# **Research Brief**

Impacts of digital tablets on trends in correctional centre safety and order: A controlled interrupted time series study

Yatin Mahajan, Anindita Sarker, Chee Seng Chong, & Mark Howard

**AIM** To examine whether implementation of digital tablets had an impact on objective indicators of inmate and staff behaviour associated with safety and order within correctional centres.

## FINDINGS AND CONCLUSIONS

We used a quasi-experimental controlled interrupted time series design to assess the effects of digital tablets on trends in multiple outcome indicators, including categories of inmate offences in custody relating to order, violence, and alcohol and other drugs; victimisation in assaults; and use of force responses by staff. We compared trends in these indicators from nine intervention centres before and after the implementation of digital tablets against six comparison centres where the tablets were not introduced.

Results indicated a significant impact of digital tablets on inmate and staff victimisation in assaults. We found that implementation of digital tablets was associated with trends towards reduced assaults and violent offences in custody at intervention centres relative to comparison centres. We found no evidence of the impact of digital tablets on order-related or alcohol and other drugs-related offences, or staff use of force incidents at intervention centres.

We concluded that this study found promising indications that the introduction of digital tablets was associated with measurable changes in indicators of safety within CSNSW correctional centres, including the incidence of violence and assaults. The results provide robust quantitative evidence in support of previous findings for the perceived effects of tablets on staff and inmates' experiences of prison. As functionalities of digital tablets continue to expand, subsequent evaluations can help broaden our understanding of the impact of digital tablets on correctional centre climates.

# INTRODUCTION

Digital technology has rapidly become essential to our daily lives. It provides convenient access to government services, media, education, health, entertainment, and the opportunity to connect and work with people remotely. While digital technologies have been adopted by corrections services across the world to support inmate management and for security purposes such as surveillance, the use of technology directly by inmates within a custodial context, such as access to the Internet and digital devices for inmates, remains limited (McKay, 2018; Mufarreh et al., 2021). This has been attributed to concerns that unregulated access to the Internet may be misused by inmates to harass victims and witnesses or engage in criminal activities (Johnson & Hail–Jares, 2016). However, denying inmates access to the Internet can lead to 'digital exclusion', where they may encounter difficulties in reintegration and developing a pro-social life (Reisdorf & Jewkes, 2016). Upon release, this can further worsen their social and economic disadvantages (Reisdorf & Jewkes, 2016).

In recent years, jurisdictions worldwide have provided access to digital technologies for inmates, including touchscreen 'kiosk' style machines and Internet–enabled digital tablets (Krikorian & Coye, 2019; McDougall et al., 2017; Palmer et al., 2020). These technologies have the potential to enhance the prison experience for inmates by facilitating communication with family and friends, providing access to personal legal information, and other opportunities for constructive leisure time activities such as entertainment resources, e–learning, and public service information (Krikorian & Coye, 2019; McDougall et al., 2017; Palmer et al., 2020). Tablets can also offer more chances to achieve rehabilitation goals by allowing inmates to access behavioural interventions and education resources that are made available online in correctional centres (Kaun & Steirnstedt, 2020; Krikorian & Coye, 2019; Lindstrom & Puolakka, 2020).

The implementation of digital technologies may also benefit prison staff by reducing their administrative workload and improving inmate management; for example, by allowing inmates the autonomy of managing their accounts and lodgement of requests for buyups and other applications (Krikorian & Coye, 2019; McDougall et al., 2017; Palmer et al., 2020). Importantly, there are indications that increased use of digital technology in prisons could positively impact experiences of correctional centre climate, such as improved interactions between staff and inmates and improved inmate behaviour (Palmer et al., 2020; Thaler et al., 2022). For example, access to in-cell phones and self-service administrative technology has been linked to improvements in interactions with prison staff and other inmates and improved perceptions of agency, independence, and overall wellbeing (Lindstrom & Puolakka, 2020; McDougall et al., 2017; Palmer et al., 2020). By providing access to self-service kiosks and digital tablets, prisons have seen reductions in inmate disciplinary offences, de-escalation of friction, and decreased altercations and violence among inmates and with staff evident from both objective and self-reported indicators (Coppola, 2017; Krikorian & Coye, 2019; McDougall et al., 2017).

