

Research Brief

Assessing the impact of Five Minute Interventions (FMI) training on behavioural indicators of correctional centre safety and order: An interrupted time series analysis

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AIM To examine if FMI training is associated with measurable changes on objective indicators of inmate and staff behaviours relating to the level of safety and order within correctional centres.

FINDINGS AND CONCLUSIONS

A total of 17 correctional centres and five outcome indicators were examined in this study. The outcomes of interest were the weekly rates of offences in custody related to order violations, alcohol and other drugs and proven violent offences; all assault incidents, including alleged and suspected; and staff use of force responses. We applied ARIMA modelling to examine if trends in these outcome indicators differed significantly before and after FMI training was implemented.

Results indicated that FMI training was linked to a significant gradual reduction in proven violent offences in custody. We also found that implementation of FMI was associated with marginal reductions in assaults and order-related offences in custody. We did not find evidence of significant associations between FMI training and staff use of force responses, or alcohol and other drug related offences in custody.

We concluded that implementation of FMI training can have measurable impacts on key correctional centre outcomes relating to safety and order. This study supports previous findings for the effects of FMI, while being the first to test such effects using quantitative indicators of inmate and staff behaviour in a quasi-experimental design. As FMI is intended to facilitate broader behavioural and cultural shifts within correctional centre climates, the impacts of FMI may be expected to develop further over the longer term, which may be better understood through subsequent analyses using similar research designs over extended timeframes.

INTRODUCTION

While behavioural change programs centred on the Risks Needs Responsivity (RNR) model can reduce inmates' risk of reoffending upon exiting custody (Andrews & Bonta, 2010), the effectiveness of these treatment programs may be enhanced by improving the quality of working relationships between staff and inmates. It has been demonstrated that correctional staff who hold positive attitudes and beliefs about change can establish trust and encourage pro-social attitudes and behaviour in inmates through their interactions with them (Mann, 2019; Ricciardelli & Perry, 2016). Furthermore, staff can act as positive role models and foster hope and motivation among prisoners, promoting effective rehabilitation (Blagden et al., 2016; Burnett & McNeill, 2005). It is therefore unsurprising that in recent years, the interaction between staff and inmates have increasingly become a focus of penological research advocating for rehabilitative prison environments (Auty & Liebling, 2020; Blagden et al., 2016; Craig, 2004; Mann, 2019; Mann et al., 2018; Ricciardelli & Perry, 2016; Stasch et al., 2018).

The growing recognition that all staff have a role in fostering a rehabilitative prison environment has led to the implementation of initiatives across jurisdictions to help train correctional staff to identify and turn everyday interactions with inmates into opportunities for behaviour change. As an example, the Five Minute Interventions (FMI) initiative was introduced in the United Kingdom (UK) to provide custodial staff with a set of skills such as Socratic questioning, active listening and positive reinforcement that they can use to turn everyday conversations with inmates into opportunities to target impulsivity, inspire hope and motivate change (Kenny & Webster, 2015; Tate et al., 2017; Vickers-Pinchbeck, 2019). Early qualitative evaluations of FMI indicate that both custodial staff and inmates perceived positive changes had occurred through having FMI conversations. For example, FMI-trained officers held more rehabilitative orientations, developed better rapport and working relationships with inmates, and reported better job satisfaction (Kenny & Webster, 2015). In turn, inmates felt that FMI conversations with officers helped improve their thinking skills and self-efficacy, and improved their perceptions of staff as non-judgemental, trustworthy, and helpful (Tate et al., 2017).

Following the success of FMI in the UK, CSNSW has adapted and implemented the initiative across NSW correctional centres (for more details on implementation, see Barkworth et al., 2021; 2023). Since its implementation in 2020, CRES has conducted a number of evaluations of FMI and reported findings similar to those reported in the UK. For example, staff indicated improved attitudes towards prisoners, higher motivation and ability to support offenders' rehabilitation, and enhanced understanding about their interactions with inmates after FMI training (Barkworth et al., 2021, 2023; Howard et al., 2021; Lobo et al., 2022).

