Research Brief

Full body x-ray scanners at NSW correctional centres: Scanner activity, contraband, and behavioural outcomes

Julie Barkworth, Chee Seng Chong, & Mark Howard

AIM

To conduct a quantitative review of the use of full body x-ray scanners at NSW correctional centres, including the frequency and characteristics of people being scanned, as well as associations between the introduction of scanners, contraband incidents, and related behavioural outcomes.

FINDINGS AND CONCLUSIONS

Data sourced from x-ray scanner reports indicated that scanner activity increased over the review period, in line with the ongoing rollout of scanners. The majority of scans took place in the course of social visits and were completed on male inmates. Female visitors were more frequently scanned than male visitors, in line with their higher rate of attendance at social visits. Adult visitors were only slightly more likely to be scanned than minors.

An examination of trends data showed little variation in average rates of contraband incidents across the review period. More notable trends in visitor contraband incidents showed an immediate spike in detections at the time visitor scanners were introduced, as well as at an earlier time that coincides with the introduction of inmate scanners. There were no discernible trends in assaults or Use of Force incidents that were proximally related to the introduction of scanners.

The results provide mixed indications about the effects of scanners on trends of contraband-related activities and outcomes. The trends, however, are in line with expectations about the dynamic influence of scanners on such outcomes and should be interpreted in combination with qualitative findings exploring staff and inmate perspectives on the use of scanners. When considered together, there is evidence for the potential of full body x-ray scanners to effectively detect contraband using an approach that is less invasive for those being searched and safer for those conducting the searches.

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INTRODUCTION

The introduction and use of contraband, particularly drugs and drug-related contraband, has been identified as a significant and ongoing concern in prisons worldwide that comes with serious health and safety consequences for both people in prison and staff (Kolind, 2015; Watson, 2016). Traditional methods of searching for contraband, such as use of metal detectors, however, are not effective for detecting non-metallic or internally secreted objects (Bulman, 2009).

Full body x-ray scanners have been identified as an additional resource for the detection and deterrence of concealed contraband attempting to be introduced into correctional centres. Scanners also provide a less invasive approach that reduces the need to use standard strip search procedures. Recognising these potential benefits, CSNSW has progressively implemented body scanners at medium and maximum security correctional centres since 2019. The introduction of x-ray scanning technology complements other existing scanning procedures for people in prison and their visitors within NSW correctional centres, including but not limited to use of metal detectors, and was not associated with the decommissioning of existing resources or processes.

Two types of scanners are utilised at NSW centres. Nuctech scanners were first introduced and primarily used for scanning male inmates. Tek84 scanners were later introduced to coincide with the introduction of scanning female inmates and visitors, commencing in September and November 2021, respectively. A total of 66 scanners are now operational across 24 centres.

Inmates are scanned on reception or arrival to a correctional centre; following a social visit; prior to being placed in an assessment cell or on confinement to a cell or segregation; or if suspected of carrying contraband. Visitors are also scanned prior to all social visits and where suspected of carrying contraband.

While detecting, intercepting, and deterring the introduction of contraband into correctional centres is of primary interest, CSNSW also anticipates improved safety and security for staff and inmates as an outcome of introducing scanners. For example, strip searches are perceived by correctional officers as a high-risk activity, particularly when the individual being searched is in a heightened emotional state (Queensland Human Rights Commission (QHRC), 2023). The high-risk nature of strip searches means there is an increased risk of assault against those conducting the search, and that in exceptional circumstances staff may be required to respond with reasonable force (QHRC, 2023; Office of the Inspector of Custodial Services (WA), 2019). Reducing the need for strip searching or other intrusive activity related to contraband matters may therefore reduce the associated risk of inmate violence or misconduct as well as staff Use of Force.

Full body scanners have been successfully implemented across multiple jurisdictions, including Brazil, the United States and the United Kingdom, though are mainly used for searching visitors and inmates returning from work release (Bulman, 2009; de Moulpied et al., 1998; Nante et al., 2017). Evaluations of the scanners reported they are an effective alternative for pat-down and strip searches and are a successful method for both detection and deterrence of contraband entering the prison (Bell & Leese, 2020; Bulman, 2009; de Moulpied et al., 1998; Nante et al., 2017).

AIMS

Corrections Research Evaluation and Statistics (CRES) has been asked to conduct a review of the operation of full body x-ray scanners following their implementation at all medium and maximum security correctional centres across NSW. The expected outcomes and benefits of scanning technology primarily include improved

detection and interception of contraband, as well as increased deterrence to inmates and visitors attempting to introduce contraband into correctional centres.

Other benefits may also include improved security and safety for staff and inmates through reducing the need for more potentially intrusive or disruptive activities, such as strip searches of inmates or medical escorts to confirm internal secretion of contraband, that could be associated with increased risk of inmate violence or other misconduct as well as staff Use of Force. Lead on effects of lessened availability of contraband on inmates' behaviours may also contribute to such outcomes.

The review of full body x-ray scanners incorporates a two-stage approach with both quantitative and qualitative components. The current study addresses the quantitative component and aims to explore associations between the introduction of full body x-ray scanners at NSW correctional centres and the various outcomes and benefits identified.

The study aims to address three key questions:

1. How many scans have been conducted, who is being scanned and where are they being scanned?
2. What is the association between introduction of full body x-ray scanners and changes in the incidence and nature of contraband misconducts among inmates?
3. What is the association between introduction of full body x-ray scanners and changes in visitor activities involving attempted introduction of contraband?

METHODS

Two main data sources were utilised to examine the activities and outcomes of the full-body x-ray scanners: x-ray scanner reports and CSNSW's Offender Integrated Management System (OIMS). X-ray scanner reports, produced by each individual scanner, were collated and provided to CRES by the Body Scanner Operations Unit, CSNSW Statewide Operations. OIMS is the central operational database that maintains a range of information on all people in custody or under community supervision of Corrective Services NSW, as well as those who visit people in custody. It includes demographics and other administrative information such as official charges for disciplinary infractions while in custody, as well as details on visitor restrictions. All correctional centres and Community Corrections offices managed by Corrective Services NSW are required to enter information on OIMS in a systematic way which is guided by departmental policies. All serious incidents, such as contraband detection, assaults, and Use of Force, are recorded via the Incident Reporting Module (IRM), an electronic based reporting system within OIMS that provides a structured questionnaire and checklist appropriate to the specific type of incident being reported.