Since October 2020, Corrective Services New South Wales (CSNSW) has introduced digital tablets in a number of correctional centres across NSW (see Thaler et al., 2022 for details on implementation). These digital tablets are internet-enabled and provide regulated access to free and paid services, such as educational and entertainment resources, pre-approved websites, voice calls to approved numbers, health and welfare services, games, and information about centre administration. Initial evaluations of the digital tablet rollout in NSW indicated that access to tablets was viewed to improve inmates' connectivity with their loved ones and enhanced their overall prison experience. This improvement was positively linked to a sense of autonomy, general wellbeing, and perceptions of the social climate in the centres (Barkworth et al., 2022). Thaler et al. (2022) further reported that inmates experienced positive changes in their lives inside and outside prison. These changes include greater independence, the alleviation of boredom and

idleness, reduced friction and aggression in shared places, improved interactions, and better overall wellbeing.

## AIMS

This study aims to expand on the results of previous evaluations by quantifying the impact of introducing digital tablets on indicators of inmate and staff behaviours associated with prison climate and the level of safety and order within correctional centres. Primary indicators in this regard involve outcomes associated with violence and other inmate misconduct as well as use of force responses from staff. Misconducts in prison refer to behaviours breaking prison rules and laws (Delisi, 2003; Steiner & Wooldredge, 2014). These behaviours can be categorised by severity and type of offence (Butler et al., 2023), ranging from minor breaches of rules to substance abuse and serious violent crimes that may result in the physical use of force by officers as a response of last resort.

Based on the findings from previous studies, the introduction of digital tablets may have a positive impact on inmate and staff behaviour through mechanisms of change such as effects of increased inmate autonomy and wellbeing on compliance with correctional authorities. Violence-related incidents may be reduced through mechanisms associated with inmates' better use of idle time, reduced friction among inmates and staff, and less exposure to high risk situations and places such as public phone areas. For example, inmates have associated access to digital tablets with perceptions of reduced friction, clashes and bullying caused by having to queue or book a time to access the public phones (Thaler et al., 2022). Such outcomes are also related to a pro-social prison climate and improved inmate-staff and inmateinmate interactions, which may improve overall inmate and staff behaviours in custody (Bosma et al., 2020; Coppola, 2017; Palmer et al., 2020).

# **METHODS**

The data were extracted from the CSNSW Offender Integrated Management System (OIMS), the central operation database maintained by CSNSW to manage people under supervision in custody and the community. All correctional centres managed by CSNSW are required to enter information on OIMS in a systematic way that is guided by departmental policies. The variables extracted from OIMS were administrative information related to all official charges for disciplinary infractions in custody and use of force incidents.

The following categories of inmate and staff behavioural indicators were examined in this study. These indicators were derived from administrative data recorded by staff and were represented as aggregate weekly counts (i.e., the weekly average number of incidents per 100 inmates).

- Offences in custody –
  Offences in custody related to order were derived by aggregating all recorded charges laid against inmates as a consequence of general rule infraction and non-compliance related to the maintenance of order in the correctional centre. Examples of charges included in this category were: failure to comply with correctional centre routine and obstructing custodial officers from performing their duties.
- Offences in custody This outcome variable was derived from charges laid against Alcohol and other Drugs inmates for violations and non-compliance that were alcohol or (AOD) drug related. Examples of infractions included in this category

were possession of illicit drugs or alcohol; possession of paraphernalia for administration of drugs; evidence of intoxication; and failure or refusal to participate in drug tests or supply sample for urinalysis.

