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Evaluation of digital technology in prisons

Emma J. Palmer, Ruth M. Hatcher and Matthew J. Tonkin

University of Leicester

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The authors

Dr Emma Palmer, Dr Ruth Hatcher and Dr Matt Tonkin are based at the University of Leicester, UK.

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1. Summary

During the last three years, digital technology has been installed into a number of public prisons in England and Wales. The technologies that have been introduced into prisons and which are the focus of this report are: in-cell telephony, whereby PIN telephones[1] are installed within prisoner cells, rather than on landings; self-service kiosks on wing landings which allow prisoners to complete administrative tasks that were previously completed through a paper-based system; in-cell laptops allowing prisoners to access the same functions as through the wing self-service kiosks; and mobile devices for prison staff with access to Prison-National Offender Management Information System (P-NOMIS).

The aims of the technology are to:

- Provide more opportunities for prisoners to build skills (including IT skills), and assist in their rehabilitation.
- Provide prisoners with the ability to be more responsible for themselves.
- Improve relationships between prisoners and between prisoners and staff, thereby reducing prison violence.
- Improve relationships between prisoners and people outside of prison.
- Increase staff job satisfaction.

Reduce the time taken for administrative tasks by prison officers, freeing up their time to spend on providing greater opportunities for officers and prisoners to have more positive interactions.

[1] PIN telephones allow callers to use a Personal Identification Number (PIN) instead of money or a pre-paid phonecard.

1.1 Approach

The objective of the research was to evaluate digital technology in prisons to identify what the benefits are, as well as any disadvantages or unintended outcomes, of implementing the technology. To do this, the specific research questions addressed whether digital technology:

- Increases access to and improves the communication of knowledge within prisons for both prisoners and staff.
- Improves prisoner confidence in using IT.
- Improves prisoner relationships with staff, other prisoners and those outside of the prison, and reduces prison violence.
- Increases staff job satisfaction and prisoner wellbeing.
- Reduces prison officer time spent completing key activities/tasks.

To answer the research questions, four methodologies were used in a sample of seven prisons with digital technology and four prisons without technology: (1) interviews and/or focus groups with staff and prisoners in the prisons with digital technology only; (2) a prisoner survey asking about use of telephones, account balance checking, ordering meals, ordering canteen and submitting applications in all prisons; (3) analysis of prison management data on prison violence and staff sickness rate over time for all prisons; and (4) a task time analysis to identify any time savings as a result of the implementation of technology in all prisons.

1.2 Key findings

The findings are organised based on the themes that emerged from the analysis of the qualitative data.

Functionality and access

- Prisoners and staff perceived that the accessibility of the in-cell telephones, self-service kiosks and laptops were a significant improvement on previous arrangements of wing telephones and the paper applications system. The prisoner survey showed that this was particularly the case for checking account

balances via kiosks and/or laptops; the process for checking account balances was seen to be a major improvement.

- Prisoners reported having more privacy and time to make calls on in-cell telephones and analysis of call data demonstrated an increase in telephone use after the implementation of in-cell telephones. However, in all prisons, prisoners considered the cost of telephone calls to be too high, even though the costs were lower for the in-cell telephones than those on the wings.
- The prisoner survey showed that there was no perceived reduction in the promptness of responses to applications, although the qualitative research found that prisoners appreciated the transparency of the digital technology for the application process. The benefit of self-service kiosks/laptops in cells on ordering canteen and meals was less clear-cut.
- Some staff felt that the in-cell telephones were likely to have reduced illicit mobile phone use for those prisoners using mobile phones to keep in touch with family.
- Outages of the in-cell telephones and self-service kiosks caused significant problems on the wings, with prisoners becoming frustrated. Contingency plans did not appear sufficiently robust and would benefit from review.
- Staff were less enthusiastic about the P-NOMIS mobile devices, reflected in the low usage of the handsets in both prisons which had this technology. However, the staff who did use it noted a number of advantages, in that the devices allowed them to do their jobs more effectively and efficiently through having information at their fingertips.

Uptake and use of technology

- Some prisoners and staff were hesitant to engage with new ways of working with the kiosks, laptops and P-NOMIS mobile devices, some of which related to unfamiliarity and a general reluctance to use technology. It was recognised that, for some individuals, such changes can take time to embed but that with the right support they can be managed successfully. However, the prisoner survey didn't suggest there was any impact of the technology on their IT skills or knowledge.
- There was low usage of P-NOMIS mobile devices, with staff reluctant to use the handsets on the wings due to several reasons. These included the lack of familiarity with information technology generally, a perceived lack of convenience,

concern over using a device within the prison environment, or due to the devices not being intuitive to use.

