
Desistance in an ageing inmate population: An examination of trends in age, assessed risk of recidivism and criminogenic needs

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Aims

The New South Wales inmate population is ageing, and recent research suggests that this is associated with increasing representation of older inmates who are in active phases of persistent recidivism and reimprisonment (Howard & Corben, 2018; Stavrou, 2017). The aim of this study was to examine how these trends are reflected in actuarial assessments of risk and criminogenic needs.

Methods

We examined current Level of Service Inventory – Revised (LSI-R) data for all assessed offenders received in NSW correctional centres between 2001 and 2016 (n = 132,454 episodes).

Results

Average LSI-R total scores increased significantly over the study period. This trend was most pronounced for inmates in older age ranges (particularly those over 40 years) and was associated with increases in case management requirements and the complexity of dynamic risk factors among these cohorts. Older offenders appeared to present increasing needs in finance, leisure, alcohol and other drug, attitudes, and emotional / personal domains. Risk trends among older inmates were related to increases in the number of repeat custody offenders assessed and the severity of their risk profiles. There was no indication that LSI-R trends were associated with changes in the predictive validity of the assessment over time.

Conclusion

The results of this study complement other recent research by indicating that ageing of the inmate population has a relationship with increasing imprisonment of offenders who maintain signs of elevated recidivism risk and more severe criminogenic needs at older ages.

INTRODUCTION

Age has been established as a critical factor in individuals' likelihood of involvement in the criminal justice system and population-wide trends in offending. A foundational empirical observation is that participation in offending follows an age-crime curve (e.g. Farrington, 1986; Hirschi & Gottfredson, 1983; Moffitt, 1993), marked by a rapid peak in adolescence and early adulthood followed by progressive declines across the adult lifespan. As a result age is one of the most powerful actuarial predictors of recidivism outcomes such as reoffending and return to custody (e.g. Helmus et al., 2012; Raudino et al., 2018; Stavrou & Poynton, 2016; Xie et al., 2018).

Developmental / life-course (DLC) criminological theories provide various accounts for the relationship between age and offending. For example, influential research by Moffitt (1993; 2006) associated the age-crime curve to distinctions between a majority of individuals who display patterns of antisocial behaviour that are limited to adolescence only, and a minority who persist in their offending for varying intervals throughout adulthood.

DLC perspectives adopt a more process-oriented approach by proposing that persistent offending is a function of interactions between individual risk factors or propensities, and bonds with social institutions that promote prosocial behaviour (Longshore et al., 2004; Maruna, 2001; Sampson & Laub, 1992, 1993). From this perspective, age acts as a proxy for the occurrence of life transitions (e.g. finishing school) and trajectories (e.g. being a parent) that have an influence on internal and external social controls that regulate behaviour.

A common feature of DLC perspectives is that they provide insights into processes associated with onset, persistence of, and desistance from offending behaviour over the life span (e.g.

Piquero, 2015). Desistance is of particular importance to offender management and corrections because it relates to long-term abstinence from offending behaviour among individuals who have a history of persistent recidivism. In this regard, desistance has been identified as a central aim and function of criminal justice systems by encompassing processes of both individual behaviour change and social reintegration to promote stable reductions in risk of reoffending (e.g. McNeill et al., 2012).

There are indications that the age-crime curve among criminal justice populations has been changing. Over recent years the NSW prison population has grown (Weatherburn et al., 2016) and become older (Howard & Corben, 2018; Leach & Neto, 2011; Stavrou, 2017). These changes have been associated with increases in the number of older inmates as well as offenders who have been convicted in NSW criminal courts (Stavrou, 2017). Other jurisdictions have similarly reported an increase in the average age of offenders in prison and the prevalence of aged offenders, typically defined as offenders over the age of 50 years (Angus, 2015; Baidawi et al., 2010; Rikard & Rosenberg, 2007). Shifts in the age profile of offenders in Australian criminal justice systems appear to be a function of both decreasing rates of involvement among younger cohorts (Weatherburn et al., 2014) in addition to disproportionate increases in involvement among older cohorts relative to the general community population (Australian Bureau of Statistics, 2010).

A number of hypotheses have been generated to explain ageing of criminal justice populations, including imposition of longer sentences and increased policing of age-specific categories of offending (Baidawi et al., 2011; Potter et al., 2007), among others. These trends are also of interest from a DLC perspective because they suggest that average trajectories of onset, persistence and desistance over the life course may be changing among these populations. For example, offenders who are convicted or

imprisoned may be commencing patterns of offending at later stages in life or alternatively, persisting in chronic reoffending for a longer period.

In a recent study we (Howard & Corben, 2018) aimed to examine relationships between trends in age and patterns of recidivism and desistance among the NSW custodial population. We found that between 1990 and 2016, increases in the average age of inmates corresponded with increasing representation by inmates in older age brackets who had histories of repeat recidivism and were also more likely to be reimprisoned in the future. This was associated with increases in the average period of repeat recidivism and reimprisonment over the life course, as indicated by the interval between repeat offenders' age of first imprisonment and their age at the time of the index custodial episode.

A recent study by Stavrou (2017) also found trends towards growth in the number of aged offenders in NSW who had previous criminal convictions and were more likely to be reconvicted following the current court matter between 2000 and 2015. Taken together, the results suggest that offenders in NSW prisons and criminal courts are increasingly likely to persist in reoffending at older ages and for longer periods.

The aim of the current study was to extend previous findings by analysing age trends in the NSW custodial population, using alternative indicators of recidivism risk. While criminal justice system involvement is a meaningful index of an individual's persistence in antisocial or offensive behaviour, broader trends may be influenced by systemic changes in policing, sentencing, or community supervision practices. Indeed, there are indications that NSW criminal courts have become more likely to imprison offenders by refusing bail or imposing a custodial sentence for various categories of offending between 1994 and 2013 (Freeman, 2015).

