unique patterns of needs for each group, we assessed both how domains of need compare to each other within a given group in a form of a relative 'hierarchy of needs', in addition to the extent to which prevalence and risk relevance differs from the general population.

METHODS

The data used in this study were retrieved from the CSNSW Offender Information Management System (OIMS). OIMS is an operational database that maintains data on people under supervision by CSNSW, including their demographic characteristics, current and past offenses, the results of assessments such as the LSI-R, and whether or not they were recorded as having returned to custody. The sample consisted of people who had served custodial sentences between 2005 and 2015, and had received an LSI-R assessment within 12 months of their release from the index custodial episode[2]. Assessments were included for analysis if they were recorded as complete and valid, and were attached to a custodial episode that permitted

[2] Those who were assessed before 2005 were excluded to remove assessment or data entry errors associated with initial implementation of the LSI-R at CSNSW.

calculation of recidivism outcomes. In the event that multiple assessments were conducted in the context of the individual's custodial episode, only the most recent assessment was retained. The final sample included 38685 assessments for analysis, including assessments for 26591 non-Aboriginal men, 8109 Aboriginal men, 2598 non-Aboriginal women, and 1387 Aboriginal women.

Each need domain on the LSI-R consists of a different number of items and, therefore, have different ranges of possible scores. As such, it is difficult to compare domains in terms of prevalence and risk relevance within a group using raw scores. To address this issue, we used the min-max scaling method to normalise the range of scores relative to the range of values possible in a measure. By doing so, the minimum and maximum value of each domain is 0 and 1, respectively. Using these scaled scores, we examined the average proportional scores on domains for each of the groups to determine which domains were most to least prevalent.

We also examined prevalence in reference to whether an individual may be considered to have severe needs on a given domain. Corrective Services NSW has historically applied scoring thresholds to each of the domains to categorise the severity of people's needs, so that scores above those thresholds (e.g., a score of 5 or more on the Alcohol/Drug domain) indicate 'considerable need for improvement', defined as causing them serious adjustment problems or contributing markedly to their offending (see Howard & Corben, 2019). Needs that meet this threshold may then be identified as priorities for intervention as part of case management. We calculated the percentage of offenders in each group who exhibited "considerable need for improvement" on domains using raw scores according to the CSNSW LSI-R manual thresholds.

To assess the risk relevance of domains of need, we ran a series of binary logistic regression models. Each of the normalised domain scores were simultaneously entered as predictor variables, and return to custody within one year was entered as the outcome variable. To control for known, measured major factors associated with reoffending and better isolate the effects of Aboriginality and gender on risk relevance, inmate age and criminal history were also added as covariates. The primary output of these models was the odds ratio, which indicates the magnitude of associations between increases in need score and odds of recidivism[3]. Due to the normalisation applied to domain scores, odds ratios can be consistently interpreted as the difference in odds of recidivism between having the lowest level of need and having the highest level of need on a given domain.

FINDINGS

Sample characteristics

Of the total sample, 89.7% were men while 10.3% were women. Further, 24.6% were Aboriginal, while 75.4% were non-Aboriginal. The average age of people in the sample at the time of assessment was 33.40 years (SD = 10.93). There were significant differences in age across priority groups ($F = 16.44$; $p < .001$), whereby both Aboriginal men (M = 29.83; SD = 9.30) and women (M = 31.22; SD = 8.68) were younger than non-Aboriginal men (M = 34.40; SD = 11.27) and non-Aboriginal women (M = 35.47; SD = 10.56) at the time of assessment.

There were differences in LSI-R total scores between the groups (see Table 1). Aboriginal people were found to have higher total scores compared to non-Aboriginal people, $F(1, 38681) = 1429.32$, $p < .001$. Further, women had higher total scores compared to men, $F(1, 38681) = 107.31$, $p < .001$. There was no interaction between gender and Aboriginal status, however, suggesting that the two variables did not interact or combine to influence scores, $p = .983$.

[3] Odds ratios (OR) can be interpreted so that scores greater than one indicate that increasing need is associated with greater odds of recidivism, and scores less than one indicate that increasing need is associated with lower odds of recidivism. Given our large sample, we predetermined that a p-value less than or equal to .01 (rather than .05) for odds ratios indicates a statistically significant result.

Table 1. Average LSI-R scores for the four priority groups

Group	*N*	*M*	*SD*	Range
Aboriginal men	8109	31.02	7.22	2-51
Aboriginal women	1387	32.60	6.59	8-48
Non-Aboriginal men	26591	25.27	8.94	0-50
Non-Aboriginal women	2598	26.84	9.23	0-50

Of the total sample, 32.1% returned to custody within 1 year of release. Splitting into groups, less than half of Aboriginal men and women and less than a third of non-Aboriginal men and women returned to custody (see Table 2).

Table 2. Percentage of sample who returned to custody vs. did not return to custody within a year of release

Group	Returned to custody	Not returned to custody
Aboriginal men	47.1%	52.9%
Aboriginal women	40.5%	59.5%
Non-Aboriginal men	27.7%	72.3%
Non-Aboriginal women	26.8%	73.2%

Profiles of need

The following sections give an overview of the prevalence and risk relevance of domains of criminogenic needs for each of our priority population groups, including Aboriginal men, Aboriginal women, non-Aboriginal men, and non-Aboriginal women. Detailed statistics about the needs profiles for each group and their deviation from general population outcomes can be found in Appendix 1. Graphical summaries of the prevalence of needs for each subgroup are also shown in Figures 1 and 2.