AIMS

While previous studies have relied on self-reported experiences and perceptions, the current study is intended to provide a quantitative examination of how FMI training translates into measurable impacts on objective indicators of inmate and staff behaviours relating to the level of safety and order within a correctional centre. Primary indicators in this regard involve outcomes associated with inmate violence and other misconduct. Misconducts in prison refer to any actions by inmates that break prison rules and laws (DeLisi, 2003; Steiner & Wooldredge, 2014) and can be categorised based on the 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 a physical use of force by officers as a response option of last resort.

Based on the rationale of FMI training and findings from previous studies, we expected that training would be associated with reductions in correctional centre violence and staff responses such as use of force as

outcomes of improved interactions between FMI-trained staff and inmates, enhanced staff de-escalation skills, and related improvements in overall prison social climate. We also expected broader reductions in the incidence of inmate offences across multiple categories, associated with mechanisms of change such as increased acceptance and compliance with correctional centre authorities and FMI-initiated improvements to decision-making and consequential thinking.

METHODS

The data examined in this study were extracted from the Corrective Services NSW Offender Integrated Management System (OIMS). OIMS is the central operational database that maintains a range of information on all offenders housed in Corrective Services NSW correctional centres. It includes offender demographics and other administrative information such as official charges for disciplinary infractions while in custody. All correctional centres managed by Corrective Services NSW are required to enter information on OIMS in a systematic way which is guided by departmental policies.

Seventeen correctional centres were included in this study. These sites were selected on the basis that they had at least 52 weeks' of data between implementation of FMI training and the data censoring period for the study. This requirement was put in place to allow sufficient time for officers to develop competencies in applying their newly trained FMI skills into practice, and to support the robustness of data analysis.

The outcome indicators examined in the current study are listed below. These indicators were derived from administrative data recorded by staff, and were represented as aggregate weekly counts (i.e., the weekly average number of incidences per 100 inmates):

- Offences in custody – Order This indicator was 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 – Alcohol and Other Drugs This outcome variable was derived from charges laid against inmates for violations and non-compliance that were alcohol or 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 – Violent 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

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 incidences 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.

The outcome of interest was extracted from a time window of five years, between 1st January 2018 and 31st January 2023. This observation window included a period of at least two years prior to the implementation of FMI training at each correctional centre examined in this study. Each outcome measure was analysed separately using an Interrupted Time Series (ITS) approach. An ITS is essentially a regression discontinuity design that examines whether observed trends in time changed significantly after the introduction of an intervention. Two types of trend changes, step and ramp, were examined in this study. A step change refers to the observation of a significant immediate and sustained change in trends post-FMI implementation, while a ramp change indicates an observed significant but gradual change in the slope of the trends post-implementation.

Our research design was informed by a number of important considerations. ITS designs are generally applied to a single time series with a discrete implementation date; however, in our current study FMI training was implemented in a staggered rollout format across centres. Implementation dates therefore vary from centre to centre (between June 2020 to November 2021). A related and critical factor is that FMI training was implemented during the COVID pandemic and its impact on correctional centre operations, such as lockdowns and reduced visitation, were expected to have unintended consequences on our outcome measures of interest. Given these challenges, the data from each correctional centre was recentered such that time of implementation was represented as Time Zero (T0). Pre-implementation time points were represented by negative values and post-implementation 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. This approach allowed us to account for the different implementation dates while mitigating the impact of local shocks, such as correctional centre lockdowns due to COVID, on our outcomes of interest.

While the data extraction procedures yielded a large number of pre-implementation datapoints, this study had limited the number of pre-implementation datapoints to 101 (100 pre-implementation time points + T0) to achieve a better balance between the number of pre- and post-implementation time points. This can help increase the statistical power to detect trend changes (Hawley et al., 2019). The final approach therefore yielded a total of 163 data points, 101 pre-implementation and 62 post-implementation weeks.