X-ray scanner reports provide details of all scanner activity from the installation date of the scanner until 31 October 2023, and are used to report the total number of scans completed since implementation, broken down by cohort (inmates, visitors) and location of scanner (e.g., Reception, Visits, Gatehouse). Tek84 scanners produce more detailed reports than Nuctech scanners, with the inclusion of Master Index Numbers (MINs) and Visitor Identification Numbers (VINs). MINs and VINs are used to determine the frequency at which individuals are being scanned, as well as key demographics of people being scanned. While gender can generally be inferred where Nuctech scanners are used (almost all are primarily used for male inmates), the reports from these scanners do not otherwise include details such as MINs and VINs and therefore cannot be used to report on characteristics of the people being scanned or the frequency of scans completed per person.

Where available, MINs and VINs were used to extract demographic information for inmates and visitors from OIMS, including age, gender, and Aboriginal status.[1] Age was also used to categorise visitors as adults (> 18 years) or minors (0–2 years; 3–17 years).

Data on inmate contraband incidents and other outcomes were also sourced from OIMS for all correctional centres where x-ray scanning was introduced. The indicators of interest were extracted from a time window of 6 years; from 1 January 2017 to 31 December 2023. As the first x-ray body scanner was introduced in April 2019, this extraction included a period of at least 2 years prior to the introduction of x-ray body scanners at the correctional centres examined in this study.

The outcome indicators include:

• Incidents detected by x-ray scanners	Percentage of incidents where contraband was detected by x-ray scanner or other electronic means. Data only began being routinely collected in 2021 and is not a mandatory field in OIMS.
• Contraband incidents	Average weekly rate of incidents (per 100 inmates) where contraband was detected within the correctional centre, including when found on an inmate. Includes all incidents, whether routine, random or targeted, and where contraband is detected by any means, including by dogs and x-ray scanners.
• Drug-related contraband	Average weekly rate of drug-related contraband detected (per 100 inmates). Includes any equipment or accessory that is intended or modified for making, concealing, and using drugs.
• Internally secreted contraband	Percentage of incidents where contraband was internally secreted. Incidents were identified through a text-based search of Incident Reporting Modules (IRMs) where contraband was found 'on person', utilising multiple search terms, such as 'cavity', 'internal', 'ingest', 'genital', 'mouth' etc.
• Assaults	Average weekly rate of assaults (per 100 inmates), where an inmate or staff member was hurt in an incident involving violent behaviour. Includes all incidents where an inmate was found guilty, and other recorded incidents where violence was alleged or suspected.
• Use of Force	Percentage of contraband incidents associated with Use of Force, calculated from incident reports for all events where officers had to resort to the use of physical force, weapons, or instruments necessary to restrain or control an unwilling inmate.
• Visitor restrictions	Average weekly rate of visitor restrictions (per 100 visitors). Includes all instances where a visitor has been denied entry, had visit restrictions imposed, or where police have been informed of an incident or police charges have been laid.

Analyses were completed in two stages. First, a descriptive analysis of all scanner activity was conducted, drawing on data from x-ray scanner reports and OIMS. Second, data time series were constructed to examine

[1] Aboriginal status is not recorded for visitors.

numbers and rates of the outcomes of interest over the 24 months prior to introduction of scanning as well as the 12 months following introduction of scanning.

To examine the aggregate impact that scanners had on our outcomes of interest, we adopted a time normalisation approach where the data from each correctional centre was recentered so that time of inmate scanner introduction was represented as Time Zero (T0). Pre-introduction time points were represented by negative values and post-introduction time points were represented by positive values. A single time series was then derived for each outcome measure by aggregating the recentered data from all sites.

While the time normalisation approach can help mitigate some impact of local shocks due to lockdowns, it should be noted that x-ray scanners were implemented during the COVID-19 pandemic and barriers to operations such as reduced visitations are expected to have unintended consequences on our outcome measures of interest. We therefore examined the trends presented in this study at the descriptive level only and did not conduct inferential analyses which aim to isolate causal effects.

FINDINGS

Scanner activity

Figure 1 provides an overview of all completed scans from the implementation of the first inmate scanners in April 2019 through to the period ending 31 October 2023 when all scanners were fully operational.

Since the implementation of full body x-ray scanners, a total of 392,300 scans have been completed on inmates and visitors. Scanner activity observably increased over time, in line with the number of scanners being implemented. Declines in scanner activity could be attributed to COVID-19 restrictions and lockdowns, with in-person visits periodically suspended between 2020 and 2022, and the resumption of visits following each period of suspension often accompanied by restrictions to the number of visitors able to attend.[2]

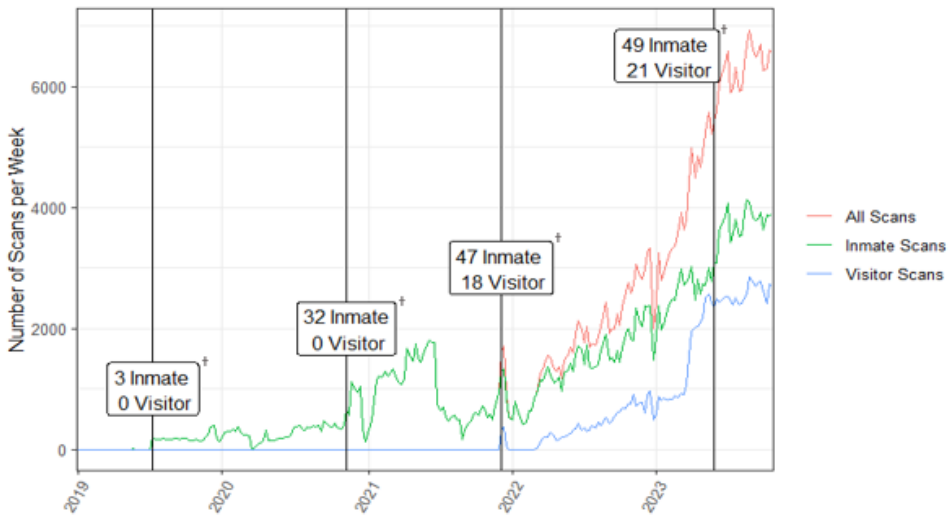

Figure 1. Weekly scanner activity by total and by inmate and visitor scans.

‡ Boxes represent a cumulative total of both inmate and visitor scanners introduced at varying time points and that coincide with observable increases in scanner activity.