- Misuse of the digital technology was rare, although there were a few incidents reported, with the main concerns around inappropriate use of and damage to in-cell telephones.

Interactions and relationships

- The qualitative research indicated that the implementation of the technology, particularly in-cell telephones, had reduced the potential for tension on the wings between prisoners and staff. However, the findings from the prisoner survey were more equivocal, and the management data did not show a relationship between the implementation of the technology and proven adjudications.
- Staff and prisoners commented that the presence of digital technology, and in particular the in-cell telephones, was seen as an incentive for good behaviour by prisoners.
- There were mixed findings about whether the introduction of in-cell telephones and self-service kiosks led to staff having more constructive interactions with prisoners. Low levels of conflict between prisoners and staff when using the self-service kiosks were reported in the prisoner survey.
- It was felt that the introduction of in-cell telephones had reduced tension between prisoners. Some staff commented however, that although in-cell telephones could potentially reduce the bullying and victimisation that can occur when prisoners use wing telephones, it could still be occurring behind cell doors. The prisoner survey showed low levels of conflict between prisoners when using the self-service kiosks.
- In-cell telephones were seen as contributing to prisoners' relationships with people outside the prison and helping to maintain family ties, particularly for those prisoners with young children. Prisoners reported having more privacy and time to make calls, and analysis of call data showed an increase in calls after the in-cell telephones were installed.

Staff and prisoner wellbeing

- The overarching view from staff and prisoners across all prisons was that the introduction of digital technology, in particular the in-cell telephones, had contributed to an improvement in the psychological wellbeing of prisoners.
- Both staff and prisoners reported that the introduction of all the technologies had led to an increase in feelings of agency and autonomy amongst prisoners. This increase in personal responsibility was seen to be a key benefit of the technologies.
- Staff and prisoners reported a perceived reduction in incidents of friction and feelings of tension in prison. However, staff did not seem to think there had been a direct impact of any of the technology types on their wellbeing.
- Telephone call volume data showed an increase in the number of calls made to the Samaritans after the implementation of in-cell telephones, indicating that prisoners were using the telephones to access professional support.
- The analysis of the prison management data did not suggest an impact of the technology on proven adjudications, rates of prisoner self-harm or staff sickness rates. The volume of calls in general and to the Samaritans were not associated with rates of prisoner self-harm.

Staff workload

- Both the task time data and interviews/focus groups indicated that the introduction of digital technology had impacted on staff workload. The nature and scale of this impact varied between staff groups, on the type of technology installed, and on the type of activity/task undertaken.
- The greatest reductions in task time as a result of kiosks/in-cell laptops being installed were associated with processing prisoner balance requests and processing prisoner applications, menu orders and canteen orders. The installation of these technologies did not, however, appear to impact on the time taken to book visits.
- The amount of staff time saved varied across prisons, particularly where prisons currently utilise prisoners to complete the most time-consuming elements of these tasks.

- In those prisons that do not currently have kiosks/in-cell laptops, the future implementation of these technologies may have the potential to reduce the time it takes to complete certain activities/tasks.
- There may be scope for additional time savings to be achieved in the future, for example, by addressing issues relating to functionality and by making changes to how the technology is implemented and used in prisons.
- The introduction of digital technology appears to save time for wing-based staff, but in some circumstances may increase the workload of other staff, for example, an increase in the volume of calls meant more work for operational support grade staff responsible for monitoring calls.

There are a number of limitations to be borne in mind when interpreting the findings:

- Several other initiatives had been ongoing across the prison estate more widely during the implementation of the digital technology, which may have impacted on the outcomes of this research.
- The response rates for the prisoner survey were low for some prisons (albeit typical of prison research) and the qualitative research necessarily only included a small number of prisoners and staff, which may impact on the generalisability of the findings.
- It should also be noted that responses to the surveys and qualitative research are based on the perceptions of participants.
- However, the use of a number of methodological approaches and triangulation of findings from these allows these limitations to be mitigated.

Overall, the findings show that the implementation of the digital technologies was perceived to have met many of the expected outcomes, particularly the in-cell telephones.

2. Context

In modern society, technology is firmly embedded and serves many vital purposes. From an organisational point of view, technology can vastly enhance working practices, increasing the efficiency with which services are provided and tasks completed. Technology is also a vital part of everyday lives, including applying for jobs and benefits, conducting online banking, booking medical appointments, purchasing shopping and communicating with family, friends and acquaintances.