As time series data often have pre-existing secular and cyclical trends, ARIMA (Autoregressive integrated moving average) modelling procedures were applied to estimate and account for the stochastic components of the data such as seasonality. In this study an ARIMA model was first fitted to the pre-implementation data to identify the structure of the pre-implementation trends. Once the best fitting model¹ was identified by using the `auto.arima` function of the Forecast package in R (Hyndman et al., 2023), the estimated parameters of the final model were then fitted to the entire data series to estimate the effects of FMI implementation.

¹ Seasonality was not detected in our models likely due to recentering of the time series data.

FINDINGS

Offences in Custody – Order

Figure 1 shows the average weekly rate of offences in custody related to order infractions across the observation window of 163 weeks. The figures presented in this report can be interpreted so that time 0 (the red vertical line) indicates the point in time where FMI training was implemented, and the trend line to the left and right of that point indicates pre-implementation and post-implementation trends in the outcome of interest respectively. The trend line in Figure 1 shows that FMI training was implemented at a point in time where there was a downward trend in order related offences in custody.

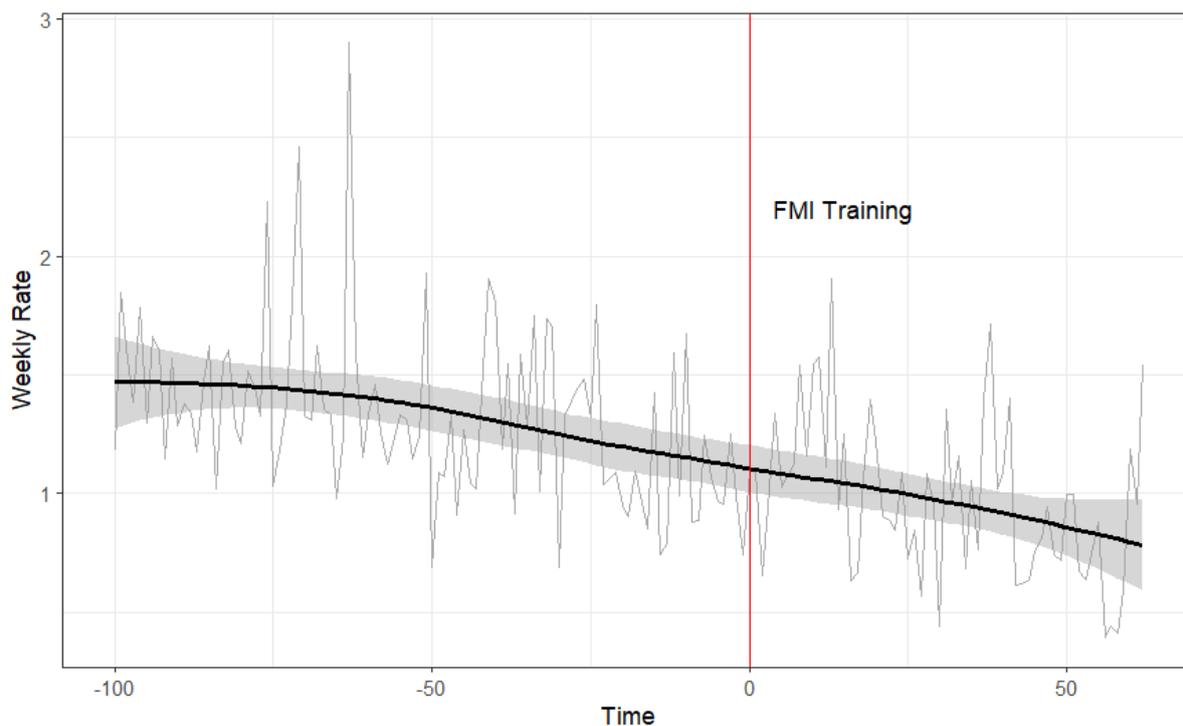


Figure 1. Average weekly rate of offences in custody related to order infractions.²