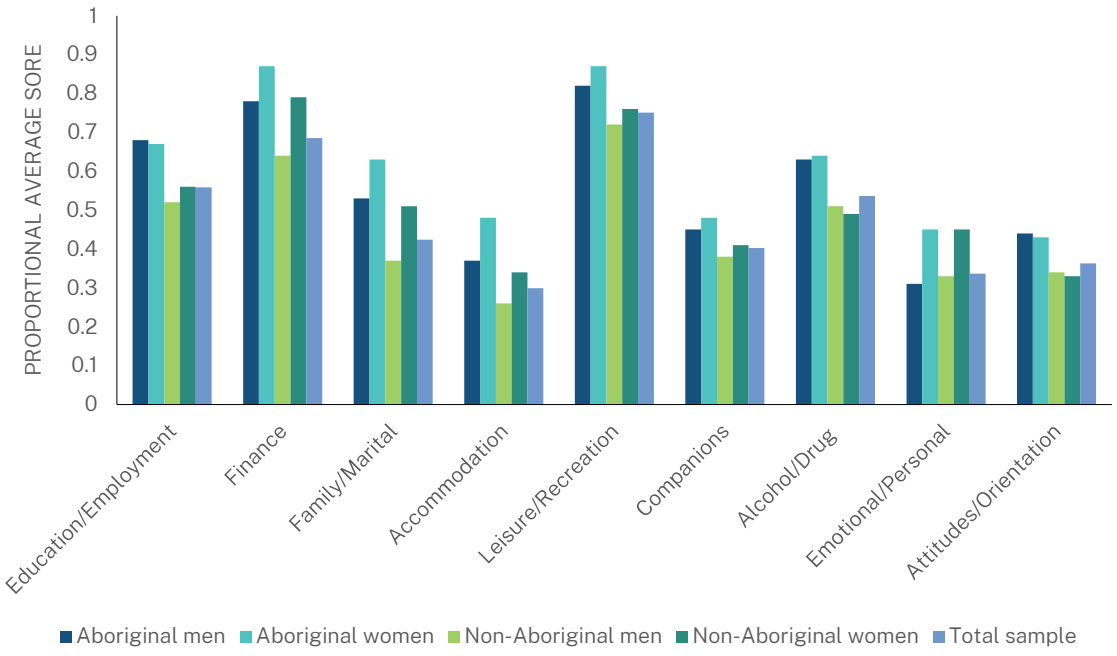

Figure 1. Average LSI-R scores for priority groups and the total population.

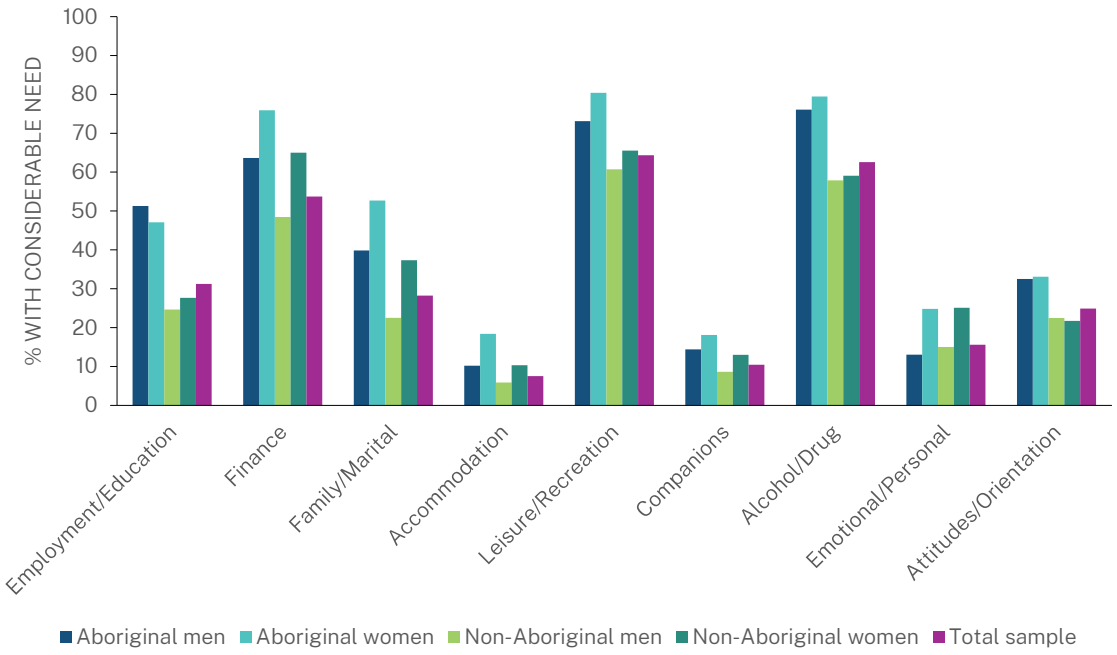

Figure 2. Percentage of participants with considerable need for improvement in each domain.

Aboriginal men

Prevalence. Aboriginal men (see Table A1) were assessed as having the highest need scores in the Leisure/Recreation domain, with 82% of items on this domain endorsed on average. Average scores were also high on the Finance, Education/Employment, and Alcohol/Drug domains, with more than 60% of needs on each of these domains assessed as present on average.

Similarly, Aboriginal men were most frequently identified as having considerable needs for improvement in the Alcohol/Drug, Leisure/Recreation, Finance and Education/Employment domains, respectively. Relatively few men were assessed as having considerable needs in the Companions, Emotional/Personal or Accommodation domains.

When considered relative to the total sample of assessments, Aboriginal men were more likely to have elevated needs in the domains of Education/Employment, Family/Marital problems, and Alcohol/Drug problems, as assessed in terms of either average domain scores or the prevalence of considerable need for improvement.

Risk relevance. In terms of risk relevance, the domains most strongly associated with recidivism were Education/Employment and Companions. Increasing needs on these domains were associated with 2.68 and 2.32 higher odds of recidivism, respectively. These domains also showed the greatest disparity from the general population, indicating that they are more strongly associated with recidivism for Aboriginal men compared to others in the sample.

Other domains most strongly associated with recidivism included Attitudes/Orientation and Alcohol/Drug problems. Interestingly, the Alcohol/Drug domain also showed substantial difference in risk relevance compared to the general population and appeared to be less strongly associated with recidivism for Aboriginal men. A number of domains had weak and statistically non-significant relationships with recidivism, including Finance, Leisure/Recreation, and Emotional/Personal problems.