- Offences in custody Violence
   Rates of violent offences amongst inmates in custody were calculated from incident reports for all events in which an inmate was found guilty of assault, fight, or physical combat. Instances of assault that were alleged or suspected were not included in this variable.
- Assaults This variable includes all instances where a person (inmate or staff) was hurt in an incident involving violent behaviour. This includes incidents of assault where an inmate was found guilty and other recorded incidents that were alleged and suspected.
- Use of Force (UoF)
  Use of force incidences were calculated from incident reports for all events where officers had to resort to the use of physical force or other techniques, weapons, or instruments necessary to restrain or control an unwilling inmate. Examples of incidents included in this variable were: to prevent the escape of an inmate; to prevent an injury of inmate from self-harm or from harming other persons; and to prevent or quell riots.

A Controlled Interrupted Time Series (CITS) approach was used to analyse the change in indicator trends before and after implementation of digital tablets. A CITS approach involves comparing the trends of an intervention time series against a comparison time series where the intervention was not implemented (Lopez Bernal et al., 2018). A benefit of a CITS approach is that it allows us to determine the impact of an intervention while controlling for other co-occurring latent variables. Digital tablets were implemented concurrent to the COVID pandemic and disruptions to correctional centre operations, such as lockdowns and reduced visitations, may have had unintended consequences on the outcome indicators examined in this study. As both the intervention and comparison groups were exposed to similar environmental factors, differences in trends observed may be attributed to the implementation of digital tablets.

This study included a total of 15 correctional centres. Nine centres were selected to be part of the 'intervention group' because the digital tablet initiative was implemented at each centre in close proximity (implementation within three weeks of one another) and had a statistically sufficient number of post-implementation datapoints. The comparison group consisted of six correctional centres where digital tablets had not been implemented within the observation period of the study. The time period of interest was between 21 October 2019 and 31 January 2023. This observation period included a period of at least 2 years prior to the implementation of tablets in the intervention group centres.

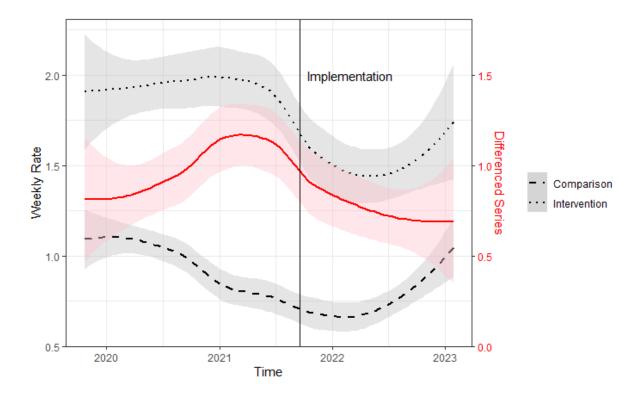
In the current study, the comparison and intervention trend lines were derived for each indicator by aggregating the data for both intervention and comparison groups. As digital tablets were implemented across most of the intervention group sites within 3 weeks, the implementation time (T0) was considered the latest date when digital tablets were introduced to the intervention sites (22 September 2021). For both comparison and intervention groups, a total of 100 weeks of timepoints prior to T0 (from 21 October 2019) and 71 weeks after implementation (up to 31 March 2023) was examined in this study.

The comparison time series was then subtracted from the intervention time series to produce a differenced time series. This was done to derive a single trendline for modelling purposes. We used ARIMA

(autoregressive integrated moving average) modelling procedures to estimate trends and account for any seasonal variations in the data. An ARIMA model was first fitted to the pre-intervention data of the differenced time series, to identify the structure of the pre-intervention trends. Once the best fitting model is identified, the estimated parameters of the final model were then fitted to the entire data series to estimate the intervention's effects. To quantify the impact of digital tablets, we examined if there were any step or ramp trend changes after the point of implementation (TO). A step change implies a significant immediate change in trends post-digital tablet implementation. In contrast, a ramp change is observed if there is a significant change in the slope of the trends after the implementation.