To determine if FMI had a measurable impact on trends beyond what can be expected from the existing downward trend, an ARIMA model was fitted to the data. An ARIMA (2,0,1) model was determined to be the best fit for this time series ($Q(12) = 5.28$, $p = .9$). The step change was not significant ($b = -0.114$ (95% CI: $-0.411 - 0.183$); $p = .45$), however the ramp change approached significance ($b = -0.007$ (95% CI: $-0.014 - 0.001$); $p = .07$), suggesting that implementation of FMI may be associated with a marginal gradual decline in order-related offences in custody. To give a descriptive indication of the effect, we observed an average decline of 12% per year in order offences over the period before FMI training, and an average decline of 24% per year after training.

² The trend line in the figures shown in this section are LOESS smoothing lines, which were derived by applying a non-parametric smoothing function.

Offences in Custody – Alcohol and other Drugs

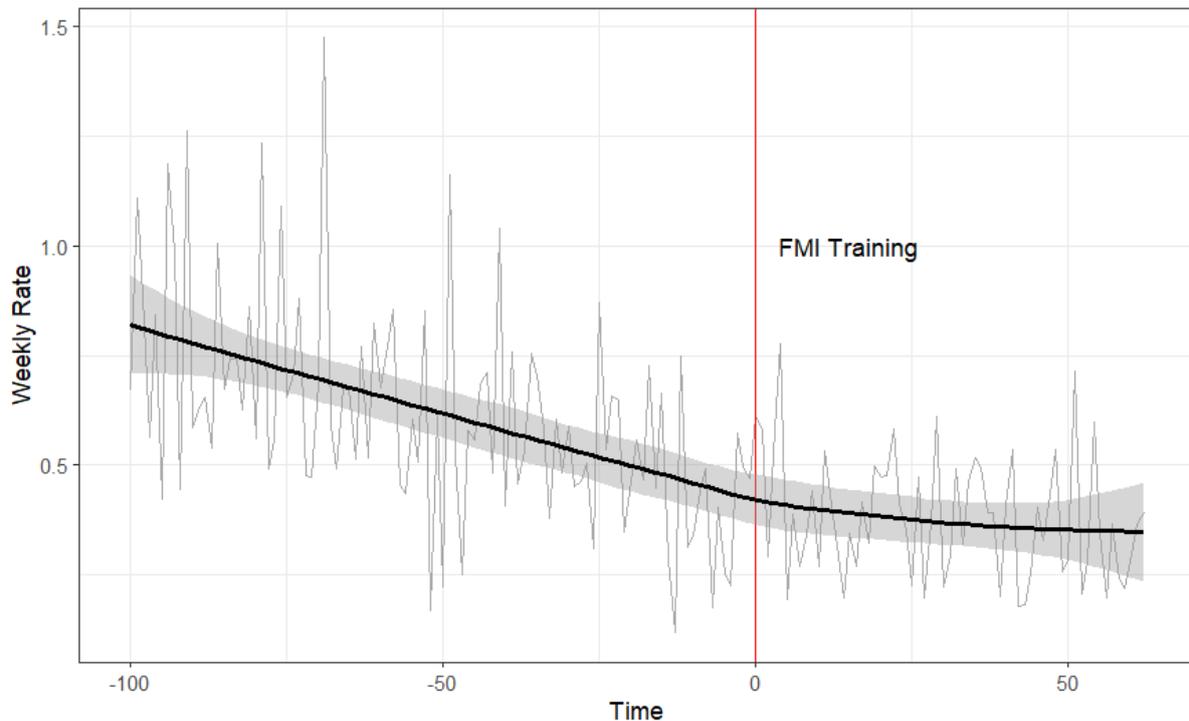


Figure 2. Average weekly rate of offences in custody related to alcohol and other drugs.