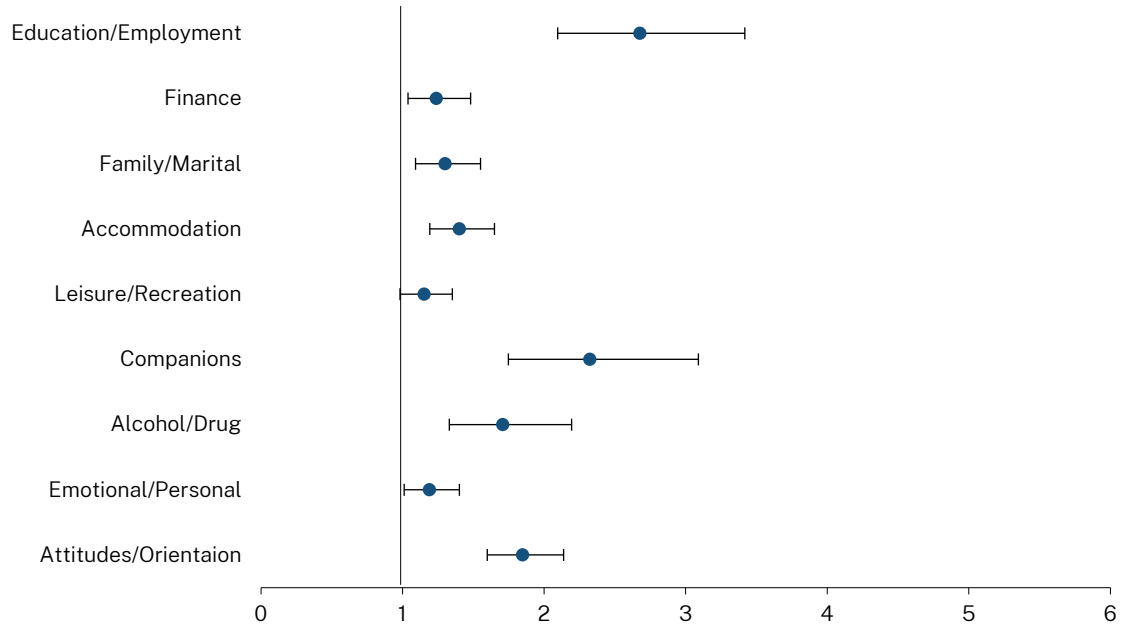

Figure 3. Odds ratios (with 95% confidence intervals) indicating the magnitude of associations between increases in need scores and odds of recidivism for Aboriginal men

Aboriginal women

Prevalence. Aboriginal women (see Table A2) were assessed as having the highest average need scores in the Finance and Leisure/Recreation domains, with 87% of items on these domains endorsed on average. Average scores were also high on the Education/Employment, Alcohol/Drug, and Family/Marital domains, with more than 60% of needs on each of these domains assessed as present on average.

Aboriginal women were also most frequently identified as having considerable needs for improvement in the Leisure/Recreation, Alcohol/Drug, Finance, and Family/Marital domains, respectively. Relatively few women were identified as having considerable needs in domains relating to Companions and Accommodation.

When considered relative to the total sample of assessments, Aboriginal women were more likely to have elevated needs in almost all domains, especially the Family/Marital, Finance, Alcohol/Drug, Leisure/Recreation, Education/Employment, Accommodation, and Emotional/Personal domains, as indicated by either average domain scores or thresholds of considerable need for improvement.

Risk relevance. The domain most strongly and significantly associated with recidivism for Aboriginal women was Leisure/Recreation. Increasing needs on this domain was associated with 2.05 higher odds of recidivism. This domain also showed the greatest disparity from the general population, indicating that it was more strongly associated with recidivism for Aboriginal women compared to the total sample. Other domains most strongly associated with recidivism included Accommodation and Attitudes/Orientation. The remaining domains were not statistically significantly predictive of recidivism outcomes.

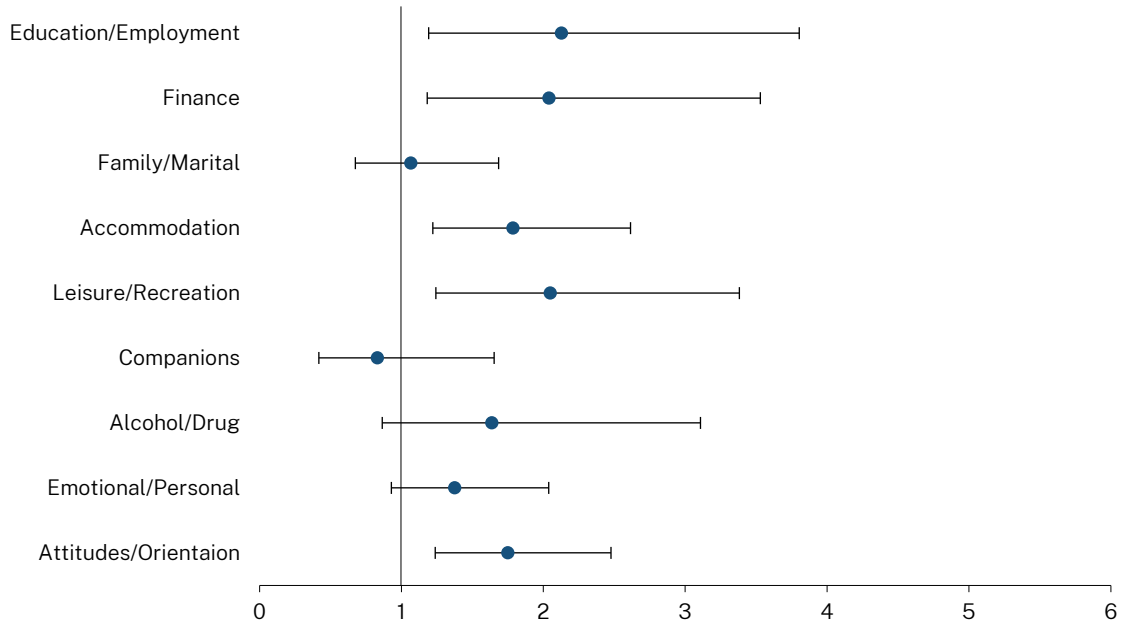

Figure 4. Odds ratios (with 95% confidence intervals) indicating the magnitude of associations between increases in need scores and odds of recidivism for Aboriginal women.