# FINDINGS

The following section presents a series of figures which illustrate trends in inmate and staff behavioural indicators relative to implementation of tablets. In addition to the solid vertical line which indicates the point of digital tablet implementation, three smoothened trend lines are also shown in each graph. The two black lines show the trends of the intervention (dashed) and comparison groups (dotted). The red line shows the differenced time series which was derived by subtracting the comparison trend line from the intervention trend line. The differenced red trend line may be interpreted so that a flat or stable line indicates that there are no differences in the trends between the intervention and comparison groups. Alternatively, changes in the slope of the differenced line shows variable trends between the two groups which may be indicative of digital tablets having an impact on the outcome indicator.



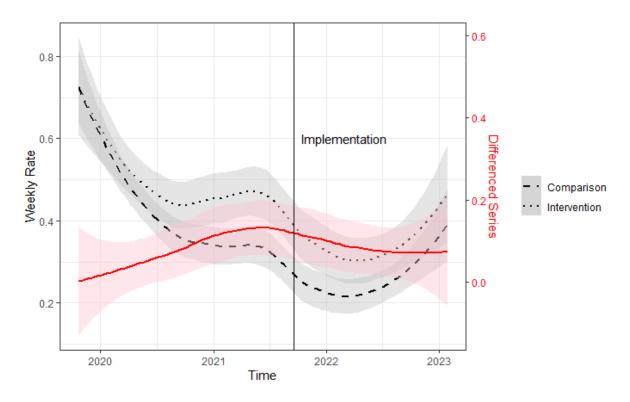
## Offences in Custody - Order

Figure 1. Weekly rate of order-related offences in custody for intervention and comparison groups and the differenced time series (shaded area depicts the CI at 95%).<sup>1</sup>

<sup>&</sup>lt;sup>1</sup> LOESS smoothing function was applied to reduce the noise inherent in the time-series data. LOESS is a non-parametric smoothing function which finds the best fitting non-linear line by segmenting the timeseries.

Figure 1 shows the weekly rates of order-related offences in custody per 100 inmates before and after digital tablets were implemented for both the intervention and comparison groups. The differenced trend line exhibited an inverted U-shaped curve which showed that there was an increasing difference in weekly rates between the two groups that peaked in early 2021 before dropping and stabilizing towards the end of the observation period. This curve appears to be driven by a decline in weekly order-related offences in the comparison sites from the middle of 2020, as opposed to the intervention sites where rates showed a slight increase over the same period. After the implementation of digital tablets, the differences between the intervention and comparison group then gradually stabilised, indicated by the flatter slope towards the end of the observation period.

An ARIMA (0,0,0) model was selected as the best fit for the differenced trend line. The Ljung-Box statistic was not significant (Q (12) = 12.09, p = .44), indicating that the model was a good fit. Both step (b = - 0.108, (95% CI: -0.42 - 0.20), p = .49) and ramp (b = .002, (95% CI: -0.009 - 0.004), p = .43) were not significant, suggesting that implementation of digital tablets was not associated with any changes in order-related offences in custody.



#### Offences in Custody - Alcohol and other Drugs

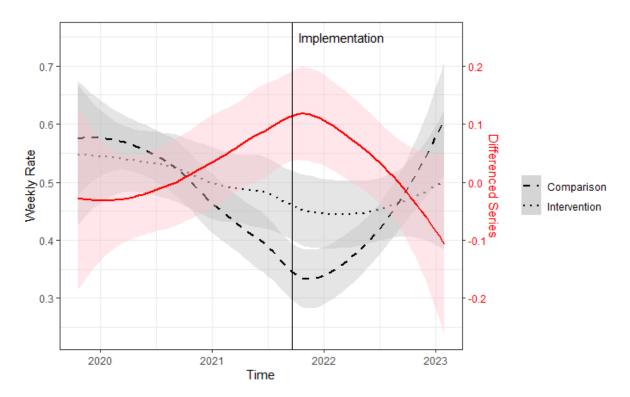
Figure 2. Weekly rate of AOD-related offences in custody for intervention and comparison groups and the differenced time series.