Figure 2 shows a declining trend in weekly rates of offences in custody related to alcohol and other drugs across the entire observation period. The ARIMA (2,0,1) model ($Q(12) = 16.00$, $p = .19$) revealed no significant step ($b = -0.026$ (95% CI: -0.177 ; 0.125); $p = .73$) or ramp ($b = -0.003$ (95% CI: -0.08 ; 0.002); $p = .27$) changes. This suggests that the implementation of FMI did not have a significant impact on the weekly rates of alcohol and drug related infractions beyond what may be expected from the pre-existing declining trend.

Offences in Custody – Violent

Figure 3 shows that the weekly rate of violent offences in custody remained relatively stable within the observed period. This time series data was most appropriately modelled with ARIMA (0,0,0), ($Q(12) = 11.86$, $p = .46$). The model found a marginal step change ($b = -0.068$ (95% CI: -0.004 ; 0.140); $p = .07$) and a significant ramp change was observed ($b = -0.003$ (95% CI: -0.004 ; 0.001); $p = .01$). The marginal step change suggests that there may be an immediate increase in the rates of violent offences in custody, while the significant ramp change indicated that there was a gradual decline in rates after FMI implementation. We observed an average decline of 6% per year in violent offence rates in the period before FMI training, and an average decline of 25% per year after FMI training.

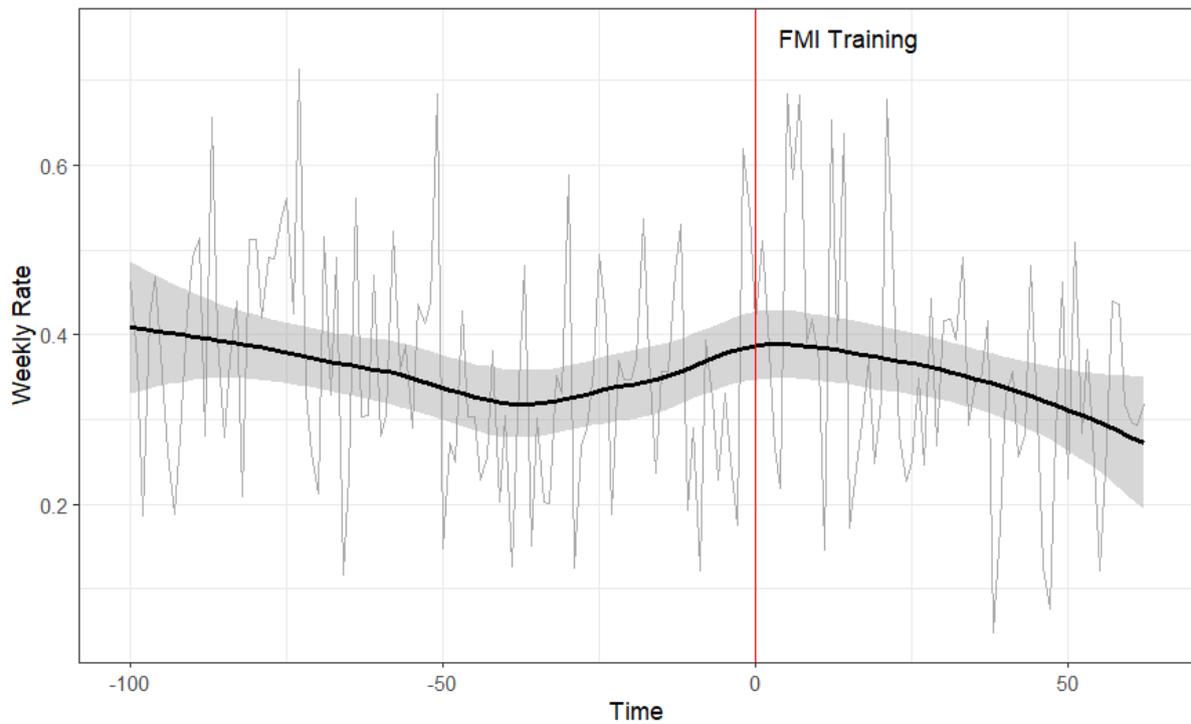


Figure 3. Average weekly rate of violent offences in custody.