Non-Aboriginal men

Prevalence. Non-Aboriginal men (Table A3) were assessed as having the highest need score in the Leisure/Recreation domain, with 72% of items on these domains endorsed on average. Average scores were also high on the Finance, Education/Employment, and Alcohol/Drug domains.

Non-Aboriginal men were most frequently identified as having considerable needs for improvement in the Leisure/Recreation and Alcohol/Drug domains, respectively. Relatively few non-Aboriginal men were assessed as having considerable needs in the Emotional/Personal, Companions, and Accommodation domains.

Needs on all domains for non-Aboriginal men were relatively comparable to the total sample of assessments, in terms of both average domain scores and the prevalence of considerable need for improvement. In other words, they did not have particularly elevated or reduced needs on any domain compared to the total sample.

Risk relevance. The domains most strongly and significantly associated with recidivism were Education/Employment, Alcohol/Drug, and Companions. Increasing needs on these domains were associated with 2.51, 2.42, and 2.11 higher odds of recidivism, respectively. These domains also showed the greatest differences in risk relevance from the general population, and were more strongly associated with recidivism for non-Aboriginal men compared to the total sample. Other domains most strongly associated with recidivism included Attitudes/Orientation and Accommodation. All domains of need were statistically significantly associated with recidivism with the exception of the Emotional/Personal domain.

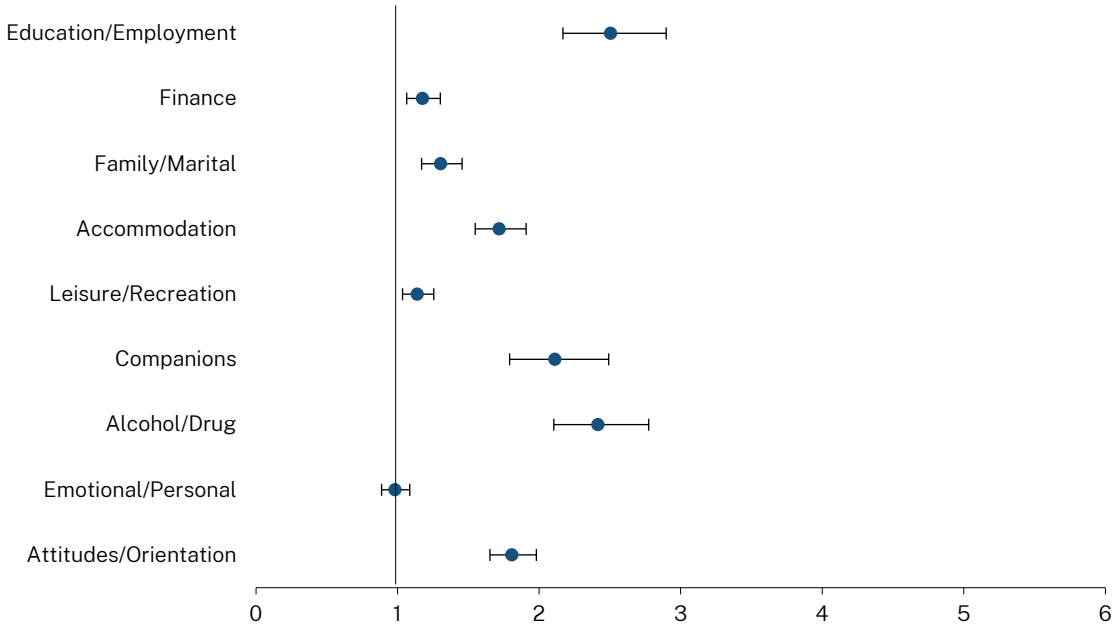

Figure 5. Odds ratios (with 95% confidence intervals) indicating the magnitude of associations between increases in need scores and odds of recidivism for non-Aboriginal men.

Non-Aboriginal women

Prevalence. Non-Aboriginal women (see Table A4) were assessed as having the highest need scores in the Finance and Leisure/Recreation domains, with 79% and 76% of items on these domains endorsed on average, respectively.

Non-Aboriginal women were also most frequently identified as having considerable needs for improvement in the Leisure/Recreation, Finance, and Alcohol/Drug domains, respectively. Relatively few non-Aboriginal women were assessed as having considerable needs in the Companions and Accommodation domains.

Relative to the total sample of assessments, non-Aboriginal women were more likely to have elevated needs in the domains of Finance, Emotional/Personal, and Family/Marital needs, both in terms of average domain scores and the prevalence of considerable need for improvement.

Risk relevance. The domains most strongly associated with recidivism were those relating to Alcohol/Drug and Attitudes/Orientation needs. Increasing needs on these domains were associated with 3.14 and 2.06 higher odds of recidivism, respectively. The Alcohol/Drug domain in particular showed a large disparity from the general population, indicating that it was more strongly associated with recidivism for non-Aboriginal women compared to the total sample. Other domains most strongly associated with recidivism included Finance and Accommodation. The remaining domains were not significantly related to recidivism.