[2] During periods of restrictions on in-person visits, the number of visitors per visit was capped at 2, which increased to 3 and then restored to the full 6 visitors (maximum of 4 adults) as restrictions eased.

Inmate scanner activity

A total of 284,672 scans have been completed on inmates since the implementation of the first scanners in April 2019 through to the end of October 2023. Of those scans, most were conducted in inmate visitation areas (40.3%) and on male inmates (83.5%) (see Table 1). To further examine characteristics of inmates being scanned, we identified a sub-set of scans that could be linked to individuals via their MIN. This sub-set captured 53,254 scans that were completed across 6,793 inmates (50.6% male).[3]

Female inmates were scanned at a slightly higher rate than males among the total inmate scans (11.6% of scans across a cohort that represents only 6.4% of the NSW inmate population; BOCSAR, 2024) and among the sub-set of scans linked to MINs (53.2% of scans for a cohort representing 49.4% of the inmate sample). The proportion of scans completed on people who identify as Aboriginal and/or Torres Strait Islander are representative of this cohort (30.5% of scans for a cohort representing 29.1% of the inmate sample, with 30.4% of all adults in custody identifying as Aboriginal; BOCSAR, 2024).

Table 1. Inmate scanner activity

	Total Inmate Scans (N = 284,672)	Inmate Scans (MIN recorded) (N = 53,254)	Inmates (MIN recorded) (N = 6,793)
Location of scanner			
Reception	93,923 (33.0%)	26,133 (49.1)	–
Visits	114,647 (40.3%)	10,605 (19.9)	–
Industries	14,079 (4.9%)	–	–
Gatehouse	16,516 (5.8%)	16,516 (31.0)	–
Parklea[a]	45,507 (16.0%)	–	–
Gender (N, %)			
Male	237,807 (83.5%)	24,784 (46.5%)	3,437 (50.6%)
Female	33,132 (11.6%)	28,342 (53.2%)	3,354 (49.4%)
Unknown	13,733 (4.8%)	128 (0.2%)	2 (0.0%)
Indigenous Status			
Indigenous	–	16,268 (30.5%)	1,974 (29.1%)
Non-Indigenous	–	36,359 (68.3%)	3,781 (55.7%)
Unknown	–	627 (1.1%)	1,038 (15.3%)
Age			
Range	–	–	18 – 88 years
M (SD)	–	–	36.3 (10.62)

[a] Two scanners at Parklea were located in Reception and Visits, but it was not possible to determine how many scans were completed by each machine as there is a combined report for the two scanners.

The number of scans per inmate ranged from 1 to 429, with an average of 7.8 (SD = 20.76) scans per inmate over the course of the study period. Almost one third of inmates (31.9%) had been scanned only once, two thirds (67.3%) had been scanned up to 100 times, and less than 1% had been scanned more than 100 times.

Male inmates were scanned on average 7.2 (SD = 27.42) times and were more likely to have been scanned only once (46.1%) compared to female inmates (17.3%). Female inmates were scanned on average 8.5 (SD = 10.33) times and were more likely to have been scanned up to 100 times (82.6%) compared to male inmates (52.3%). Only one female inmate (< .01%) had been scanned more than 100 times, compared to the 54 male inmates (1.6%) that had been scanned more than 100 times.

[3] Male inmates account for 93.6% of adults in custody in NSW (BOCSAR, 2024). The over-representation of female inmates with MINs recorded against their scans can be attributed to the timing around implementation of Tek84 scanners, which were introduced in 2021 when scanners were first rolled out to female centres. In total, 7 Tek84 scanners are used for scanning female inmates and 7 are used for scanning male inmates, compared to 1 Nuctech scanner for female inmates and 35 for male inmates. Most male inmates are therefore likely to be scanned through a Nuctech scanner, which do not have the ability to produce reports that link scans to MINs.

Aboriginal people in prison were scanned, on average, 7.1 times and were slightly more likely to be scanned 2–10 times (55.1%) and 11–100 times (18.7%) compared to non-Aboriginal people in prison (50.6% and 15.9%, respectively). Non-Aboriginal people in prison were scanned, on average, 9.1 times and were more likely to be scanned only once (32.1%) or more than 100 times (1.3%) compared to Aboriginal people in prison (25.9% and 0.3%, respectively) (see Figure 2).

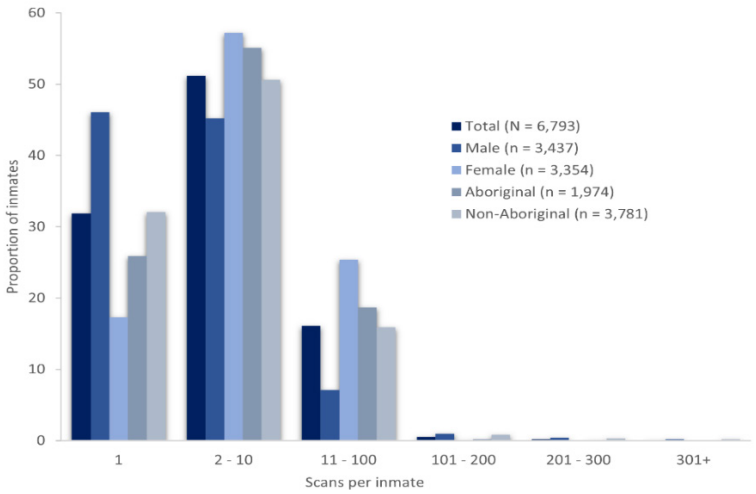

Figure 2. Number of scans per inmate (where MIN has been recorded).

Visitor scanner activity

Visitors were scanned a total of 107,628 times from the implementation of visitor scanners in 2021, until 31 October 2023. Visitor scans were mainly completed at Gatehouse scanners (99.0%), with a little more than half of all scans (53.2%) conducted on female visitors (see Table 2).

The majority of scans, 106,078 (98.6%), were linked to a VIN, capturing a total of 28,751 individual visitors being scanned during the review period. Female visitors were scanned at a higher rate than males (61.8% of scans for a cohort representing 51.3% of the visitor sample), but also visited inmates more frequently, with an average of 40 visits per female visitor, compared to an average of 23 visits per male visitor.