However, despite the proliferation of technology in the everyday lives of most people, it has been argued that prisoners "constitute one of the most impoverished groups in the digital age" (Jewkes & Reisdorf, 2016, p. 1), and that such impoverishment can contribute to social isolation. In turn, this can limit the utility of rehabilitative efforts both within and outside the prison gates (Champion & Edgar, 2013). As explained by Reisdorf and Jewkes (2016), the lack of access to online and social media both isolates prisoners from their social support networks and undermines their digital literacy skills (by not allowing them to keep pace with technological developments). This makes it more difficult for prisoners to reintegrate back into the community when released from prison, while also making it more difficult to gain employment (which increasingly relies on technological literacy skills). This leads prisoners to experience what the authors refer to as "supercharged digital exclusion". For longer-term prisoners, it has also been commented that our prisons don't prepare prisoners for the digital world within which we now live.

Another potential function of technology in prisons is that it allows prisoners to take responsibility for some aspects of their lives that were previously managed by prison officers. Not only could this help to teach prisoners important self-management skills and engender decency within prisons, but it "frees up significant periods of staff time formerly spent on form-filling [allowing] this newly acquired time [to be] spent on more meaningful interactions with prisoners" (Jewkes & Reisdorf, 2016, p. 540).

Thus, the literature suggests greater access to technology in prisons might produce a range of benefits for prisoners. There are also potential organisational benefits, in terms of

helping prisons to achieve more time-efficient and cost-effective ways of working that allow them to make best use of their limited resources.

Prisoner self-service (PSS) technology was introduced into a small number of private and public-sector prisons in England and Wales in the early 2010s. While very little research has examined the impact of introducing digital technology into prisons in England and Wales, one such study exists (McDougall, Pearson, Torgerson, & Garcia-Reyes, 2017). This study found that, through the use of self-service kiosks instead of traditional paper-based systems, prisoners were able to take responsibility for tasks such as completing menu orders, ordering from the prison shop, and checking their prison account balances. Consequently, prisoners reported that they felt more in control of their lives in prison and would be more confident in coping with technology on their release. The study also reported significant reductions in adjudications over the two-year period following installation of technology and a reduction in proven reoffending in the first year after release[2]. While these results imply improved behaviour within and outside of the prison following the introduction of self-service technology, other predicted improvements, such as increases in offending behaviour programme completions, were not observed during the study period. The reduction in the number of adjudications was not maintained after two years prompting the authors to call for further research on the impact of such technology within prisons. It should be noted that there was no evidence on what other initiatives may have also been in place/introduced in the prisons during the same period as the technology which may have had an impact on the outcomes of interest.

Following the 2016 White Paper on Prison Safety and Reform (MoJ, 2016), HMPPS invested in installing technology more widely into prisons in England and Wales to help enable delivery of the paper's commitments. The technology included:

- **In-cell telephony**, whereby PIN telephones are installed within cells. The telephones are used via individual PINs (in the same way as telephones situated on wing landings) and access is controlled by the prison governor. Prisoners can

[2] The study used a quasi-experimental methodology (a natural stepped-wedge design) with prisons acting as their own controls to look at the impact on adjudications. Reoffending rates were analysed by (1) comparing actual vs. predicted reoffending rates before and after installation of the technology in each prison and (2) comparing technology prisons with comparator groups of similar category prisons without self-service kiosks.

only dial pre-approved numbers or certain freephone numbers, e.g. Samaritans, charity help-lines.

- **Self-service kiosks** on wing landings which allow prisoners to complete administrative tasks, such as checking their prison account balances, placing menu orders, ordering items from the prison shop (known as 'canteen'), making PIN phone top-ups, and making applications[3], which are normally completed through a paper-based applications system administered by prison officers.
- **In-cell laptops** allowing prisoners to access the same functions as through the wing self-service kiosks. Access is also available to prison radio and resources such as books and training/education materials.
- **Mobile devices for prison staff** with access to P-NOMIS. This access allows staff to access prisoner information more quickly and, therefore, facilitate prompt responses without recourse to time-consuming paper-based tasks or the need to log onto desk-based computers in wing offices.

A number of outcomes beneficial to both prisoners and staff were expected from these, including:

- More opportunities for prisoners to build skills (including IT skills), and assist in their rehabilitation.
- Ability for prisoners to be more responsible for themselves.
- Improved relationships between prisoners and between prisoners and staff, thereby reducing prison violence.
- Improved relationships between prisoners and people outside of prison.
- Increased staff job satisfaction.
- Reduced time for administrative tasks by prison officers, freeing up their time to spend on providing greater opportunities for officers and prisoners to have more positive interactions.