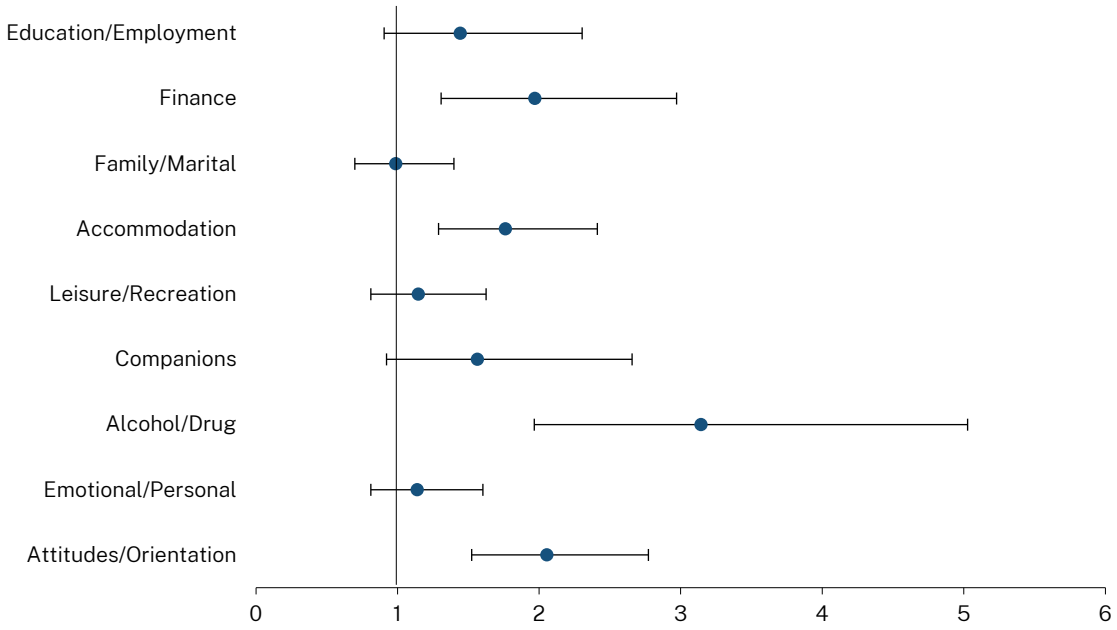

Figure 6. Odds ratios (with 95% confidence intervals) indicating the magnitude of associations between increases in need scores and odds of recidivism for non-Aboriginal women.

CONCLUSIONS

This study aimed to develop a series of profiles exploring the prevalence and risk relevance of criminogenic needs among key population groups represented in the NSW criminal justice system, including Aboriginal men and women as well as non-Aboriginal men and women. In doing so, we sought to gain insights about how needs may be considered as a hierarchy within a given group, as well as their unique experiences of needs relative to the general NSW prison population and other samples historically applied to the LSI-R validation and research literature (which, in both cases, involves majority representation by white men) more broadly. Overall, our results illustrated a number of both commonalities and differences in experience of criminogenic needs across population groups in the study.

There were various similarities in relative prevalence of needs across groups, with Leisure/Recreation, Education/Employment, Finance, and Alcohol/Drug domains commonly recorded as having the highest average scores and percentage of people with considerable needs for improvement. Conversely, people were least likely to register needs on the Accommodation and Companions domains. These patterns give some indication of the general level of demand for relevant programs and services within the NSW prison population; however, it is also possible that they may reflect non-equivalence in scoring across domains to some extent, whereby some items or combinations of items on the LSI-R have lower thresholds for indicating the presence of need than others.

Outcomes of risk relevance analyses indicated greater variance and fewer commonalities across groups. Considering common patterns, needs on the Attitudes/Orientation and Accommodation domains consistently demonstrated strong associations with risk of recidivism. Relatively large effect sizes were also observed for the Alcohol/Drug and Education/Employment domains, although it is noted that these associations were statistically non-significant for Aboriginal women and non-Aboriginal women respectively. Each of the groups were found to have domains of need that were not significantly associated with recidivism, and in all cases this included the Emotional/Personal domain. There are indications that this domain may have been subject to inconsistent scoring over time which could contribute to error (Howard & Corben, 2019); in any case, the results reinforce other findings that related needs such as mental health

difficulties may be important responsivity issues although not necessarily critical dynamic risk factors (e.g., Skeem et al., 2015). Considering the overall pattern of results, there is a case for the systemic availability of interventions to support needs in the Alcohol/Drug and Education/Employment domains, given their high prevalence and risk relevance. However, the results also illustrate that while some needs are less prevalent, such as the Accommodation domain, their risk relevance warrants access to specialist interventions for those individuals who require substantial support.

Our results also indicated a number of subgroup-specific patterns of needs. For Aboriginal men, experience of severe needs on the Education/Employment, Family/Marital, and Alcohol/Drug domains was more common relative to the general population. Interestingly, while needs on the Education/Employment domain also showed a stronger relationship with recidivism compared to the total sample, needs on the Alcohol/Drug domain appeared to be less risk relevant. This weaker association between Alcohol/Drug domain scores and recidivism was also observed for Aboriginal women, suggesting cross-cultural differences in how these needs correspond with, or have a role in, post-release outcomes. Conversely, elevated risk relevance of Education/Employment and Companions domains were observed for Aboriginal as well as non-Aboriginal men, which could indicate gender effects.

For Aboriginal women, needs on the Finance and Family/Marital domains tended to show higher prevalence compared to the overall population. There were indications that experience of needs on the Finance domain may be particularly sensitive to gender differences as this domain was more prevalent and risk relevant for both Aboriginal and non-Aboriginal women compared to the general population. In addition to the previously mentioned lower risk relevance of Alcohol/Drug and Companions domains, Aboriginal women had a relatively more pronounced association between Leisure/Recreation needs and recidivism. It should also be noted that Aboriginal women tended to have some of the weakest statistical relationships between domains of need and recidivism. This is reflected in other findings for the relatively poor predictive validity of LSI-R total scores for this group (e.g., Watkins, 2011). There is an implication that how needs are assessed by the LSI-R, and their relationship with post-release outcomes, may be subject to greater variance or error for Aboriginal women compared to other priority population groups. We acknowledge, however, that such error may be partly attributable to differences in sample composition across groups, with Aboriginal women comprising the smallest sample in the study.

In reference to non-Aboriginal women, a distinctive feature of their need profile was the elevated risk relevance of Alcohol/Drug needs, relative to the general population. The association between this domain of need and recidivism was the strongest of any assessed for each of the subgroups, and also showed the largest deviance from general population effect sizes. In addition to relative elevations on the Family/Marital and Finance domains, non-Aboriginal women were also more likely to demonstrate needs on the Emotional/Personal domain; however, it is noted that these needs were again not significantly related to recidivism outcomes. Non-Aboriginal women also had particularly weak associations between Employment/Education needs and recidivism outcomes. Recent research has illustrated that women's reintegration into the community often involves multiple priorities and pathways that may limit the feasibility of gainful employment (Cassidy & Howard, 2023), and the current study suggests that how these pathways correspond with recidivism outcomes may be particularly variable amongst non-Aboriginal women.