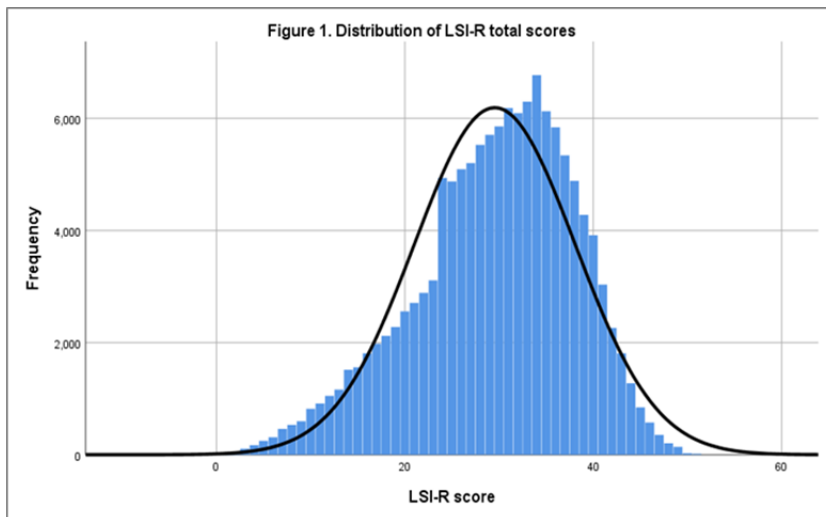
To account for this we examined trends in the risk and needs profiles of inmates as assessed by the Level of Service Inventory – Revised (LSI-R: Andrews & Bonta, 1995), an actuarial risk assessment tool that has been routinely administered by Corrective Services NSW since 2001. In accordance with DLC perspectives on desistance (e.g. Maruna, 2001) and the Risk Need Responsivity model (RNR: Andrews & Bonta, 2010), it may be expected that current patterns of persistent or chronic recidivism would be associated with elevations in static and dynamic indicators of risk. We therefore predicted that if growing representation of older inmates in NSW correctional centres is associated with increases in the prevalence and duration of persistent offending among this cohort, this would correspond with trends towards increasing severity and complexity of risk factors.

A secondary aim of this study was to examine the risk and need profiles of older inmates, to generate insights into the case management needs of this growing cohort.

METHODS

Data for this study were extracted from the CSNSW Offender Integrated Management System (OIMS), which is used to collate and manage demographic, sentencing, episode, and operational data relating to all offenders under CSNSW supervision. Electronic records in OIMS have been in continuous operation for supervision of custody based offenders since 1986.

Custodial episode data were gathered for all offenders who were housed in and subsequently released from NSW correctional centres between 1 January 2001 and the data census date of 30 November 2016. To be eligible for the primary analyses of this study, inmates were also required to have an approved LSI-R assessment completed within 12 months of reception into the correctional centre for their index episode. This criterion was applied to give an indication of each



inmate's current risk and needs profile at the time of intake. A total of 132,454 episodes were eligible for inclusion in the study.

The LSI-R assesses 10 domains of risk over a total of 54 items. The first domain assesses static risk factors relating to criminal history whereas the remainder assess a range of dynamic risk factors (also referred to here as criminogenic needs). In combination the LSI-R allows for prediction of general risk of reoffending in addition to identification of criminogenic needs that have a causal relationship with likelihood of reoffending and serve as targets for intervention. The LSI-R has been the primary risk assessment tool used by CSNSW since 2001 and has an extensive history of validation, including with CSNSW samples (Watkins, 2011).

A subset of analyses in this study examined predictive validity of the LSI-R for return to custody outcomes. To account for the potential effects of lag between time of assessment and proximity to risk, inmates were included in these analyses if their index episode ended between 1 January 2001 and 30 November 2015 and they had an LSI-R assessment completed within 12 months of their release date.¹ To ensure that LSI-R

¹ The sampling upper limit of 2015 was used so that all offenders had a minimum of 12 months' opportunity to return to custody following release from their index custodial episode.

scores were current during inmates' time at risk, we defined recidivism as any return to custody within 12 months of release. As a result of these changes to sample definition we included 141,359 custodial episodes in this subset of analyses.

Data diagnostics indicated that LSI-R total and domain scores were normally distributed. Figure 1 shows the distribution of LSI-R total scores across the sample, which indicates that other than a general tendency

towards normality there was a pronounced discontinuity between the scores of 23 and 24, which is the threshold for the medium category of risk. In accordance with the normal distribution we report parametric statistics for LSI-R scores unless otherwise noted. A series of both parametric and non-parametric inferential tests for linear trends and other measures of association were conducted and interpreted as significant at $p < .05$.²

RESULTS

Trends in risk and age

Between 2002 and 2016 the average (mean) LSI-R score for all inmates in the sample increased from 28.0 to 30.3. Scores showed a significant and relatively consistent linear trend ($\tau = .75$; $p < .001$) from a low of 28.0 in 2002 to a high of 30.5 in 2015, before declining slightly to the 2016 average of 30.3. This represents a shift in average scores from the middle of the medium category of risk to the upper bounds of the medium category.³ Figure 2 shows trends in mean LSI-R score as a function of age. It can be seen that all of the age groups trended towards increasing

² Trend analysis was restricted to 2002-2016 due to low and potentially unrepresentative counts of LSI-R assessments for offenders with custodial episodes commencing in 2001.

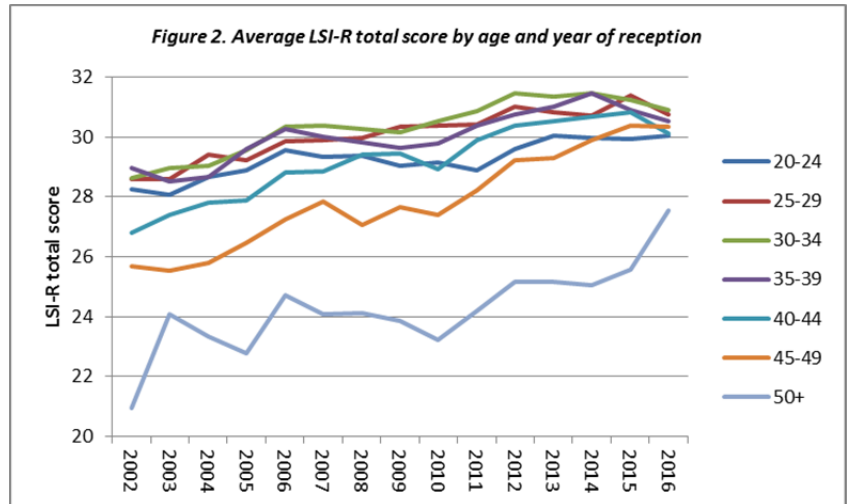
³ Scores in the medium category of the LSI-R range between 24 and 33.

scores over the timeframe of measurement; however the extent of that change varied as a function of age. The most pronounced increases were observed for inmates in the 50+ age range (from 20.9 to 27.5; an increase of 31.5%), the 45-49 age range (18.1% increase), and the 40-44 age range (12.4% increase).

In contrast, increases among younger inmates ranged from 5.4% (35-39 age range) to 7.9% (30-34 age range).⁴

Figure 2 also indicates that differential growth in scores across age ranges has had an influence on the relationship between age and risk scores more generally. For example, in 2002 there was a clear age-crime curve represented in risk scores so that inmates in the younger age ranges (below 40 years) showed comparable average LSI-R total scores, whereas scores declined successively on average for inmates in the 40-44, 45-49, and 50+ age ranges. By comparison, in 2016 all age ranges showed similar average scores with the exception of the 50+ age range.

To further illustrate this trend, Figure 3 shows the continuous relationship between age and LSI-R total score for different reception cohorts selected at equal intervals across the timeframe of measurement.⁵ It can be seen that on average there is a non-linear relationship between age and risk score, so that risk tends to increase slightly over the initial years of adulthood before reaching a relatively stable plateau over much of the 20s



and 30s, followed by progressive declines throughout the 40s and 50s.