[3] Applications can be submitted by prisoners to departments and staff within the prison to address a range of queries and issues e.g. organising educational activities, adding a phone number to their approved list of numbers, scheduling a health care appointment.

2.1 Aims and Research Questions

The aim of the research was to evaluate digital technology in prisons to identify what the benefits are, as well as any disadvantages or unintended outcomes, of implementing the technology.

The specific questions addressed whether prison technology:

- Increases access to and improves the communication of knowledge within prisons for both prisoners and staff.
- Improves prisoner confidence in using IT.
- Improves prisoner relationships with staff, other prisoners and those outside of the prison, and reduces prison violence.
- Increases staff job satisfaction and prisoner wellbeing.
- Reduces prison officer time spent completing key activities/tasks.

The research also aimed to assess whether impacts varied depending on what was installed and how it was delivered, i.e. through in-cell laptops versus on-wing self-service kiosks.

3. Approach

3.1 Methods

To answer the research questions, four methodologies were used (see Table 3.1):

1. Qualitative data analysis of 32 interviews and 21 focus groups were conducted with staff and prisoners in the prisons with digital technology. These were used to explore prisoner and staff experiences of the digital technology.

2. A prisoner survey was administered to 2,750 prisoners across the 11 prisons asking about use of PIN telephones, checking account balance, ordering meals and canteen, making applications, accessing information on prison activities and messages, confidence using IT, use of self-service kiosks, and general experience of life on wings. Relationships between prisoners and staff was also explored using the *Hold and Support* scale of the Essen Climate Evaluation Schema (EssenCES, Schalast & Tonkin, 2016), which is a questionnaire measuring the social and therapeutic aspects of prison wings. Of these, 916 surveys were completed (a response rated of 33.3%, although this varied from 19% - 70%). These data were used to make comparisons between prisons with digital technology and comparator prisons without the technology; where the sample size was sufficient, statistical analysis was conducted.

3. Quantitative data analysis:
   - Management information data on proven adjudications, prisoner self-harm rates and staff sickness rates over time was analysed to explore any changes before and after implementation of the technology.
   - Data on telephone call volumes was analysed to look at any changes following implementation of the technology.

4. Data were collected on time taken to complete activities/tasks that were most likely to have been impacted by the introduction of digital technology. These data were used to identify whether the introduction of technology led to reductions in task

time and whether technology has the potential to deliver time-savings in those prisons where it has yet to be implemented.

Table 3.1: Methodologies used to address the research questions

Methodology	Objective	Which prisons?
Qualitative interviews and focus groups with prisoners and staff	To explore prisoner and staff perceptions and experiences of the technology.	Conducted in digital prisons only
Prisoner survey	To measure use of PIN telephones, checking account balances, ordering meals and canteen, use of self-service kiosks and confidence in using IT.	Conducted in digital and comparator prisons
Quantitative analysis: (1) Prison management information **(2) Data on volume of telephone calls**	To make an assessment of impact of the technology on key outcomes of interest (proved adjudications, rates of prisoner self-harm, staff sickness rates). To make an assessment of impact of the in-cell telephones on volume of telephone calls	Conducted for digital prisons only
Task time analysis	To explore whether the technology reduced the time taken by staff to perform key tasks, or has the potential to reduce task time in comparator prisons.	Conducted in digital and comparator prisons

At the time of data collection (November/December 2018), digital technology had been rolled out in only a small proportion of public-sector prisons: 12 had in-cell telephony only; six had in-cell telephony and landing kiosks; and two had in-cell telephony, landing kiosks, and in-cell laptops. In addition, three prisons also had mobile devices with P-NOMIS for prison staff as well as the in-cell phones.

For the research, data were collected from eleven prisons. Of these, seven prisons had one or more digital technologies and four prisons without any technology acted as comparator prisons.

A fuller account of the methodology and the data analysis approaches can be found in Appendix A.

3.2 Limitations

Several other initiatives had been ongoing across the prison estate more widely during the implementation of the digital technology, which may have impacted on the outcomes of this research. The two key national initiatives which have taken place or commenced during the time frame of the digital technology being implemented are (1) a drive to recruit an additional 2,500 prison officers by the end of 2018, a target that was achieved several months early and (2) implementation of the Key Worker scheme (Offender Management in Custody – OMiC) whereby prison officers will be trained in the Key Worker role and given dedicated time to coach, support and mentor offenders in custody.