It is consistent with the majority representation of non-Aboriginal men in the sample that their profile of needs largely follows those of the general population. It is also consistent with the representation of similar demographics in LSI-R development and validation studies (Andrews & Bonta, 1995; see also Wilson & Gutierrez, 2014) that for this group, almost all domains of need were significantly and positively associated with recidivism outcomes. As previously mentioned, the sole exception to this was the Emotional/Personal domain, which was not predictive of recidivism. In a reflection of other cross-cultural and gendered patterns observed elsewhere, there were indications that needs on the Education/Employment, Alcohol/Drug and Companions domains had particular risk relevance for non-Aboriginal men relative to other groups.

Some caveats to interpretation of the results are noted. Following other examples in the literature (e.g., Hsu et al., 2009; 2010), our analyses of risk relevance were adjusted for age and criminal history to account for variability associated with these factors and to better isolate effects of gender and Aboriginality on

outcomes. While these adjustments allow for more reliable observations that are robust to fluctuation in such factors within the population over time, a result is that findings are not a direct reflection of contemporary group demographics and may require further investigation when applied to dynamic operational matters such as workload modelling. We also note that comparability of both prevalence and risk relevance statistics may be impacted by differences in the predictive validity of the LSI-R across groups (e.g. Watkins, 2011); for example, a potential implication of poorer predictive validity for Aboriginal women is that scores on a given domain may be a less reliable indicator of severity of need, or how that relates to recidivism outcomes, than for other groups (e.g., Howard et al., 2023; Wilson & Gutierrez, 2014). Further, significance values presented in this study are affected by differences in sample sizes across groups, and it is recommended that cross-group comparisons attend to effect sizes (such as odds ratios) as opposed to p-values. Lastly, we acknowledge that available data are limited to those individuals who received an LSI-R assessment, and results may not generalise to cohorts of people in prison who are systematically less likely to be assessed.

In sum, the current study provides insights into how domains of criminogenic need are distributed and experienced by priority groups within NSW prison populations, including Aboriginal men and women as well as non-Aboriginal men and women. It is hoped that these profiles will help to inform tailored allocation of interventions to support the needs of people in prison, taking into account both the commonalities of domains of need at the population level, and distinct patterns arising as a function of Aboriginal cultural background and gender. While prevalence of criminogenic needs gives an indication of the level of demand for given programs and services at the population level, it is critical that allocation of limited resources is also informed by considerations of general or subgroup-specific variation in the influence of needs on recidivism outcomes.

REFERENCES

Allan, A., & Dawson, D. (2004). Assessment of the risk of reoffending by Indigenous male violent and sexual offenders. *Trends & issues in crime and criminal justice, 280*. Canberra: Australian Institute of Criminology. https://www.aic.gov.au/publications/tandi/tandi280

Andrews, D.A., & Bonta, J. (1995). *The Level of Service Inventory–Revised*. Toronto: Multi-Health Systems.

Andrews, D. A., & Bonta, J. (2010). Rehabilitating criminal justice policy and practice. *Psychology, Public Policy, and Law, 16*(1), 39–55. https://doi.org/10.1037/a0018362

Andrews, D. A., Bonta, J., & Wormith, J. S. (2006). The recent past and near future of risk and/or need assessment. *Crime & Delinquency, 52*(1), 7–27. https://doi.org/10.1177/0011128705281756

Australian Bureau of Statistics. (2022). *Corrective Services, Australia*. ABS.

Australian Bureau of Statistics. (2023). *Prisoners in Australia*. ABS.

Australian Institute of Health and Welfare (2020). *The health and welfare of women in Australia's prisons*. Cat. no. PHE 281. Canberra: AIHW.

Australian Law Reform Commission. (2017). *Pathways to justice—An inquiry into the incarceration rate of Aboriginal and Torres Strait Islander Peoples (Report 133*). https://www.alrc.gov.au/wp-content/uploads/2019/08/final_report_133_amended1.pdf

Bonta, J., & Andrews, D. A. (2007). Risk-need-responsivity model for offender assessment and rehabilitation. *Rehabilitation, 6*(1), 1-22.

Campbell, M. A., French, S., & Gendreau, P. (2009). The prediction of violence in adult offenders: A meta-analytic comparison of instruments and methods of assessment. *Criminal Justice and Behavior, 36*(6), 567-590. https://doi.org/10.1177/0093854809333610

Cassidy, S., & Howard, M.V.A. (2023). *Empirical review of the Pathways to Employment (P2E) pilot for women in prison. Research Publication no. 68*. Sydney, NSW: Corrective Services New South Wales.

Day, A., Davey, L., Wanganeen, R., Casey, S., Howells, K., & Nakata, M. (2008). Symptoms of trauma, perceptions of discrimination, and anger: A comparison between Australian indigenous and nonindigenous prisoners. *Journal of Interpersonal Violence, 23*(2), 245–258. https://doi.org/10.1177/0886260507309343

Duwe, G. & Rocque, M. (2016). A jack of all trades but a master of none? Evaluating the performance of the Level of Service Inventory–Revised (LSI-R) in the assessment of risk and need. *Corrections, 1*(2), 81-106, https://doi.org/10.1080/23774657.2015.1111743

Gendreau, P., Little, T., & Goggin, C., (1996). A meta-analysis of the predictors of adult offender recidivism: What works! *Criminology, 34*(4), 575-608. https://doi.org/10.1111/j.1745-9125.1996.tb01220.x

Gentry, A. L., Dulmus, C. N., & Theriot, M. T. (2005). Comparing sex offender risk classification using the Static-99 and LSI-R assessment instruments. *Research on Social Work Practice, 15*(6), 557-563. https://doi.org/10.1177/1049731505275869

Hollin, C. R., & Palmer, E. J. (2003). Level of Service Inventory-Revised profiles of violent and nonviolent prisoners. *Journal of Interpersonal Violence*, *18*(9), 1075-1086. https://doi.org/10.1177/0886260503254514

Hollin, C. R., & Palmer, E. J. (2006). The Level of Service Inventory–Revised Profile of English Prisoners: Risk and Reconviction Analysis. *Criminal Justice and Behavior*, *33*(3), 347-366. https://doi.org/10.1177/0093854806286195

Howard, M.V.A., & Corben, S. (2019). *Desistance in an ageing inmate population: An examination of trends in age, assessed risk of recidivism and criminogenic needs. Research Bulletin no. 42*. Sydney, NSW: Corrective Services New South Wales.