Figure 2 shows the weekly rates of AOD-related offences in custody per 100 inmates across the observation period. The trends for both intervention and comparison groups looked similar across the observation period. For both intervention and comparison groups, there was a marked declining trend in rates of AOD-related offences before the implementation of tablets, and an increasing trend towards the end of the observation period.

The differenced trend line shows that before the implementation of digital tablets, AOD-related offences were not declining at a steady rate for both groups; a sharper rate of decline was observed for the comparison group. A flat differenced trend line was observed after the implementation of digital tablets,

suggesting that although rates were higher in the intervention group, this was consistent throughout the period after the implementation of digital tablets and there were no differences in the trends of AOD offences between the comparison and intervention groups.

An ARIMA (1,0,0) model (Q (12) = 6.01, p = .90) revealed no significant difference between the intervention and comparison group trend lines, step (b = 0.037, (95% CI: -0.083 - 0.157), p = .55), ramp (b = -.001, (95% CI: -0.003 - 0.001), p = .58). This suggests that the implementation of digital tablets had no significant impact on AOD-related offences in custody across intervention group sites compared to centres where the tablets were not implemented.



#### **Offences in Custody – Violence**

Figure 3. Weekly rate of violent offences in custody for intervention and comparison groups and the differenced time series.

Figure 3 shows the weekly rates of violent offences in custody per 100 inmates across the observation period. It can be seen that the differenced trend line is characterised by an inverted V-shaped curve across the observation period. This appears to be driven mainly by changes in trends of the comparison group, which showed a decline in offence rates from the middle of 2020 before sharply increasing from 2022. In contrast, the intervention group showed a more stable rate of violent offences across the observation period.

The ARIMA model (0,0,3), (Q(12) = 4.01, p = .98) indicated that both step change (b = 0.152, (95% CI: -0.021 - 0.325), p = .09) and ramp (b = -.004, (95% CI: -0.007 - 0.001), p = .07) effects approached significance. These findings and the trend lines in Figure 3 suggest that the introduction of digital tablets in the intervention sites may have marginally modulated violent offence rates in the intervention sites. As an indicative description of the observed trends, over the period of time when digital tablets were made available in the intervention groups, weekly rates of violent offences in custody increased by 76% in the comparison group, while a smaller increase of 9% was observed for the intervention group.

## Assaults

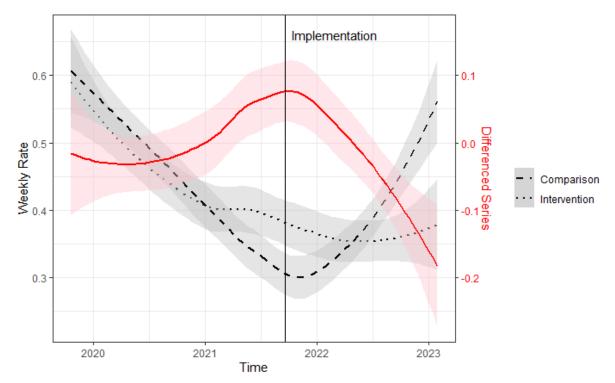


Figure 4. Weekly rate of assaults in custody for intervention and comparison groups and the differenced time series.

Figure 4 shows the trends in weekly assault rates. The differenced trend line was again characterised by an inverted V-shaped curve across the observation period. This pattern was a result of assaults rates declining at a greater rate for the comparison group than the intervention group prior to the implementation, and a sharp increase in the rates after the implementation of digital tablets. In contrast, assault rates in the intervention group remained stable after the implementation of digital tablets.