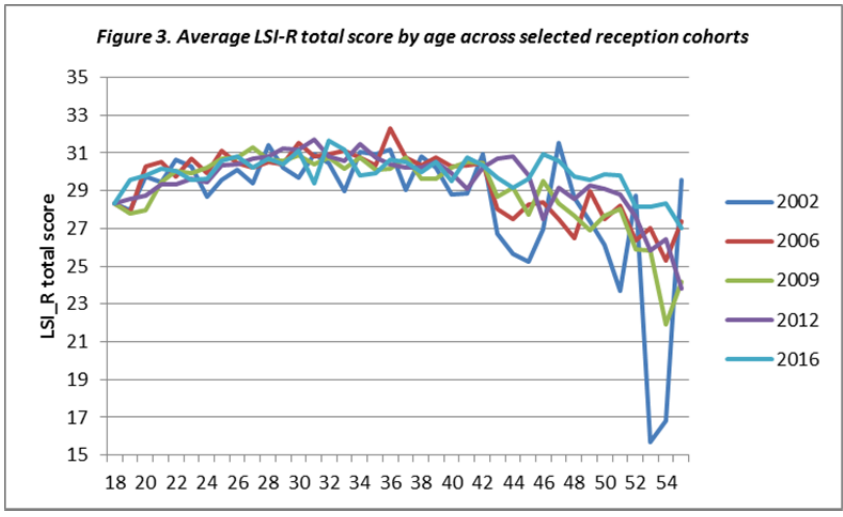
Figure 3 indicates that changes in the risk profile of different age groups have been associated with delays in the decline from peak risk levels and the slope of that decline. For example, inmates at the age of 45 had an average LSI-R score that was 18.5% lower than inmates at the age of 35 in 2002, whereas the difference between inmates entering custody at age 35 and 45 was marginal in 2016 (1% decrease). Similarly, there was an 8.9% difference in risk scores between the ages of 40 and 50 in 2002, relative to a slight increase in scores between these ages (1.3%) in 2016.

Trends in static and dynamic contributors to risk

Total scores on the LSI-R represent a multitude of factors that could have varying influences on trends and have differing implications. For example, almost 20% (10/54 items) of the total score is calculated on the basis of the Criminal History domain, which measures static features of the individual's previous offending and other involvement with the criminal justice system. As a result, LSI-R scores can be substantially influenced by population-wide trends in the offending profile of imprisoned inmates and related factors such as increasing reimprisonment of repeat offenders (Howard & Corben, 2018).

⁴ An additional age category for inmates between the ages of 18 and 19 years was omitted for the purposes of this study to allow for greater comparability across the groups. Inmates in this age range were observed to exhibit similar trends to those in the 20-24 age category.

⁵ Inmates over the age of 55 were excluded to account for low sample sizes and excessive variance. It is also noted that counts of assessments for older inmates were relatively low in 2002 compared to other years, which is likely to account for the observed noise or inconsistency in trend for that year.



as the indicator of the prevalence of need in that particular domain.⁶

Figure 4 shows mean scores on the Criminal History domain across age ranges. Scores on this domain showed limited, non-significant ($\tau = .28$; $p = .15$) growth over the measurement period and trends varied substantially across each of the age categories. The most pronounced increases were observed for inmates in older age

The remainder of LSI-R total scores are calculated on the basis of domains of dynamic risk. A complicating factor is that each domain provides differential contributions to overall risk scores depending on the number of items present in the domain. As a result, trends in the overall complexity of criminogenic needs and prevalence of multiple risk factors may be confounded by shifts in particular, more heavily weighted domains.

The following analyses examine trends in both the static risk profile (Criminal History domain) and range of dynamic risk factors across inmates. To better understand patterns of criminogenic need we calculated whether inmates' scores on each of the nine dynamic domains met criteria for being an active case management factor. Corrective Services NSW applies thresholds to continuous scores for each of the domains to indicate whether that domain is in need for improvement and should therefore factor into the case formulation. For example, scores on the Alcohol/Drug domain (range = 1-10) of 2-4 indicate 'some' need for improvement, whereas scores of 5 or higher indicate 'considerable' need for improvement and signal eligibility for relevant offender treatment programs. For the purposes of this study, scores that exceeded the threshold for 'considerable' need for improvement were used

categories, including those in the 50+ age group (an increase of 1.13 points), the 45-49 age group (1.02 points) and the 40-44 age group (.35 points). This is consistent with changes in the representation of repeat custody inmates in older cohorts over time (see First Time Versus Repeat Custody Inmates).

By comparison, average Criminal History domain scores remained steady or declined for the younger age groups. The most substantial changes were decreasing scores for inmates in the 20-24 age range (-.48 points) and those in the 25-29 age range (-.25 points).

In contrast, Figure 5 shows trends in the average count of dynamic risk domains needing improvement across the age groups. Similar to trends in total LSI-R scores, the average count of domains needing improvement across the sample increased from 3.08 to 3.70 between 2002 and 2016 in a significant linear trend ($\tau = .96$; $p < .001$). Average count of needs showed the greatest change for inmates in the 50+ age range (from 1.80 to 3.17 domains, an increase of 1.37 domains), followed by those in the 45-49 age range (1.05 domains) and the 40-44 age range (.96 domains). The smallest increases were

⁶ According to the Corrective Services NSW Assessment and Scoring Guide for the LSI-R, considerable need for improvement is defined as meaning that the offender's functioning measured by this domain has caused them serious adjustment problems and has contributed markedly to their offending.