Howard, M. V. A., Chong, C. S., & Murphy, K. (2023). Static-99R Norms and Cross-Cultural Validity for Australian Aboriginal and Non-Aboriginal Men Convicted of Sexual Offences. *Sexual Abuse*, *0*(0). https://doi.org/10.1177/10790632231219233

Hsu, C.-I., Caputi, P., & Byrne, M. K. (2009). The Level of Service Inventory — Revised (LSI-R): A useful risk assessment measure for australian offenders? *Criminal Justice and Behavior*, *36*(7), 728–740. https://doi.org/10.1177/0093854809335409

Hsu, C.-I, Caputi, P., & Byrne, M. K. (2010). Level of Service Inventory–Revised: Assessing the risk and need characteristics of Australian Indigenous offenders. *Psychiatry, Psychology and Law, 17*(3), 355–367. https://doi.org/10.1080/13218710903089261

Hsu, C.-I, Caputi, P., & Byrne, M. K. (2011). The Level of Service Inventory–Revised (LSI-R) and Australian offenders: Factor structure, sensitivity, and specificity. *Criminal Justice and Behavior, 38*(6), 600–618. https://doi.org/10.1177/0093854811402583

Jones, C., Hua, J., Donnelly, N., McHutchison, J., & Heggie, K. (2006). *Risk of re-offending among parolees (Report no. 91).* Crime and Justice Bulletin, NSW Bureau of Crime Statistics and Research. www.bocsar.nsw.gov.au/Publications/CJB/cjb91.pdf

Jones, R., Masters, M., Griffiths, A., & Moulday, N. (2002). Culturally relevant assessment of indigenous offenders: A literature review. *Australian Psychologist, 37*(3), 187–197. https://doi.org/10.1080/00050060210001706866

Labrecque, R. M., Smith , P., Lovins, B. K., & Latessa, E. J. (2014). The importance of reassessment: How changes in the LSI-R risk score can improve the prediction of recidivism. *Journal of Offender Rehabilitation, 53*(2), 116-128. https://doi.org/10.1080/10509674.2013.868389

Lowenkamp, C. T., & Bechtel, K. (2007). The predictive validity of the LSI-R on a sample of offenders drawn from the records of the Iowa Department of Correction Data Management System. *Federal Probation, 71*(3), 25-29.

Lowder, E. M., Desmarais, S. L., Rade, C. B., Johnson, K. L., & Van Dorn, R. A. (2019). Reliability and validity of START and LSI-R assessments in mental health jail diversion clients. *Assessment*, *26*(7), 1347-1361. https://doi.org/10.1177/1073191117704505

Mals, P., Howells, K., Day, A., & Hall, G. (2000). Adapting violence rehabilitation programs for the Australian Aboriginal offender. *Journal of Offender Rehabilitation*, *30*(1-2), 121-135. https://doi.org/10.1300/J076v30n01_08

Manchak, S. M., Skeem, J. L., & Douglas, K. S. (2008). Utility of the revised Level of Service Inventory (LSI-R) in predicting recidivism after long-term incarceration. *Law and Human Behavior, 32*(6), 477–488. https://doi.org/10.1007/s10979-007-9118-4

McClellan, D. S., Farabee, D., & Crouch, B. M. (1997). Early victimization, drug use, and criminality: A comparison of male and female prisoners. *Criminal Justice and Behavior, 24*(4), 455-476. https://doi.org/10.1177/0093854897024004004

Mihailides, S., Jude, B., & Van den Bossche, E. (2005). The LSI-R in an Australian setting: Implications for risk/needs decision- making in forensic contexts. *Psychiatry, Psychology and Law, 12*(1), 207–217. https://doi.org/10.1375/pplt.2005.12.1.207

NSW Bureau of Crime Statistics and Research (2023a). *Aboriginal over-representation in the NSW Criminal Justice System*. https://www.bocsar.nsw.gov.au/Pages/bocsar_pages/

NSW Bureau of Crime Statistics and Research. (2023b). *New South Wales Custody Statistics: December 2023.*

Olver, M. E., Stockdale, K. C., & Wormith, J. S. (2014). Thirty years of research on the Level of Service Scales: A meta-analytic examination of predictive accuracy and sources of variability. *Psychological Assessment, 26*(1), 156.

Pisani, A. (2022). *Long-term reoffending rates of adults and young people in prison.* Sydney: NSW Bureau of Crime Statistics and Research.

Persson, M., Belfrage, H., Fredriksson, B., & Kristiansson, M. (2017). Violence during imprisonment, forensic psychiatric care, and probation: Correlations and predictive validity of the risk assessment instruments COVR, LSI-R, HCR-20V3, and SAPROF. *The International Journal of Forensic Mental Health, 16*(2), 117–129. https://doi.org/10.1080/14999013.2016.1266420

Shepherd, S. M., & Lewis-Fernandez, R. (2016). Forensic risk assessment and cultural diversity: Contemporary challenges and future directions. *Psychology, Public Policy, and Law, 22*(4), 427–438. https://doi.org/10.1037/law0000102

Simourd, D. J. (2004). Use of dynamic risk/need assessment instruments among long-term incarcerated offenders. *Criminal Justice and Behavior, 31*(3), 306–323. https://doi.org/10.1177/0093854803262507

Simourd, D. J., & Malcolm, P. B. (1998). Reliability and validity of the Level of Service Inventory — Revised among federally incarcerated sex offenders. *Journal of Interpersonal Violence, 13*(2), 261-274. https://doi.org/10.1177/088626098013002006

Skeem, J. L., Steadman, H. J., & Manchak, S. M. (2015). Applicability of the Risk-Need-Responsivity Model to Persons With Mental Illness Involved in the Criminal Justice System. *Psychiatric Services (Washington, D.C.), 66*(9), 916–922. https://doi.org/10.1176/appi.ps.201400448

Stathopoulos, M., & Quadara, A. (2014). *Women as offenders, women as victims: The role of corrections in supporting women with histories of sexual abuse*. Australian Institute of Family Studies.