Table 2. Visitor scanner activity

	Total Visitor Scans (N = 107,628)	Visitor Scans (VIN recorded) (N = 106,078)	Visitors (VIN recorded) (N = 28,751)
Location of scanner			
Gatehouse	106,543 (99.0%)	104,993 (99.0%)	–
Reception	949 (0.9%)	949 (0.9%)	–
Visits	136 (0.1%)	136 (0.1%)	–
Gender			
Male	32,631 (30.3%)	33,109 (31.2%)	11,229 (39.1%)
Female	57,305 (53.2%)	65,555 (61.8%)	14,735 (51.3%)
Unknown	17,692 (16.4%)	7,414 (7.0%)	2,787 (9.7%)
Age			
Range	–	–	0 – 97 years
M (SD)	–	–	38.2 (19.19)
Adults > 18 years	–	93,366 (88.0%)	24,843 (86.4%)
Minors 3–17 years	–	10,672 (10.1%)	3,217 (11.2%)
Minors 0–2 years	–	1,518 (1.4%)	515 (1.8%)
Unknown	–	522 (0.5%)	176 (0.6%)

The number of scans per visitor ranged from 1 to 72, with an average of 3.7 (SD = 5.33) scans per visitor. Around half of all visitors (50.5%) had been scanned more than once, but few (7.0%) had been scanned more than 10 times.

Male visitors were scanned 3.0 (SD = 3.83) times on average and were more likely to be scanned only once (47.1%) compared to female visitors (37.2%). Female visitors were scanned on average 4.5 (SD = 6.34) times and were more likely to be scanned up to 10 times (53.0%) and up to 100 times (9.8%) compared to male visitors (48.7% and 4.3%, respectively).

Adults were scanned, on average, more frequently (M = 3.8, SD = 5.50) than minors aged 3 to 17 years (M = 3.3, SD = 3.97) and 0 to 2 years (M = 3.0, SD = 3.52). Across all three groups, visitors were most likely to be scanned up to 10 times [Adults = 50.5%; Minors (3–17 years) = 50.8%; Minors (0–2 years) = 49.9%]. Minors aged 0 to 2 years were only slightly more likely to be scanned once (45.8%), compared to minors aged 3 to 17 years (43.5%) and adults (42.2%). In turn, adults were slightly more likely to be scanned up to 100 times (7.2%), compared to minors aged 3 to 17 years (5.7%) and 0 to 2 years (4.3%) (see Figure 3).

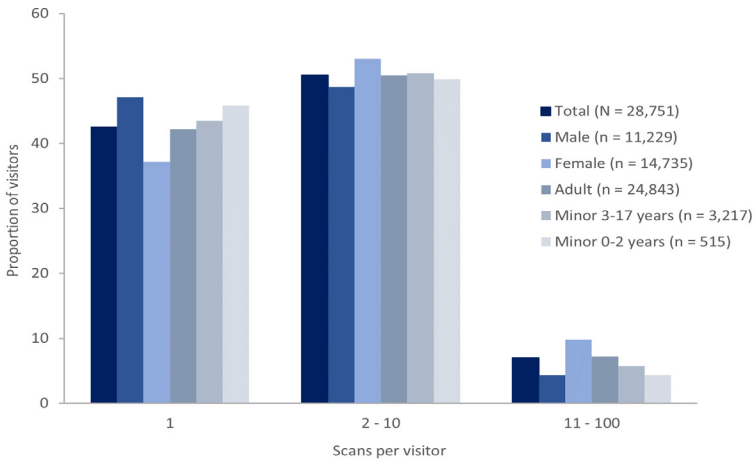

Figure 3. Number of scans per visitor (where VIN has been recorded).

Exploring trends in outcome measures

The following section presents a series of figures that illustrate trends in contraband detection and associated behavioural indicators relative to the implementation of x-ray scanners. While some introductory figures present gross counts by calendar year to illustrate relevant indicator activity over the measurement timeframe, the remainder present trends using the time normalisation approach. Time is represented on the (horizontal) x-axis and is in the scale of weeks. The red vertical line at T0 indicates the time of inmate or visitor scanner introduction at correctional centres. Negative T values indicate time points prior to the introduction of scanners, while positive T values indicate time points after the introduction of scanners. For example, T-100 indicates the point in time 100 weeks before scanner introduction, while T100 indicates 100 weeks after implementation. The curved line is the best fitting non-linear trend line generated using LOESS, a non-parametric smoothing function.

Outcomes associated with inmate scanner activity

Figure 4 presents the total number of inmate contraband incidents per week from 2017 to 2023, and Figure 5 indicates the number of contraband incidents detected by x-ray or other electronic device following the inclusion of this IRM field in June 2021. There was a decline in contraband incidents over the period that coincides with the height of Covid-19 restrictions and lockdowns. The subsequent increase in contraband incidents was also reflected in the number of detections by x-ray or other electronic device. Focusing

specifically on the period after the inclusion of the x-ray IRM field, total weekly contraband incidents ranged from 31 to 149, with an average of 76.6 incidents per week. On average, 2.2% of weekly contraband incidents were detected by x-ray or other electronic device (range = 0 – 9.2% of incidents). It should be noted, however, that the IRM field for recording contraband detection by x-ray or other electronic device is not a mandatory field for completion, therefore additional incidents of contraband detection via x-ray may have occurred but were not recorded within this OIMS IRM field.

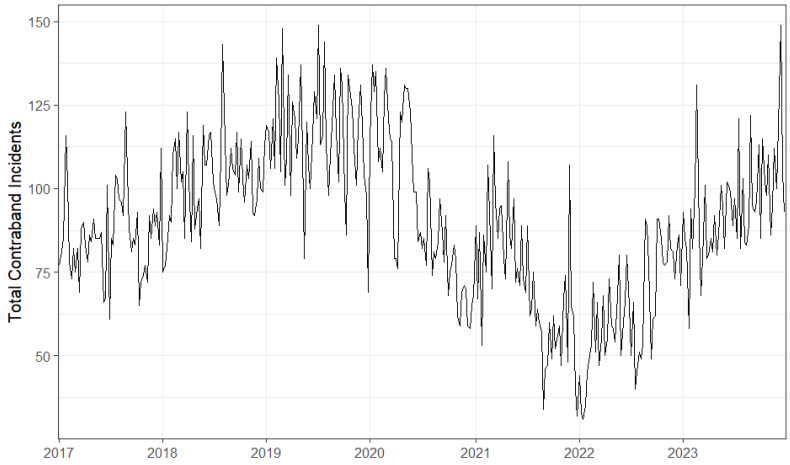

Figure 4. Total number of inmate contraband incidents per week (2017-2023).