Assault

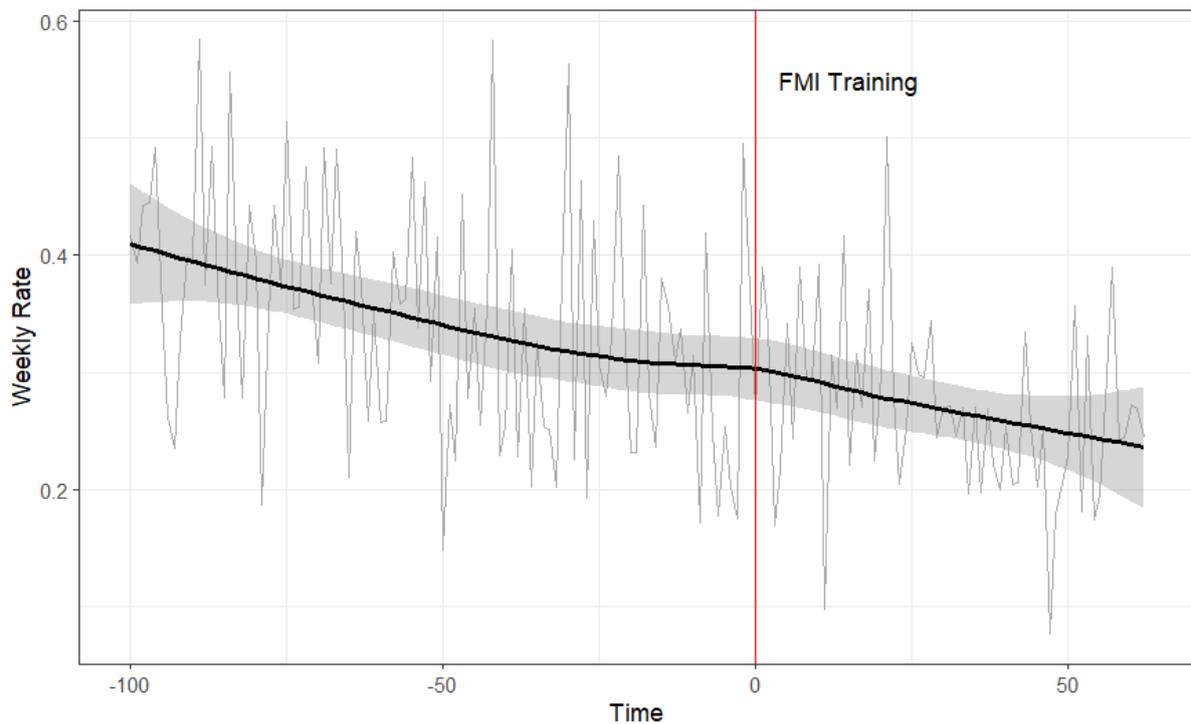


Figure 4. Average weekly rate of assault incidents.

Figure 4 shows a consistent decline in the weekly rate of alleged, threatened, suspected and confirmed assault incidents prior to FMI implementation, which continues throughout the study period. The best fitting ARIMA (0,0,0) model ($Q(12) = 16.87, p = .015$) did not find any significant step change ($b = -0.039$ (95% CI: $-0.088; 0.010$); $p = .12$). The ramp change however approaches significance, which suggests that FMI was associated with a marginal decline in assault incidents, ($b = -0.001$ (95% CI: $-$

0.003; 0.000); $p = .07$). We observed an average decline of 14% per year in assault rates over the pre-implementation phase, compared to an average decline of 19% per year post-implementation.