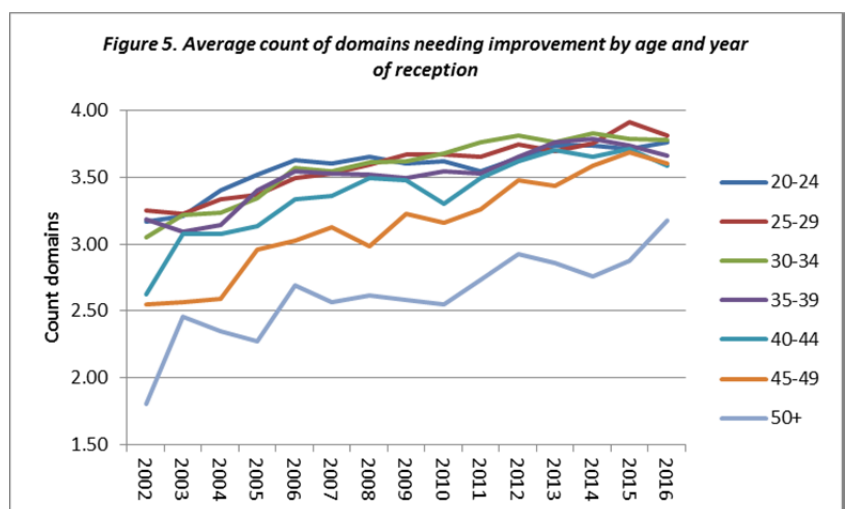
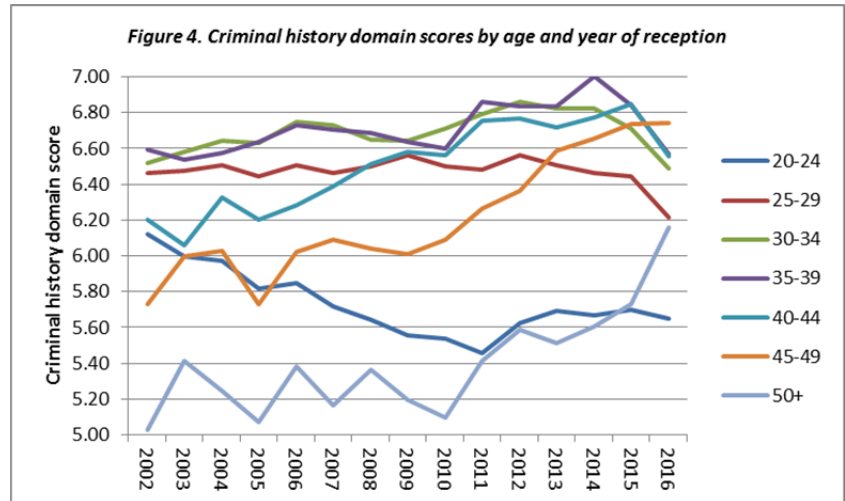
observed for inmates in the 35-39 age range (an increase of .47 domains), the 25-29 age range (.56 domains) and the 20-24 age range (.60 domains).

Trends in criminogenic needs

The observed trends in LSI-R scores have implications for the prevalence of case management needs presented by inmates as a population and across differing age groups. For example, trends in the count of domains needing improvement (Figure 5) indicate that inmates are presenting an increasing range and complexity of case management needs, particularly among those in the older age categories.

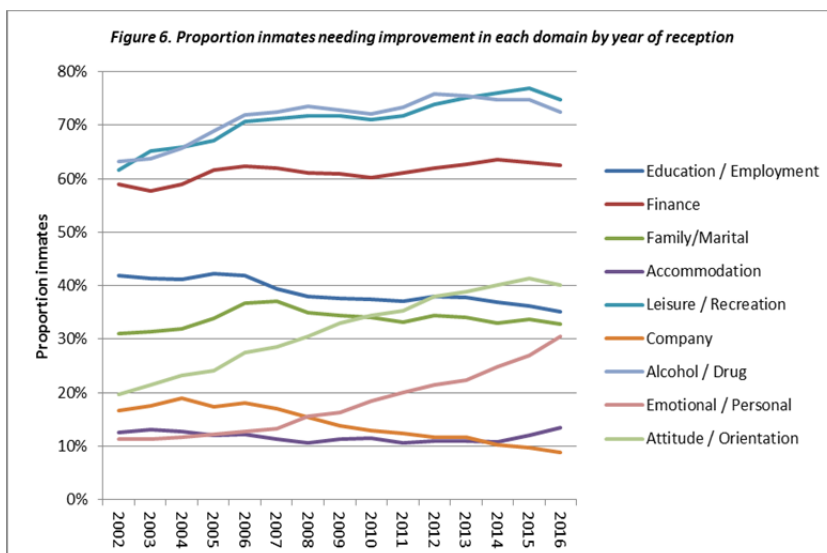
Corrective Services NSW also uses LSI-R total scores to prioritise inmates for intervention, so that various programs and services are typically only available to those with a medium or higher risk of reoffending. In a similar pattern to the trends described above, the total proportion of sampled inmates with a medium or higher LSI-R score at intake increased significantly from 71% in 2002 to 81% in 2016 ($\tau = .75$; $p < .001$), which indicates a 14.1% increase in total intervention caseload after holding population size and other eligibility criteria constant. Again, growth in the proportion of inmates with a medium or higher total LSI-R score was greatest among inmates in the older age categories, including those in the 50+ age range (from 43% to 71%), the 45-49 age range (from 66% to 80%) and the 40-44 age range (from 68% to 80%).

Figure 6 shows trends in the proportion of inmates who have a considerable need for improvement for each of the individual domains across reception cohorts. On average across the



study period, inmates have had the highest prevalence of need on the Alcohol/Drug (71%), Leisure/Recreation (71%) and Finance (61%) domains, whereas need for improvement has tended to be lowest on the Accommodation (12%), Company (14%), and Emotional/Personal (18%) domains.

Growth in the proportion of inmates needing improvement has been the most pronounced in the Attitudes/Orientation (from 20% to 40%) and Emotional/Personal (from 11% to 30%) domains, and more moderate in the Leisure/Recreation (from 62% to 75%) and Alcohol/Drug (from 63% to 72%) domains. On the other hand, prevalence of need declined for the Company domain (from 17% to 9%) and the Education/Employment (from 42% to 35%) domain between 2002 and 2016.



this perspective, a paired comparison at the population level indicated that inmates who had been in custody within 3 years of reception for the index episode had significantly higher average LSI-R total scores (mean = 31.5; SD = 7.51) compared to first time inmates (mean = 23.62; SD = 8.62; $t = 7.92$; $p < .001$).⁷ This difference between repeat custody and first time inmates was observed to remain relatively stable over the timeframe of measurement.

A series of figures showing trends in the proportion of inmates needing improvement in each of the domains, stratified by age group, are given in Appendix 1. In brief, the pattern of results suggests that inmates in the 45-49 age range and the 50+ age range have had particularly pronounced growth relative to other age categories in the Finance, Leisure/Recreation and Alcohol/Drug domains. Despite the observed trends inmates in the 50+ age range tended to continue to have the lowest prevalence of these needs compared to younger inmates. Inmates in the older age groups have also shown increases in the Emotional/Personal and Attitude/Orientation domains that are commensurate with population-wide trends for these factors.

The prevalence of needs in the Company and Education/Employment domains among the older age groups was relatively steady, and low compared to younger age groups. Scores on the Family/Marital domain appeared to be consistent over time and largely independent of age.

First time versus repeat custody inmates

As previously discussed, we expected that trends in the risk and needs profiles of inmates would be associated with increased representation by repeat custody inmates who showed evidence of being in active phases of persistent reoffending, particularly among older cohorts. Consistent with

While there is evidence that an increasing number of inmates have a history of repeat recidivism and reimprisonment at the population level (Howard & Corben, 2018), it cannot be assumed that such trends underpin the patterns of LSI-R scores observed in this study. Specifically, the LSI-R is not routinely administered to all inmates, and previous research has estimated a selective administration rate of around two in three (66.6%) imprisoned offenders (Xie et al., 2018). As a result broader population trends may not be replicated in the LSI-R assessment sample. The following analyses examine dynamics of assessment sampling and outcomes as a function of inmates' history of repeat imprisonment.