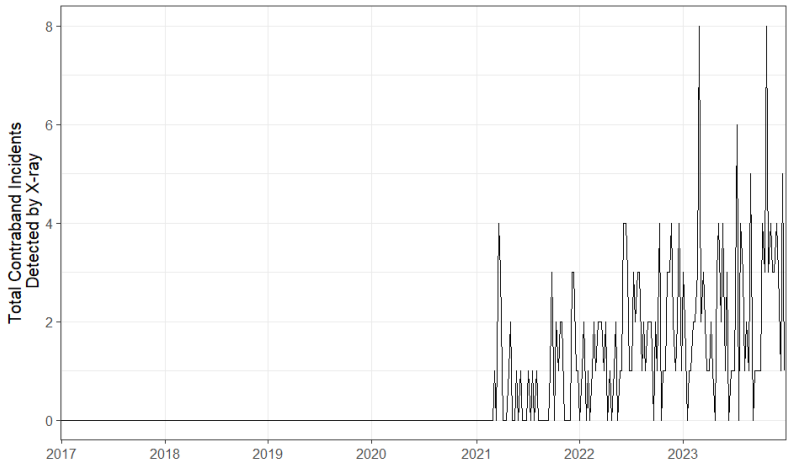

Figure 5. Number of inmate contraband incidents detected by x-ray or other electronic device.

Figures 6 and 7 show the average weekly rate of reported contraband incidents and average weekly rate of drug-related contraband items seized, respectively. These figures show similar cyclical trends; peaks were observed at around T-100 and at time of data census while the lowest points were observed at T-200 and T50.

It is observed that inmate scanners were introduced at a point in time when there was a steady decline in weekly rates, which persisted for about a year after scanner introduction. Before inmate scanners were introduced, there was an average weekly rate of 1.0 contraband incident per 100 inmates. This rate averaged at 0.8 after scanner introduction (averages of 0.7 and 0.6 drug-related contraband items seized per 100 inmates before and after implementation, respectively).

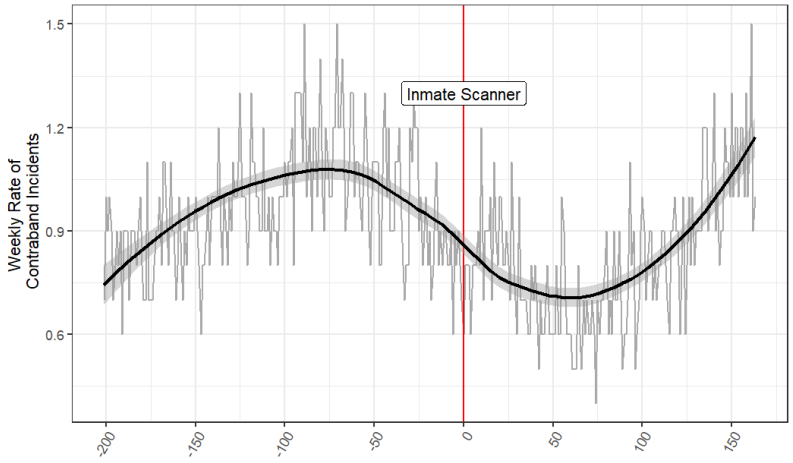

Figure 6. Average weekly rate of contraband incidents (per 100 inmates).

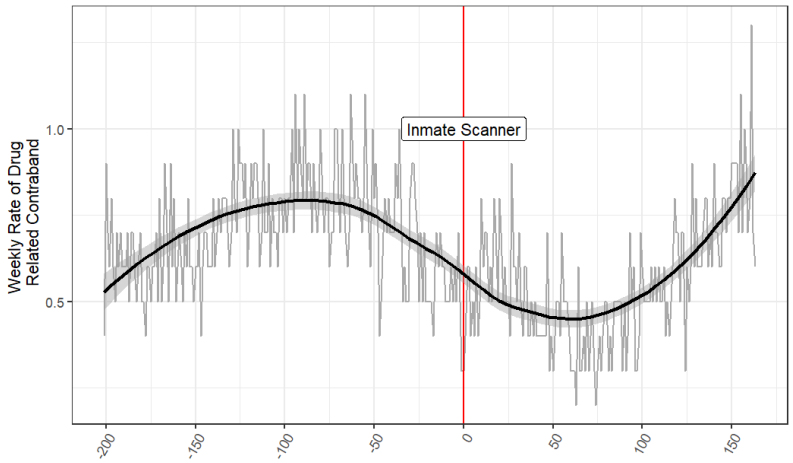

Figure 7. Average weekly rate of drug-related contraband items detected (per 100 inmates).

Figure 8 shows no discernible change in trends in the detection of contraband incidents involving internal secretion. Prior to implementation of inmate scanners an average of 6.7% of incidents were recorded as involving internal secretion; following implementation an average of 6.2% of incidents involved internal secretion.

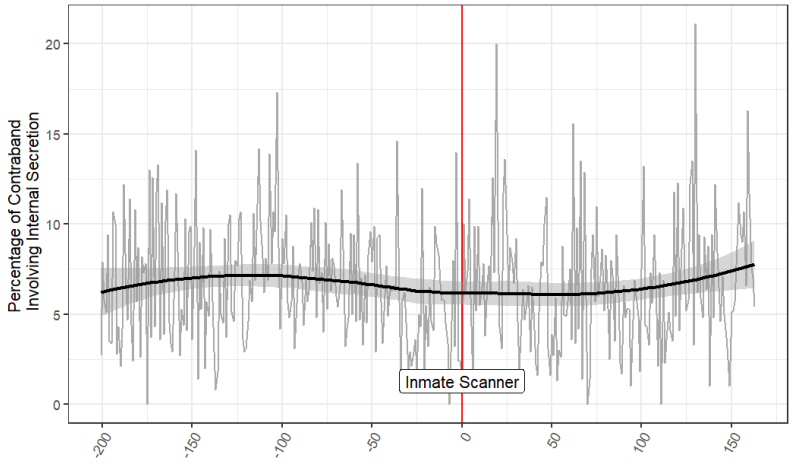

Figure 8. Percentage of contraband incidents involving internal secretion.

Figure 9 shows peaks in the rate of assault incidents around T-100 and T150, with the lowest points observed just prior to T0 and T50. On average, the weekly rate of assaults prior to inmate scanner implementation was 0.5; following implementation there was an average of 0.4 assault incidents per week.