Use of Force

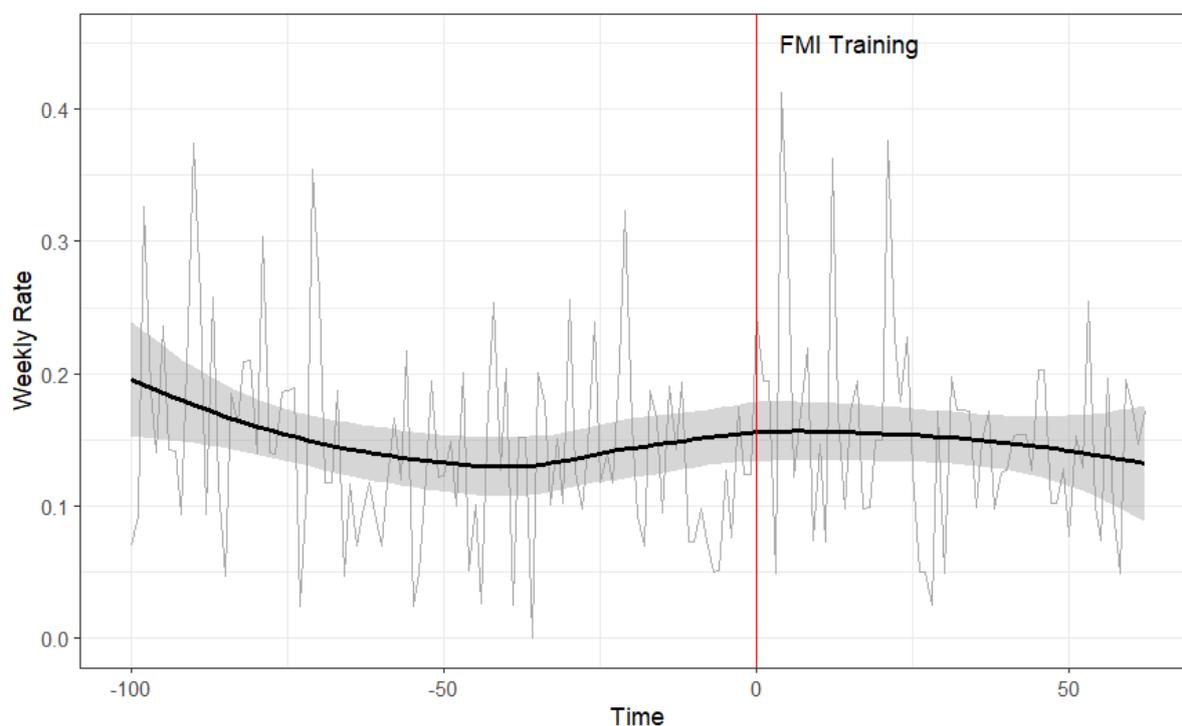


Figure 5. Average weekly rate of use of force incidents.

Figure 5 shows that the weekly rate of use of force (UOF) incidents remained stable over the observed period. An ARIMA (3,0,0) model ($Q(12) = 14.85$, $p = .25$) suggests that FMI did not have any statistically significant impact on weekly UOF rate: step ($b = 0.036$ (95% CI: -0.006 ; 0.078); $p = .09$) and ramp ($b = -0.001$ (95% CI: -0.003 ; 0.001); $p = .11$). This suggests that implementation of FMI training did not have an impact on UOF rates.

CONCLUSIONS

Previous evaluations found that both inmates and staff perceived positive outcomes of FMI training that are relevant to improved correctional climates and prosocial behaviour change. For example, inmates felt that FMI conversations with officers helped improve their thinking skills, while FMI-trained officers held more rehabilitative orientations towards inmates and engaged in better quality interactions with inmates (Kenny & Webster, 2015; Tate et al., 2017; Barkworth et al., 2021; 2023; Howard et al., 2021; Lobo et al., 2022). This study aimed to examine if these perceived benefits may translate into measurable changes on specific indicators of inmate and staff behaviours across Corrective Services NSW correctional centres where FMI was implemented.