Figure 7 compares the proportions of new receptions who had previously been imprisoned in 2002 and in 2016, stratified by age range. Compared to 2002, the prevalence of prior imprisonment was lower in 2016 for younger offenders (those aged under 40 years) and higher for older offenders. The magnitude of change was highest for inmates over the age of 50 years, where the proportion of repeat custody inmates

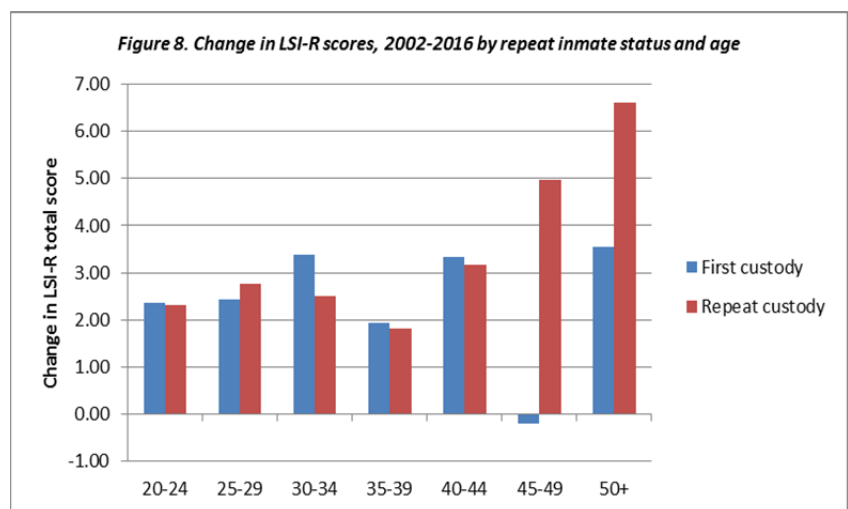
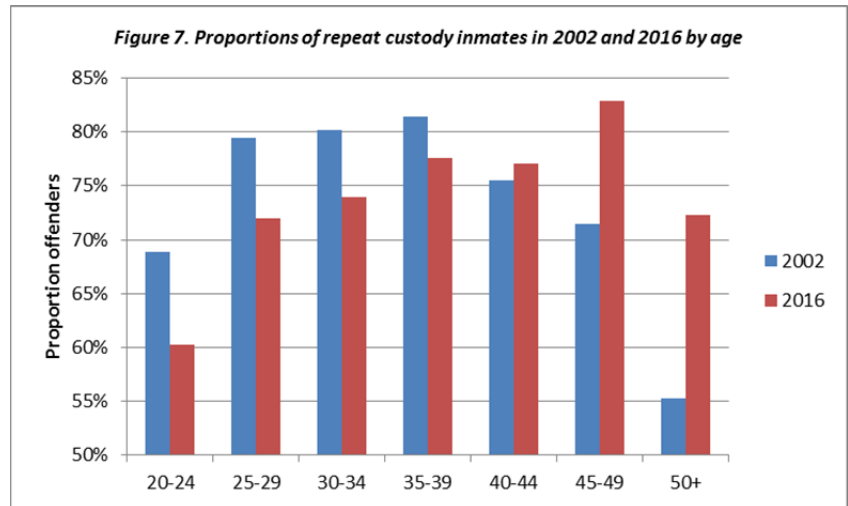
⁷ Corresponding with our prior study (Howard & Corben, 2018), we defined repeat custody inmates as those who had previously been imprisoned within 3 years of the index episode. This threshold was selected to account for potential data continuity issues and to improve confidence in interpretation of repeat custody status as an indicator of active persistence in recidivism.

increased from 55% in 2002 to 72% in 2016. As of 2016, the cohort with the greatest proportion of assessed repeat custody inmates comprised those in the 45-49 age range at reception (82.9%).

Trends in average LSI-R scores may be influenced by both changes in the representation of first time and repeat custody inmates, and potential interactions with changing risk profiles of these groups of inmates. Figure 8 shows average growth in LSI-R total scores between 2002 and 2016 for each of the age ranges, stratified by first time and repeat custody inmates.

For most age groups, change in scores was broadly comparable for first time and repeat inmates. However, the risk profiles of repeat inmates in the 45-49 age range and the 50+ age range showed growth exceeding that of first time inmates. Whereas repeat inmates in the 45-49 age range showed an increase in scores by 4.98 points between 2002 and 2016, first time inmates showed a decline of .01 points. Repeat inmates in the 50+ age range also showed an increase (6.61 points) that was substantially higher than that of first time inmates (3.54 points).

Taken together, the results suggest that increases in the risk profile of older inmates (particularly those in the 45-49 age range and the 50+ age range) are associated with changes in the number of assessed inmates who have previously been in custody. While assessed repeat custody inmates tended to have higher risk scores on average over the timeframe of measurement, repeat inmates over the age of 45 years also showed particular increases in risk between 2002 and 2016.



Predictive validity of the LSI-R

The available LSI-R data indicates that assessed inmates have presented increasing severity of risk and criminogenic needs between 2002 and 2016, and that these trends are more pronounced among older inmates. However, it is possible that trends in LSI-R scores may partially reflect changes in how the test is administered or scored. For example, there appears to be a localised trend towards increasing detection of risk factors associated with the Emotional/Personal and Attitude/Orientation domains (see Appendix 1) that may be a function of system-wide changes in how these domains are assessed or how results are applied. A potential implication is that LSI-R scores may vary in the extent to which they provide a valid index of an inmate's risk of recidivism or criminogenic needs over time.

To examine this possibility we conducted a number of Receiver Operating Characteristic (ROC) curve analyses to test the predictive validity of LSI-R total scores at intervals across the timeframe of observation. Area under the Curve (AUC) statistics were generated as an index of discrimination for return to custody outcomes within 12 months of release for the index custodial episode. Only LSI-R assessments that were completed within 12 months of the date of release for the custodial episode were considered a valid current index of inmate risk.

The results of the various ROC curve analyses are shown in Table 1. Over the period of observation the average AUC statistic was .72, which is indicative of fair discrimination for 12 month return to custody outcomes (Hosmer & Lemeshow, 2000). It can be seen that this average statistic showed only minor variation over time or as a function of age. There were limited indications that predictive validity increased slightly in more recent years. Interestingly, the pattern of results also suggested that predictive validity for older inmates is robust relative to other age groups, despite the lower sample sizes represented. In sum, the data indicated that trends in LSI-R scores may not be readily attributable to systematic shifts in the validity of the measure over time.