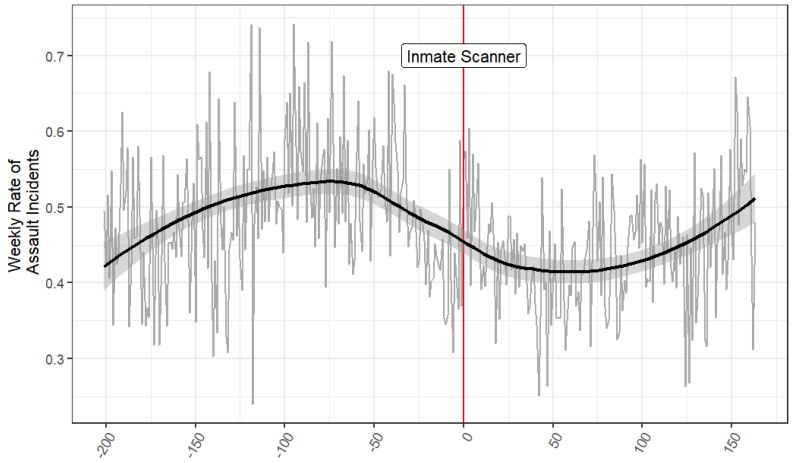

Figure 9. Average weekly rate of assault incidents (per 100 inmates).[4]

Figure 10 shows no discernible change in trends in the percentage of contraband incidents linked with Use of Force after scanner implementation. Prior to the implementation of scanners, on average, 1.8% of incidents were associated with Use of Force; following implementation, on average, 1.7% were associated with Use of Force.

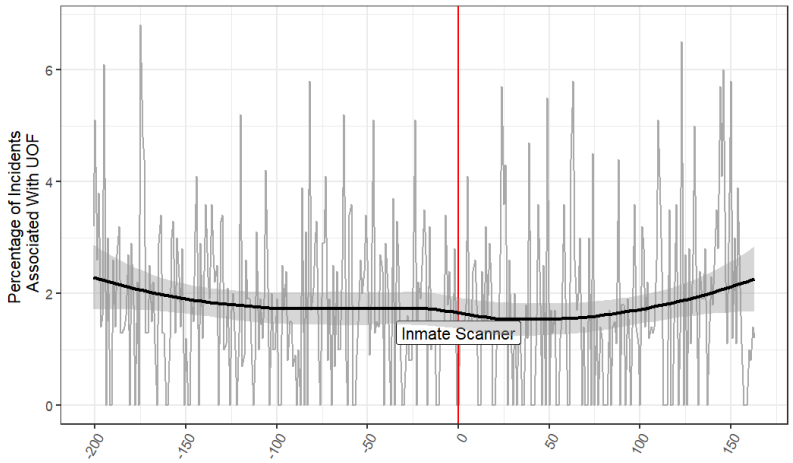

Figure 10. Percentage of contraband incidents associated with Use of Force.

Outcomes associated with visitor scanner activity

Visits and visitor activity were most impacted by COVID-19 lockdowns and restrictions, with visitor scanners implemented at a time when visitor restrictions were beginning to ease following NSW's longest COVID-19 lockdown. At that time there were, on average, only one fifth the number of visits occurring as there had been in the years prior to COVID-19; by 2023, the number of visits were still only half the number that occurred prior to COVID-19. The number of visitors attending each visit had also decreased during this period from 2.5 visitors per visit to 1.8 and rising to an average of 2 visitors per visit in 2023.

[4] Including actual, threatened, suspected, and alleged.

Figure 11 presents the total number of visitor contraband incidents per week from 2017 to 2023, and Figure 12 indicates the number of contraband incidents detected by x-ray or other electronic device following the inclusion of the IRM field in June 2021. Visitor contraband incidents followed a similar pattern of decline and gradual increase as inmate incidents around the time that coincides with Covid-19 restrictions and lockdowns and the subsequent easing of those restrictions. Focusing on the period following the inclusion of the x-ray IRM field, total weekly contraband incidents ranged from 0 to 19, with an average of 2.3 incidents per week. On average, 6.2% of weekly contraband incidents were detected by x-ray or other electronic device (range = 0 - 100% of incidents), again noting this may not truly reflect the total number of incidents detected by x-ray or other electronic device given this IRM field is not a mandatory field for completion.

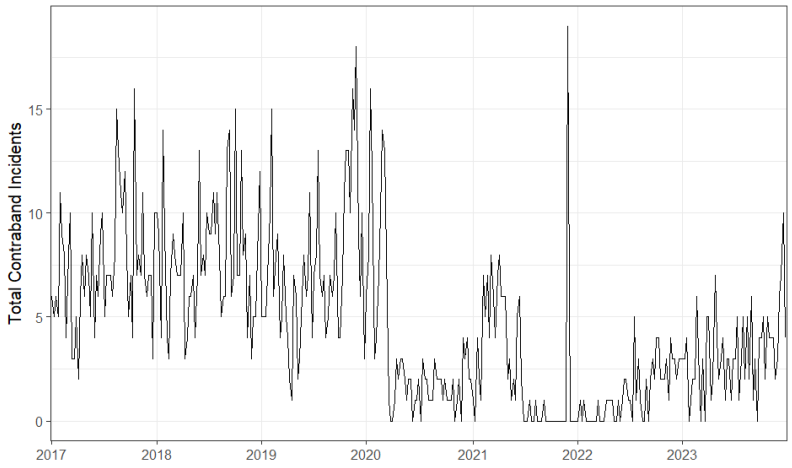

Figure 11. Total number of visitor contraband incidents per week (2017-2023).

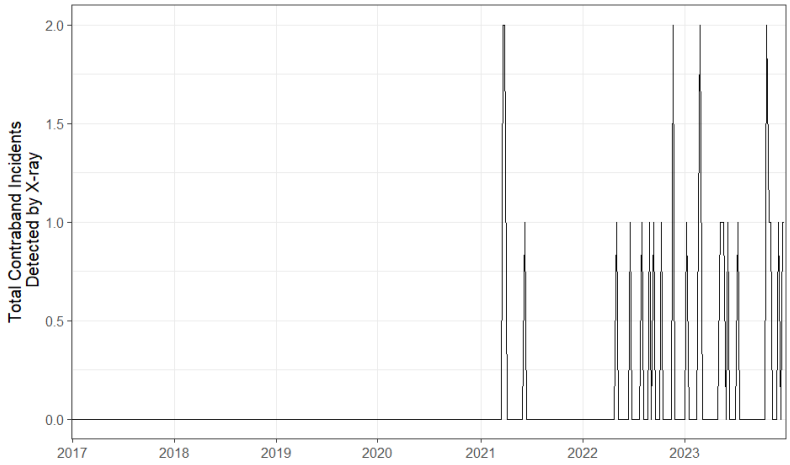

Figure 12. Number of visitor contraband incidents detected by x-ray or other electronic device.