Thompson, A. P., & McGrath, A. (2012). Subgroup differences and implications for contemporary risk-need assessment with juvenile offenders. *Law and Human Behavior, 36*(4), 345–355. https://doi.org/10.1037/h0093930

Vose, B., Smith, P., & Cullen, F. T. (2013). Predictive validity and the impact of change in total LSI-R score on recidivism. *Criminal Justice and Behavior*, *40*(12), 1383-1396. https://doi.org/10.1177/0093854813508916

Watkins, I. (2011). *The utility of Level of Service Inventory-Revised (LSI-R) assessments within NSW correctional environments*. Sydney: Corrective Services NSW.

Wilson, H. A., & Gutierrez, L. (2014). Does One Size Fit All?: A Meta-Analysis Examining the Predictive Ability of the Level of Service Inventory (LSI) With Aboriginal Offenders. *Criminal Justice and Behavior, 41*(2), 196-219. https://doi.org/10.1177/0093854813500958

APPENDIX 1

Detailed statistics on priority group need profiles

Table A1. Needs prevalence and risk relevance for Aboriginal men

Domain	Average domain scores		Considerable need for improvement		Relationship between scores and recidivism		
	Proportion	Difference from total population	% of people	Difference from total population	Odds ratio	*p*	Difference from total population
Education/Employment	0.68	+0.12	51.29	+20.07	2.68	<.001	+0.46
Finance	0.78	+0.09	63.64	+9.91	1.24	.018	-0.01
Family/Marital	0.53	+0.11	39.83	+11.61	1.30	.003	+0.03
Accommodation	0.37	+0.07	10.18	+2.67	1.40	<.001	-0.24
Leisure/Recreation	0.82	+0.07	73.09	+8.74	1.15	.082	-0.02
Companions	0.45	+0.05	14.37	+3.92	2.32	<.001	+0.48
Alcohol/Drug	0.63	+0.09	76.07	+13.51	1.71	<.001	-0.31
Emotional/Personal	0.31	-0.03	13.01	-2.59	1.19	.037	+0.17
Attitudes/Orientation	0.44	+0.08	32.50	+7.60	1.85	<.001	+0.06

Table A2. Needs prevalence and risk relevance for Aboriginal women

Domain	Average domain scores		Considerable need for improvement		Relationship between scores and recidivism		
	Proportion	Difference from total population	% of people	Difference from total population	Odds ratio	*p*	Difference from total population
Education/Employment	.67	+0.11	47.08	+15.86	2.13	.011	-0.09
Finance	.87	+0.19	75.92	+22.19	2.04	.011	+0.79
Family/Marital	.63	+0.21	52.70	+24.48	1.07	.782	-0.20
Accommodation	.48	+0.18	18.39	+10.88	1.79	.003	+0.15
Leisure/Recreation	.87	+0.12	80.39	+16.04	2.05	.005	+0.88
Companions	.48	+0.08	18.08	+7.63	0.83	.598	-1.01
Alcohol/Drug	.64	+0.10	79.45	+16.89	1.64	.131	-0.38
Emotional/Personal	.45	+0.11	24.80	+9.20	1.38	.112	+0.36
Attitudes/Orientation	.43	+0.07	33.09	+8.19	1.75	.002	-0.04

Table A3. Needs prevalence and risk relevance for non-Aboriginal men

Domain	Average domain scores		Considerable need for improvement		Relationship between scores and recidivism		
	Proportion	Difference from total population	% of people	Difference from total population	Odds ratio	*p*	Difference from total population
Education/Employment	.52	-0.04	24.63	-6.59	2.51	<.001	+0.29
Finance	.64	-0.05	48.45	-5.28	1.18	.002	-0.07
Family/Marital	.37	-0.05	22.51	-5.71	1.31	<.001	+0.04
Accommodation	.26	-0.04	05.85	-1.66	1.72	<.001	+0.08
Leisure/Recreation	.72	-0.03	60.73	-3.62	1.14	.008	-0.03
Companions	.38	-0.02	08.61	-1.84	2.11	<.001	+0.27
Alcohol/Drug	.51	-0.03	57.89	-4.67	2.42	<.001	+0.40
Emotional/Personal	.33	-0.01	14.99	-0.61	.98	.719	-0.04
Attitudes/Orientation	.34	-0.02	22.47	-2.43	1.81	<.001	+0.02

Table A4. Needs prevalence and risk relevance for non-Aboriginal women

Domain	Average domain scores		Considerable need for improvement		Relationship between scores and recidivism		
	Proportion	Difference from total population	% of people	Difference from total population	Odds ratio	*p*	Difference from total population
Education/Employment	.56	0	27.64	-3.58	1.44	.123	-0.78
Finance	.79	+0.10	65.01	+11.28	1.97	.001	+0.72
Family/Marital	.51	+0.09	37.34	+9.12	0.99	.947	-0.28
Accommodation	.34	+0.04	10.32	+2.81	1.76	<.001	+0.12
Leisure/Recreation	.76	+0.01	65.55	+1.20	1.15	.436	-0.02
Companions	.41	+0.01	12.97	+2.52	1.57	.097	-0.27
Alcohol/Drug	.49	-0.05	59.08	-3.48	3.14	<.001	+1.12
Emotional/Personal	.45	+0.11	25.10	+9.50	1.14	.451	+0.12
Attitudes/Orientation	.33	-0.03	21.71	-3.19	2.06	<.001	+0.27

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