Due to organisational constraints it was often not possible to distribute the prisoner surveys across a wide range of wings, with some prisons giving them out on one/two wings, whereas others distributed them more widely. Therefore, it is possible that some of the findings are reflective of particular wings, rather than the whole prison. Furthermore, the response rate was low for some prisons, albeit typical of prison research[4]. Statistical analysis for between prisons comparisons were only conducted where sample sizes were of a sufficient size. These issues may, therefore, impact on the generalisability of the findings. It should also be noted that responses to the surveys and qualitative research are based on the perceptions of participants. However, the use of a number of methodological approaches and triangulation of findings from these allows these limitations to be mitigated.

The prison management information metrics used to assess prison violence, prisoner self-harm and staff sickness are likely to be impacted on by factors other than digital technologies relating to both local and national factors, which needs to be borne in mind when interpreting these findings in isolation from the results of the other methodologies. For example, at the time of the research, assaults and rates of prisoner self-harm had been rising over the whole prison estate (Ministry of Justice, 2018).

The task time figures reported must be viewed as indicative rather than definitive and precise. While steps were taken to ensure that the data were as robust as possible, estimating the time taken to complete activities (where multiple people are involved and

[4] The overall response rate = 33.3%, with a range of 19% - 70%

where processes can change depending on circumstances within the prison) and estimating the potential future impact of digital technology is necessarily imprecise. More precise estimates might be achieved by capturing task time prospectively rather than retrospectively. It was not possible to obtain pre-implementation data on the number of applications submitted and average processing times. Therefore, it was not possible to test whether the implementation of digital technology reduced processing times.

Finally, time constraints meant that it was not possible to capture pre-post change from prisoners and staff. This limits the conclusions that can be drawn from the project as a piece of evaluation research. Future research would benefit from being able to follow prisons and their staff and prisoners through the implementation journey to better capture change.

However, although each methodological approach has limitations, triangulating findings from all four approaches allows more confidence in the overall findings.

3.3 Structure of the report

The remainder of the report is structured as follows:

- Chapters 4-8 present the findings from the research. The themes that emerged from the qualitative analysis are used to structure the presentation of the results.
  - Functionality and access (Chapter 4)
  - Uptake and use of the technology (Chapter 5)
  - Interactions and relationships (Chapter 6)
  - Wellbeing (Chapter 7)
  - Impact on staff workload (Chapter 8)
- Chapter 9 summarises and concludes the report.

4. Functionality and access

4.1 Key Findings:

- Prisoners and staff perceived that the accessibility of the in-cell telephones, self-service kiosks and laptops were a significant improvement on previous arrangements of wing telephones and the paper applications system. The prisoner survey showed that this was particularly the case for checking account balances via kiosks and/or laptops; the process for checking account balances was seen to be a major improvement.
- Prisoners reported having more privacy and time to make calls on in-cell telephones and analysis of call data demonstrated an increase in telephone use after the implementation of in-cell telephones. However, in all prisons, prisoners considered the cost of telephone calls to be too high, even though the costs were lower for the in-cell telephones than those on the wings.
- The prisoner survey showed that there was no perceived reduction in the promptness of responses to applications, although the qualitative research found that prisoners appreciated the transparency of the digital technology for the application process. The benefit of self-service kiosks/laptops in cells on ordering canteen and meals was less clear-cut.
- Some staff felt that the in-cell telephones were likely to have reduced illicit mobile phone use for those prisoners using mobile phones to keep in touch with family.
- Outages of the in-cell telephones and self-service kiosks caused significant problems on the wings, with prisoners becoming frustrated. Contingency plans did not appear sufficiently robust and would benefit from review.
- Staff were less enthusiastic about the P-NOMIS mobile devices, reflected in the low usage of the handsets in both prisons which had this technology. However, the staff who did use it noted a number of advantages, in that the devices allowed them to do their jobs more effectively and efficiently through having information at their fingertips.

This theme concerns staff and prisoners' comments on the functionality of the digital technology available to them, how the technologies had been implemented, and the access that they had to the digital functionality.