Figure 13 shows a substantial and immediate increase in the detection of visitor contraband on the week of visitor scanner introduction. That initial increase suggests there was an improved ability to detect contraband at the time scanners were introduced, after which visitors adjusted their behaviour once learning scanners were being used for contraband detection. Figure 14 shows a similar spike in the number of drug-related contraband detected. There were average weekly rates of visitor contraband incidents and drug-related contraband detected of 0.2 per 100 visitors prior to visitor scanner implementation and 0.1 per 100 visitors following implementation.

There were also observable spikes in contraband incidents and the number of drug-related contraband items detected at T-50 and T-75, which coincides with the introduction of inmate scanners around 12 months prior to visitor scanners being implemented. Following the initial increase in contraband detection after implementation of visitor scanners there is a notable drop, which begins to stabilise over the following 2 years.

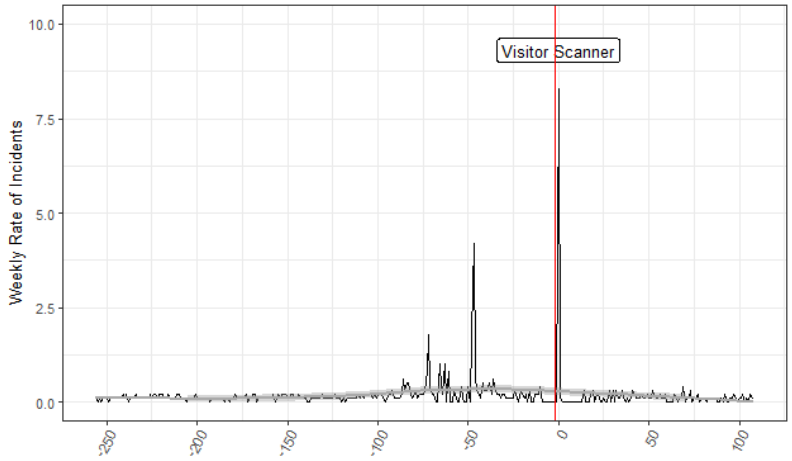

Figure 13. Average weekly rate of visitor contraband incidents (per 100 visitors).

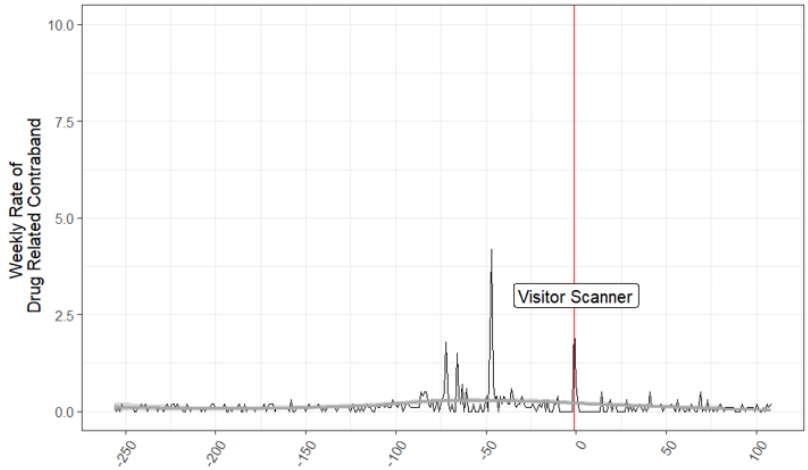

Figure 14. Average weekly rate of visitor drug-related contraband items seized (per 100 visitors).

Figure 15 shows the average weekly rate of visitor restrictions peak around the time of inmate scanner introduction and then decline until the time of visitor scanner introduction, after which an upward trend was observed until data census. Prior to implementation of visitor scanners there were, on average, a weekly rate of 0.07 visitor restrictions in place per 100 visitors; following implementation the number of visitor restrictions per week, on average, dropped to 0.03 per 100 visitors.

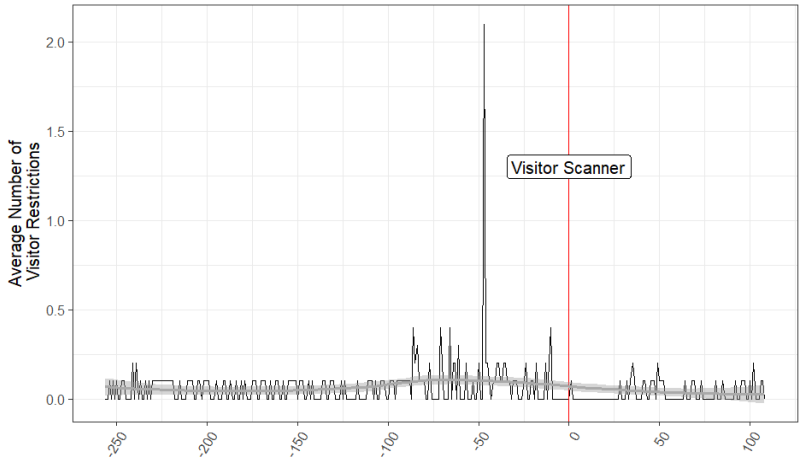

Figure 15. Average weekly rate of visitor restrictions (per 100 visitors).

CONCLUSIONS

This study forms part of a two-stage review of full body x-ray scanners at NSW correctional centres. Quantitative data from x-ray scanner reports and OIMS were utilised to understand the extent of scanner activity from the time of scanner installation, as well as examine trends in various contraband-related activity and outcomes.

Scanner activity increased over the review period in line with the ongoing rollout of scanners for both inmates and visitors across NSW medium and maximum security correctional centres. The majority of scans were conducted in the course of social visits, which has previously been identified as a primary point of entry for contraband introduction (Berghuis et al., 2023; Norman, 2023; Tititampruk & Ketsil, 2021).

More scans in total were completed on male inmates; however, female inmates were scanned at a higher rate. Findings from the qualitative review suggest female inmates may be prone to additional scans due to the occurrence of ambiguous images when gender-specific items of clothing, such as bra straps, appear suspicious (see Ross et al., 2024).