Five outcome indicators were examined in this study. These are the weekly rates of offences in custody related to order violations; alcohol and other drugs; proven violent offences; all assault incidents, including alleged and suspected; and staff use of force responses. Out of the five indicators, we found significant trend changes in one; implementation of FMI was linked to a significant gradual reduction in proven violent offences in custody. This finding supports those of previous studies that found perceived improvements in inmates' thinking skills, as well as improvements in rapport and interactions with officers

(Tate et al., 2017). It is well established that the quality of interactions between inmates and staff can have an impact on occurrences of violence and aggression within correctional centres (Day et al., 2011; Gadon et al., 2006; Tonkin, 2016). Relatedly, the reduction in violent offences may have also been influenced by the FMI training component intended to enhance officers' de-escalation skills.

We also found that implementation of FMI appeared to be associated with gradual reductions in order-related offences and assault rates that approached statistical significance ($p = .07$ for both). One possible reason for these marginal results may be due to the strong downward trend that was observed before FMI implementation. These downward trends, which may be associated with disruptions to operations due to the pandemic, may have contributed to error in detecting the impact of FMI. In this regard, greater statistical power or a larger effect size may be required to isolate the unique contribution of FMI. A related consideration is that FMI training is intended to facilitate broader behavioural and cultural shifts within correctional centre climates that are likely to take time (e.g. Barkworth et al., 2021) and consistent with this, there were indications that trends shifts appeared to be most prominent towards the end of the time series. Extending the time series to include more post-implementation datapoints could therefore result in a better fitting model as additional lead in time may be required for staff to develop training-related competencies, and for flow on changes to be reflected in our outcomes of interest.

In considering that lead in time may be required for the effects of FMI to unfold we acknowledge that it is less likely that we will find a step or immediate change in staff and inmate behaviours after FMI implementation. In this regard, it should be noted that we found a marginal effect where implementation of FMI was associated with an immediate increase in violent offences in custody. This effect was not significant and is most likely an artefact related to model fit. This can be improved by having more datapoints in both the pre- and post-implementation phases.

Despite the significant reduction in violent offences and the purported benefit of FMI in enhancing officers' de-escalation skills, we did not find any evidence to suggest that FMI was associated in reductions in use of force responses by officers. On this, we acknowledge that there are data quality issues that have constrained our analysis of this indicator. Use of force incidents can involve other correctional staff such as the Immediate Action Team (IAT) who are not FMI trained. We were, however, unable to identify and segregate our analysis based on the role of the staff member involved in the incident, and in what situations these incidents occurred in.

We also did not find any evidence to suggest that the implementation of FMI had any impact on rates of alcohol and other drug related offences in custody. It may be argued that FMI could have an impact on reducing these offences through mechanisms of change such as improvements in inmates' decision-making processes, motivation for compliance with authority, and overall experience of prison social climate. However, issues relating to alcohol and other drug addiction have complex medical, psychological, and situational influences that may be outside of the scope of non-specialist interventions. From this perspective, it is possible that FMI could have an observable impact on such behaviours if dedicated therapeutic supports and other resources to help address alcohol and other drug issues within correctional centres are accompanied by staff training to increase inmate motivation to engage in such services.

Some other limitations of the study are noted. For many of our outcomes of interest, we observed prevailing downward trends before FMI was implemented. Although ARIMA modelling allowed us to mitigate the impact of external shock on the data such as correctional centre lockdowns due to COVID and the staggered FMI rollout, we acknowledge that the FMI was implemented at a time of significant change within Corrective Services NSW correctional centres, and it was not possible to account for other influences which occurred concurrent to the implementation of FMI training.

To conclude, the current study is the first evaluation that shows quantitative evidence for association between FMI training and measurable changes in inmate behaviour. While we acknowledge that there are certain limitations in this study, there are promising indications that FMI training can have significant and observable impacts on key correctional centre outcomes relating to safety and order, such as inmate violence. Future study would be beneficial to understand how FMI contributes to changes in prison climate and inmate and staff behaviours over the longer term, as well as the potential implications for the rehabilitative influence of correctional centres and ultimately, inmate reoffending outcomes.

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