An ARIMA (0,0,0) model, (Q (12) = 11.25, p = .51) on the differenced trend line demonstrated a significant change to the weekly rate of assaults in custody following the implementation of digital tablets, step (b = 0.114, (95% CI: 0.033 - 0.194), p = .01), ramp (b = -0.004, (95% CI: -0.005 - -0.002), p < .001). The results indicate a significant impact of the implementation of digital tablets on rates of assaults in custody across intervention sites relative to comparison sites. The significant step change indicated an immediate increase in difference in assault rates at intervention sites, which appeared to be driven by a discrete concurrent decline in assault rates at comparison sites. The significant ramp change indicated a gradual decline in assault rates at intervention sites relative to comparison sites. The pattern of data suggests that introduction of digital tablets may have had a dampening effect on increasing trends observed at other centres. After the implementation of digital tablets in the intervention sites to the censor date, the weekly assault rates for the comparison group increased by 84.2%, while the intervention group showed a slight reduction of -0.6%.

## **Use of Force**

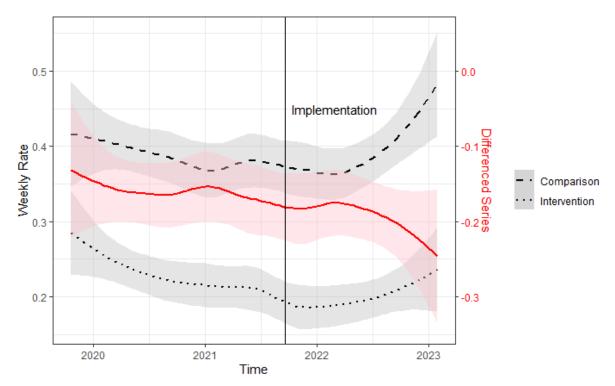


Figure 5. Weekly rate of use of force incidents by staff for intervention and comparison groups and differenced time series.

Figure 5 shows that across the observation period the comparison group had more UoF incidents per 100 inmates in custody than the intervention group. It also shows that the differenced trend line remained largely stable before the implementation of digital tablets, followed by a declining difference between the two groups towards the end of the observation period. This late declining trend in differenced line was perhaps driven by a sharper upward trend in the comparison group in the period when digital tablets were implemented at the intervention sites.

An ARIMA (2,0,3), (Q (12) = 14.63, p = .26) on the differenced time series indicated no significant difference between the intervention and comparison group trend lines, suggesting no impact of digital tablets on the weekly UoF rates; step (b = -0.008, (95% CI: -0.097 - 0.081), p = .86), ramp (b = -0.001, (95% CI: -0.002 - 0.001), p = .58).

# CONCLUSIONS

The digital tablets provided in CSNSW correctional centres offer inmates access to news, games, selfadministrative functions, resources for behaviour change and phone services. By doing so, this initiative has the potential to contribute to a more pro-social prison climate and improved inmate-staff and inmate-inmate interactions (Barkworth et al., 2022; McDougall et al., 2017; Palmer et al., 2020. This study aimed to apply a robust quasi-experimental design to examine whether the introduction of digital tablets was associated with measurable changes in objective indicators of inmate and staff behaviour across NSW correctional centres. We examined five behavioural indicators in this study and found that the introduction of digital tablets had a significant impact on inmate and staff victimisation in assault. In particular, introduction of digital tablets was associated with trends towards fewer assaults at intervention centres relative to comparison centres. Correspondingly, we also found a marginal impact on proven violent offences in custody. Overall, these results are consistent with earlier indications that access to digital technology and tablets in prisons could play an important role in reducing tension and de-escalating friction with other inmates and staff, reducing inmate-on-inmate fights and altercations with staff (Coppola, 2017; McDougall et al., 2017; Palmer et al., 2020).