In comparison, more scans in total were conducted on female visitors, who attended social visits at almost twice the rate of male visitors. Adults were also more likely to visit people in prison compared to minors and were therefore scanned more frequently. Among minors, those aged under 2 years were least likely to be scanned, a potential consequence of the challenges associated with scanning young children. For example, Ross et al. (2024) reports that children struggle to follow instructions to remain still during the scan and that some parents or guardians are particularly resistant to children being scanned.

An examination of time series data showed little variation in contraband incidents and detection of drug-related contraband around the time inmate scanners were introduced. Of all contraband incidents occurring post-implementation of scanners, only a small percentage were identified as being detected by x-ray or other electronic device. It is important to note, however, that the OIMS IRM field for reporting whether contraband is detected by x-ray or other electronic device was not introduced until June 2021 (over 12 months after the introduction of scanners) and is not a mandatory field for completion. The field also captures incidents of contraband detection by other electronic devices, such as metal detectors. Consequently, the data may not be an accurate representation of the true proportion of contraband incidents detected by x-ray scanners.

While scanners are primarily utilised for detecting or preventing the introduction of contraband via people entering centres, it is widely recognised that other methods of contraband introduction can occur through vehicles, mail, staff, or perimeter throwovers (Norman, 2023; Tititampruk & Ketsil, 2021). Contraband is therefore still likely to be detected through other search methods, including random and targeted cell searches and intercepting contraband thrown over fences or walls. Given the various ways contraband is introduced and the range of methods available for detecting contraband, new detection methods, such as scanner technology, may have limited impacts on gross trends in contraband incidents.

It should also be noted that an existing downward trend in contraband detection at the time scanners were implemented may be the result of COVID-19 restrictions and lockdowns creating fewer opportunities to introduce contraband. We also cannot rule out that any fluctuations in contraband detection are not the direct result of scanner implementation through an increased ability to detect contraband, or a genuine deterrent effect where people have changed their behaviour with respect to contraband activity. Given we were unable to control for a range of external factors that may impact the operational context of contraband searches, it was not possible to conduct analyses that aim to isolate causal effects and subsequently determine whether fluctuations in contraband trends could be directly attributed to the introduction of scanners.

The percentage of contraband incidents involving internal secretion remained relatively consistent across the review period. This result is in line with findings reported by Ross et al. (in preparation) that both officers and inmates considered scanning was no more effective for detecting drug-related contraband than strip searches, but scanning was preferred as it was a more pleasant process. While data on exact numbers of strip searches were not available, the incidence of scans and incidents observed in this study gives an indication of how scanners are displacing a potentially large amount of strip search activity, and in turn the potentially negative experiences people in prison have previously reported with respect to strip searches (see for example: Guerri, 2023; McCulloch & George, 2008; QHRC, 2023).

Another anticipated outcome was the potential for a reduction in assaults and staff Use of Force that may be associated with the high-risk nature of strip searches (QHRC, 2023). Findings, however, suggest scanners may not have had an immediate or direct effect on these outcomes. Considering there was little change in contraband trends following the introduction of scanners, and the likelihood a strip search still occurs when a scan indicates possible presence of contraband, the potential benefits associated with the more pleasant scanner search may not be represented in specific cases of suspected or confirmed contraband detection.

For visitors, there was a clearer indication that the immediate period of scanner introduction was associated with increases in detection of contraband. A subsequent decline in contraband detection suggests visitors may have changed their behaviour with respect to contraband activity soon after scanners were implemented. There may be a higher likelihood for scanners to detect contraband on visitors, compared to inmates, given the scans occur at a single point of entry where visitors are most likely to introduce contraband. As previously noted, inmate contraband incidents may be detected through other methods, such as cell searches and intercepting contraband throwovers, hence scanners are only one approach among many for detecting contraband on inmates.

Interestingly, there were also spikes in visitor contraband incidents, drug-related contraband detection and visitor restrictions that coincided with the introduction of inmate scanners. In these cases, contraband appears to have often been detected when inmates were scanned at the completion of their social visit with a reasonable expectation that the contraband had been passed over by the visitor, resulting in a contraband incident recorded against that visitor and a restriction put in place. While a similar spike in contraband detections was not identified for inmates, this could be attributed to visitor data being more sensitive to observable increases and decreases in contraband trends associated with singular search methods such as

scanners. This finding is further reflected when comparing the proportion of contraband incidents recorded as being detected by x-ray for inmates (which does not exceed 9.2%) compared to visitors (which can account for up to 100% of incidents).

Limitations of the current study should be considered. First, reports derived from each of the x-ray scanners provide limited information about the characteristics of the individuals being scanned. This is particularly evident with Nuctech scanners where even a MIN is not provided from which additional data could be sourced. Further, the MIN or VIN of the individual being scanned is not always entered, which limits the ability to access complete or accurate information about those being subjected to scanning. OIMS IRM records can also be limited by the use of non-mandatory fields for determining specific details of contraband incidents, including whether contraband was detected by x-ray scanners and whether contraband had been internally secreted. Given the limitations with being able to associate a MIN with each scan completed, we are also unable to accurately link scanner activity with specific incidences of assaults or staff Use of Force that may have been associated with contraband detection and have therefore relied on overall trends of these behavioural indicators with respect to the timeline for the introduction of scanners. A lack of comparison sites, combined with the relatively uniform implementation timeline of scanners across centres, also limited our ability to isolate causal effects of scanners on these trends and our time series data are presented as descriptive and indicative only.

This study provides the first insights into the use and outcomes of full body x-ray scanners at NSW correctional centres. The results provide mixed indications about the effects of scanners on trends in detection of contraband and associated outcomes relating to changes in safety and security for staff and inmates. These findings, however, are in line with the expected dynamic influence of scanners on such outcomes involving both detection and deterrence effects, as well as their limited role in the overall activities around contraband introduction and detection within the system. Trends reported in the current report should be interpreted in combination with qualitative evidence from staff and inmate perspectives on the use of scanners (Ross et al., 2024) to provide a more global understanding of the potential impacts of scanners on contraband-related activities and outcomes. Importantly, when findings from the two-stage review are considered together, there is evidence that suggests scanners may play an important role in contraband search efforts through their ability to detect non-metallic contraband via an approach that is less invasive for people being searched and safer for officers tasked with conducting searches.

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Corrections Research Evaluation & Statistics
Corrective Services NSW
GPO Box 31
Sydney NSW Australia

Telephone: (02) 8346 1556
Email: research.enquiries@dcj.nsw.gov.au