DISCUSSION

The results of this study indicate that previously observed increases in the average age of inmates and growing representation of older inmates in the NSW custodial population (e.g. Howard & Corben, 2018; Leach & Neto, 2011; Stavrou, 2017) have corresponded with trends in the relationship between recidivism risk and age. While assessed general risk of reoffending increased between 2002 and 2016 for inmates of all ages, growth was particularly pronounced among those over the age of 40 years. These trends in LSI-R total scores were driven by more severe criminal histories and static indicators of risk among older inmates, in addition to increases in the range of active criminogenic needs presented by inmates at the time of reception.

The results are consistent with other findings that older inmates are increasingly likely to be engaged in persistent cycles of reoffending and reimprisonment at the time of the index custodial episode (Howard & Corben, 2018; Stavrou, 2017), and show that these trends are related to elevated psychometric indicators of risk in accordance with RNR principles (e.g. Andrews & Bonta, 2010). An interesting corollary is that the relationship between age and risk among NSW inmates has become more homogeneous over recent years, so that many inmates in their 40s and older now present risk and needs profiles that are comparable to those in their 20s and 30s.

Age	2002	2006	2010	2014
20-24	.75	.72	.74	.73
25-29	.68	.70	.73	.74
30-34	.66	.71	.70	.73
35-39	.73	.70	.75	.73
40-44	.73	.71	.71	.74
45-49	.77	.72	.74	.76
50+	.80	.74	.74	.76
TOTAL	.72	.72	.73	.74

Table 1. Area under the curve (AUC) statistics for LSI-R total scores and prediction of return to custody within 12 months of release, as a function of age and cohort of release.

In conjunction with results from our previous study, an implication is that inmates may be maintaining persistent phases of elevated risk and recidivism at older ages and for longer periods. One potential explanation for this trend is the influence of broader societal shifts whereby offenders experience critical life trajectories and transitions that facilitate desistance at a later age on average (e.g. Kazemian, 2007). Consistent with this, inmates showed an increasing range and severity of dynamic risk factors at reception that are indicative of poor social functioning and integration at older ages, including ongoing issues with alcohol and other drug use and finances.

An alternative explanation relates to shifts in the underlying population of offenders who are imprisoned in NSW. Trends in criminal justice processes may result in more selective imprisonment of higher risk offenders, or those identified by Moffitt (1993) as life-course persistent offenders, who are more likely to show patterns of repeat recidivism over extended periods. This may account for findings that average LSI-R scores tended towards growth between 2002 and 2016, including for younger inmates and many offenders who had not previously been imprisoned, in addition to repeat custody inmates. These trends are suggestive of increased thresholds of risk for both initial placement in the custodial environment and for reimprisonment.

On the other hand, the pattern of results suggests that increasing involvement in active cycles of recidivism and reimprisonment among older inmates may not be solely attributable to factors that increase capture within the criminal justice system, such as more liberal use of custodial sanctions; more stringent parole conditions; or more targeted policing of former inmates. Older inmates showed increases in various psychosocial indicators of risk that have meaningful causal relationships with antisocial behaviour (Andrews & Bonta, 1995; 2010; Gendreau et al., 1996; Mann et al., 2010) and therefore were not merely more

likely to be reimprisoned. However, capture in the criminal justice system and cycling in and out of custody may have interacting impacts on persistence by aggravating dynamic risk factors and disrupting processes of desistance for many offenders.

We recognise that the results of this study have limited implications for the broader NSW custodial population because only a subset of inmates are administered an LSI-R assessment. There were indications that distribution of LSI-R assessments in this sample was not representative of characteristics of the population in total; for example, assessments appeared to be disproportionately weighted towards repeat custody inmates in older age groups over recent years (see Figure 7). In this regard interpretation of some trends in LSI-R scores are contingent on underlying eligibility criteria and other administration resources and practices. However, a relatively consistent observation was that repeat custody inmates were more likely to have substantially elevated risk profiles relative to first time inmates. While this is not surprising from an RNR perspective, it highlights the increasing case management challenges associated with growth in the population of repeat custody inmates in general (Howard & Corben, 2018).

Our examination of trends in LSI-R scores also gave some indication of the shifting profiles in case management needs among inmates. We found that the proportion of assessed inmates who were of medium or higher risk, and therefore eligible for most CSNSW interventions, rose from 71% to 81% between 2002 and 2016. Inmates in older age brackets were both more numerous and more likely to be of medium or higher risk over the timeframe of measurement; this was associated with a greater complexity of dynamic risk factors and increased needs in areas of finance, alcohol and other drugs, and leisure, in addition to increases in attitudes and emotional / personal domains that were consistent with broader population trends. Taken together, the

results suggest that older inmates comprise an increasingly prevalent target population for intervention, both in regards to their criminogenic needs and the unique challenges posed by managing older individuals in custody (Baidawi et al., 2011; Trotter & Baidawi, 2015).

While not central to the aims of this study, we found that LSI-R scores were relatively consistent predictors of recidivism and did not appear to be affected by declines in assessment integrity over time. While there did appear to be localised shifts in how the LSI-R was administered (e.g. assessment of the Emotional/Personal and Attitudes/Orientation domains), these did not impact overall predictive validity. On the other hand, the distribution of LSI-R total scores suggested that a greater than expected number of assessed inmates met the eligibility threshold of medium risk, which may have implications for intervention workload and resources and the discriminative power of selection criteria. In light of the increasing risk profile and complexity of needs among the NSW population, particularly those of older inmates, it would be beneficial to continue to review and calibrate the processes by which offenders are prioritised for intervention and supported in their pathways to desistance.