A potential account for the effects of digital tablets on correctional centre violence relates to 'routine activities theory' (Cohen & Felson, 1979; Felson, 1986). This theory suggests that the daily routines and situations that inmates engage in or are exposed to can influence victimisation or engagement in violence-related offences. From this perspective, access to individual tablets could serve to alter prison routines that are historically associated with friction or violence, such as queuing up to use public phones (Palmer et al., 2020; Thaler et al., 2022). It also reduces the risk of coming in contact with inmates who have participated in violence (Wooldridge, 1998), which can contribute to decreased negative interactions that may lead to reduced instances of interpersonal conflicts and violent or other misconduct (Barkworth et al., 2022; Bosma et al., 2020; Thaler et al., 2022). Also, tablets offer inmates access to news, media, and games, which not only reduce boredom and idleness but also increases the focus on new routines and activities other than ruminating over aggressive conflicts, interactions, and interpersonal transgressions (Barkworth et al., 2022; Bosma et al., 2020; Thaler et al., 2020; Thaler et al., 2020; Thaler et al., 2020; Also, tablets offer inmates access to news, media, and games, which not only reduce boredom and idleness but also increases the focus on new routines and activities other than ruminating over aggressive conflicts, interactions, and interpersonal transgressions (Barkworth et al., 2022; Bosma et al., 2020; Thaler et al., 2020; Thaler et al., 2022).

Another potential explanation for the effects of digital tablets on assaults and violent offences in custody relates to the ability to make calls in-cell, which has been reported to improve relationships between inmates and their loved ones (Barkworth et al., 2022). These improvements in interpersonal relationships were linked to a host of benefits such as reduced anxiety, better mood, and improved overall wellbeing, potentially resulting in more positive interactions with other inmates and staff, with flow-on effects for instances of violence or assaults (Barkworth et al., 2022; Thaler et al., 2022).

We expected that similar mechanisms could also have implications for the likelihood of other outcomes, such as order-related outcomes and staff use of force, following implementation of digital tablets. However, we did not find any evidence to suggest that the implementation of digital tablets was associated with changes in these indicators. It is possible that digital tablets may have changed how inmates are exposed to or respond to conflict amongst each other; however, that does not necessarily translate to their relations with staff or capacity or motivation to comply with more administrative prison rules. This association may improve in future with the addition of tablet self-administration features, such as purchases and application inquiries, which could reduce conflicts or frustration associated with inmates' reliance on staff for such functions as well as the staff workload burdens involved (e.g., Thaler et al., 2022).

We also did not observe any significant impact of the introduction of digital tablets on trends in AODrelated offences in custody. Inmate addiction issues are complex and often require medical and psychological interventions. There is the potential that digital tablets could have an observable impact on these outcomes in the future, such as through support from additional tablet functionalities and applications aimed at addressing AOD issues along with other dedicated therapeutic resources within correctional centres. From a statistical standpoint, a challenge associated with this analysis is the increased noise in the data due to other initiatives implemented concurrently with digital tablets, such as x-ray scanners for contraband detection and the introduction of 'buvidal' as a maintenance treatment for opioid dependence.

Other limitations of the current study are noted. For some of our measures, we noticed that the impact of the tablets was most prominent towards the end of our observation period. Our analyses were, however, restricted by the number of post-implementation data points available. While our study incorporated a robust quasi-experimental design, we could only include a subset of correctional centres, which were the earliest sites to introduce digital tablets. Digital tablets introduced at these early sites had limited features, and the intended benefits of the tablets may have yet to be fully realised. Further, examining

only a limited number of correctional centres may raise some implications regarding the generalisability of these results. For example, we found that step changes in assault rates appeared to be driven by changes in the comparison group. Subsequent studies may consider readjusting the implementation time to better reflect periods when more tablet features were made available and involving a greater range of sites and data points.

To summarise, this study found encouraging indications that introduction of digital tablets in CSNSW correctional centres has been associated with measurable changes in inmate behaviour, particularly those associated with safety and experiences of violence and assault in the prison context. These findings corroborate the results of an earlier qualitative study (Thaler et al., 2022) which found that inmates report perceived benefits of the tablets in terms of reductions in interpersonal conflicts and improved interactions. As the benefits of digital tablets are expected to grow with the addition of more features and functions, future evaluations will help determine the impact of digital tablets on prison climate and further expand on its impact on inmate and staff behaviour.

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 $\ensuremath{\mathbb{C}}$  Corrective Services NSW

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

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