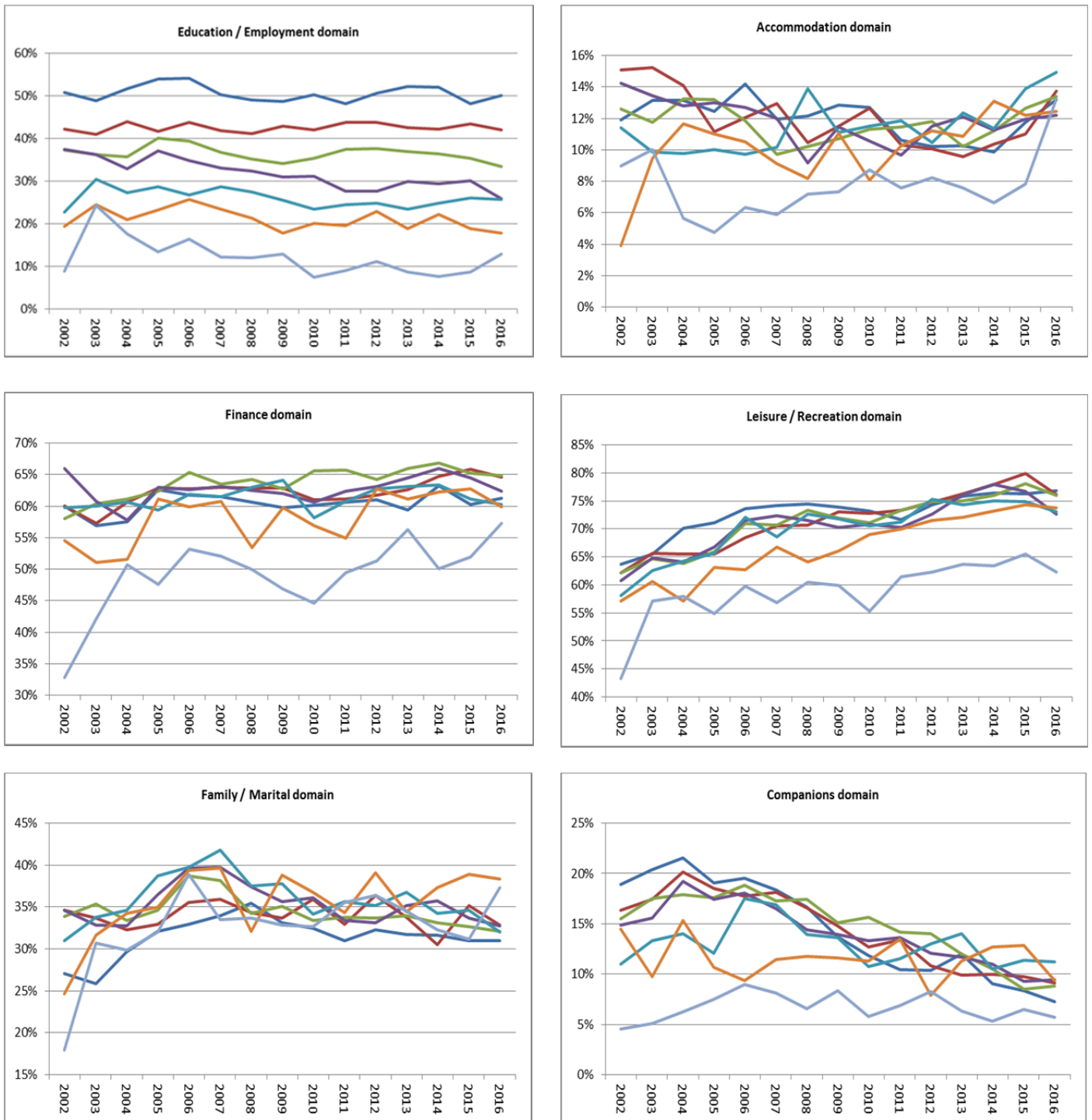
REFERENCES

- Andrews, D.A., & Bonta, J. (1995). *Level of Supervision Revised (LSI-R): An offender assessment system. User's guide*. Toronto, ON: Multi-Health Systems.
- Andrews, D. A., & Bonta, J. (2010). *The psychology of criminal conduct (5th ed)*. New Providence, NJ: LexisNexis Group.
- Angus, C. (2015). *Older prisoners: trends and challenges*. eBrief 14/2015. NSW: Parliamentary Research Service.
- Australian Bureau of Statistics (2010). *Australian demographic statistics 2010. Cat no. 4517.0*. Canberra: Australian Bureau of Statistics.
- Baidawi, S., Turner, S., Trotter, C., Browning, C., Collier, P., O'Connor, D., & Sheehan, R. (2011). *Older prisoners - A challenge for Australian corrections. Trends and Issues in Crime and Criminal Justice no. 426*. Canberra: Australian Institute of Criminology.
- Farrington, D. P. (1986). Age and crime. In M. Tonry & N. Morris (Eds.), *Crime and Justice: An Annual Review of Research* (Vol. 7, pp.189-250). Chicago: University of Chicago Press.
- Freeman, K. (2015). *Have New South Wales criminal courts become more lenient in the past 20 years? Bureau Brief 101*. Sydney, NSW: Bureau of Crime Statistics and Research.
- Gendreau, P., Little, T., & Goggin, C. (1996). A meta-analysis of the predictors of adult offender recidivism: What works! *Criminology*, 34, 575–608.
- Helmus, L., Thornton, D., Hanson, R.K., Babchishin, K.M. (2012). Improving the predictive accuracy of Static-99 and Static-2002 with older sex offenders: Revised age weights. *Sexual Abuse: A Journal of Research and Treatment*, 24, 64-101.
- Hirschi, T., & Gottfredson, M. (1983). Age and the explanation of crime. *American Journal of Sociology*, 89, 552-584.
- Hosmer, D. W., & Lemeshow, S. (2000). *Applied logistic regression (2nd ed.)*. New York, NY: John Wiley & Sons.
- Howard, M., & Corben, S. (2018). *Forty is the new thirty (for recidivism): Trends in offender age, reimprisonment, and time to desistance among the New South Wales custodial population*. Sydney, NSW: Corrections Research Evaluation and Statistics, Corrective Services NSW.
- Kazemian, L. (2007). Desistance from crime: Theoretical, empirical, methodological and policy considerations. *Journal of Contemporary Criminal Justice*, 23, 5-27.
- Leach, J., & Neto, A. (2011). *Offender population trends: Aged offenders in NSW. Research Bulletin no. 30*. Sydney, NSW: Corrections Research Evaluation and Statistics, Corrective Services NSW.
- Longshore, D., Chang, E., Heieh, S., & Messina, N. (2004). Self-control and social bonds: A combined control perspective on deviance. *Crime and Delinquency*, 50, 542-564.
- Mann, R. E., Hanson, R. K., & Thornton, D. (2010). Assessing risk for sexual recidivism: Some

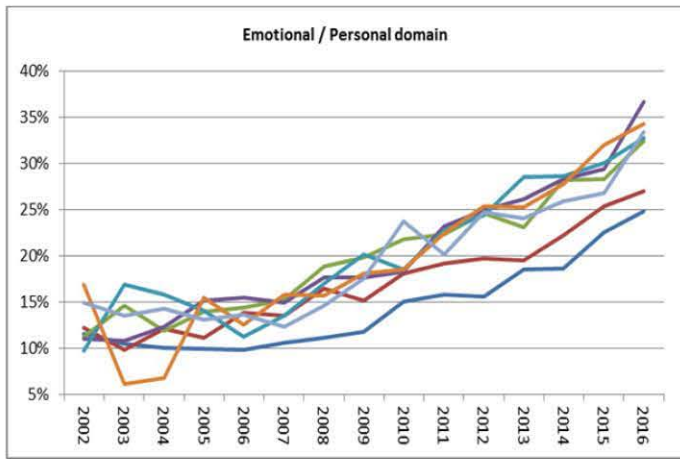
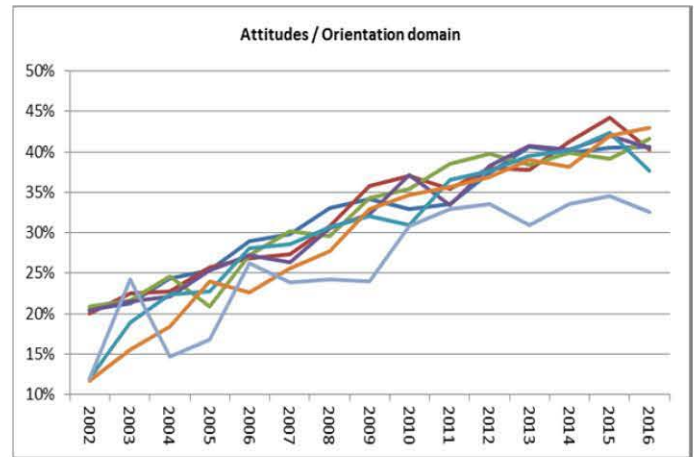
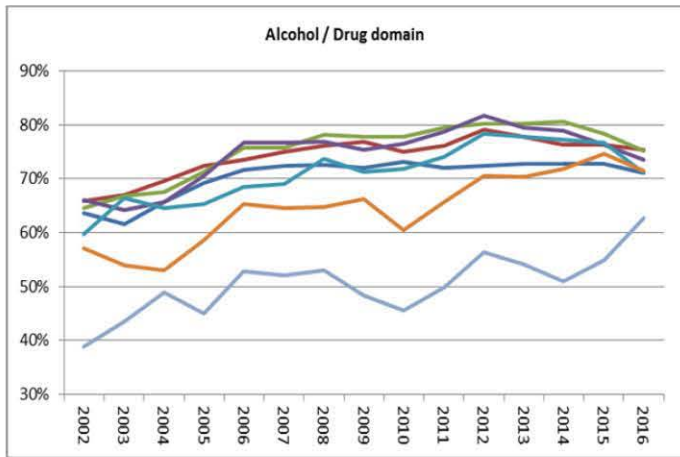
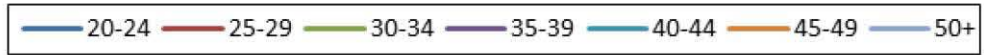
- proposals on the nature of psychologically meaningful risk factors. *Sexual Abuse: A Journal of Research and Treatment*, 22, 191–217.
- Maruna, S. (2001). *Making good: How ex-convicts reform and rebuild their lives*. Washington, DC: American Psychological Association.
- McNeill, F., Farrall, S., Lightowler, C., & Maruna, S. (2012). *How and why people stop offending: Discovering desistance. Insights no. 15*. Glasgow: Institute for Research and Innovation in Social Services.
- Moffitt, T. (1993). 'Life-course persistent' and 'adolescent-limited' antisocial behaviour: A developmental taxonomy. *Psychological Review*, 100, 674-701.
- Piquero, A.R. (2015). What we know and what we need to know about developmental and life-course theories. *Australian and New Zealand Journal of Criminology*, 48, 336-344.
- Potter, E., Cashin, A., Chenoweth, L., & Jeon, Y. (2007). The healthcare of older inmates in the correctional setting. *International Journal of Prisoner Health*, 3, 204-213.
- Raudino, A., Corben, S., van Doorn, G., & Galouzis, J. (2018). *The Community Triage Risk Assessment Scale (Community TRAS): A statistical model for predicting recidivism among community-based offenders*. Sydney, NSW: Corrections Research Evaluation and Statistics, Corrective Services NSW.
- Rikard, R., & Rosenberg, E. (2007). Ageing inmates: A convergence of trends in the American justice system. *Journal of Correctional Health Care*, 13, 150-162.
- Sampson, R.J., & Laub, J.H. (1992). Crime and deviance in the life course. *Annual Review of Sociology*, 18, 63-84.
- Sampson, R.J., & Laub, J.H. (1993). *Crime in the making: Pathways and turning points through life*. London: Harvard University Press.
- Stavrou, E. (2017). *Changing age profile of NSW offenders. Bureau brief no. 123*. Sydney, NSW: Bureau of Crime Statistics and Research.
- Stavrou, E., & Poynton, S. (2016). *The revised Group Assessment Risk Model (GRAM 2): Assessing risk of reoffending among adults given non-custodial sanctions. Contemporary issues in crime and justice no. 197*. Sydney, NSW: Bureau of Crime Statistics and Research.
- Trotter, C., & Baidawi, S. (2015). Older prisoners: Challenges for inmates and prison management. *Australian and New Zealand Journal of Criminology*, 48, 200-218.
- Watkins, I. (2011). *The utility of the Level of Service Inventory – Revised (LSI-R) assessments within NSW correctional environments*. Sydney, NSW: Corrections Research Evaluation and Statistics, Corrective Services NSW.
- Weatherburn, D., Freeman, K., & Holmes, J. (2014). *Young but not so restless: Trends in the age-specific rate of offending*. Sydney, NSW: Bureau of Crime Statistics and Research.
- Weatherburn, D., Wan, W., & Corben, S. (2014). *Why is the NSW prison population growing? Crime and justice statistics bureau brief no. 95*. Sydney, NSW: Bureau of Crime Statistics and Research.
- Xie, Z., Neto, A., Corben, S., Galouzis, J., Kevin, M., & Eyland, S. (2018). *The Criminal Risk of Reimprisonment Scale (CRES): A statistical model for predicting risk of reimprisonment*. Sydney, NSW: Corrections Research Evaluation and Statistics, Corrective Services NSW.

APPENDIX 1

Proportion of inmates who have considerable need in each domain of dynamic risk, by age and year of reception.⁸



⁸ Note that the y axes of figures for the domains differ, to allow for detailed representation of data comparing trends across age cohorts within each domain. For an examination of the prevalence of needs across domains, please see Figure 6.



Other CRES

Research Titles

- RB 41 The Custody Triage Risk Assessment Scale (Custody TRAS): An updated statistical model for predicting risk of return to custody – August 2019
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- RP 57 Evaluation of vocational training in custody: Relationships between Training, Post-Release Employment and Recidivism – August 2017
- RP 56 The Case Quantify and Search Tool (C-QST) – December 2017
- RD 6 Increase in the community corrections population – August 2017
- RP 55 Process Evaluation of the Custody Based Intensive Treatment (CUBIT) Programs for Sex Offenders – October 2016
- RP 34 Judicial Outcomes of Remand Inmates in New South Wales – October 2016
- RP 54 A Process Evaluation of the Intensive Drug & Alcohol Treatment Program (IDATP) - Study One – March 2015
- RP 53 Evaluation of the Getting SMART Program – June 2013
- RP 52 Drug Use in the Inmate Population - prevalence, nature and context – June 2013
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- RB 29 The Utility of Level of Service Inventory - Revised (LSI-R) Assessments within NSW Correctional Environments – January 2011
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