4.2 Access to telephones/calls

In relation to the in-cell telephones, the decision as to the times of day the telephones were operational was devolved to each prison. There are therefore a number of models in operation across the estate: some prisons opt to turn the telephones off at certain points in the day to encourage prisoners to attend work and other activities, some turn them off during meal times to ensure the smooth running of this operation, and others have opted to turn the telephones off overnight to restrict the potential of late night nuisance calls and disagreements over noise between those sharing cells. A further reason given by prison officers for limiting access to the in-cell telephones overnight is to minimise the chances of distress or self-harm should a prisoner have an upsetting call while locked in their cell. The feedback from prisoners and staff, regardless of the system adopted, on the increased availability of the in-cell telephones over the wing-based telephones was positive:

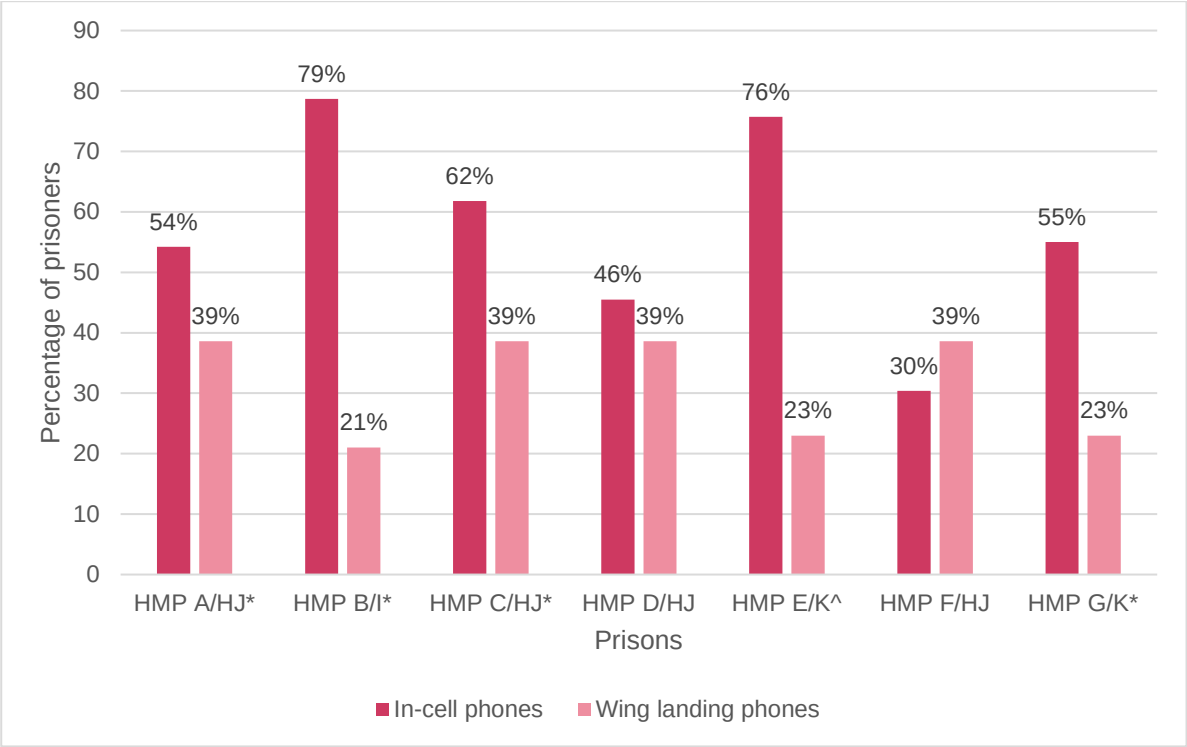
> *"The fact that they can ring when it's suitable for them because some of their partners' work, they work nightshifts, they pick up from school, so when they're out on association it wasn't always ideal for them. You know, say for example their partner works nights, their association period was in the morning, the partner would be in bed, so it'd be very difficult for them to contact them." (Prison Officer)*

> *"A lot better. No queuing at landings, no waiting for association, no people shouting behind you while you're on the phone and I think they're on in your cell until 12 at night, it doesn't randomly go off." (Prisoner)*

These views seemed to be shared across prisoner and staff groups. The improved access that prisoners had to telephones was seen as an overwhelmingly beneficial development.

The prisoner survey results supported these findings, with prisoners in four of the seven prisons with in-cell telephones reporting significantly higher levels of agreement that they had enough time to speak to people on the telephone compared to their comparator prisons (see Figure 4.1).

Figure 4.1 Percentage of prisoners who strongly agree/agree that they have enough time to speak to people on the telephone (*n* = 908)



Note: * Significant difference between prisons. ^ The sample size was not large enough for robust statistical analysis

Of the six prisons with in-cell telephones for which statistical analysis was possible, prisoners made phone calls significantly more often than their comparators in four prisons. This was supported by analysis of the call data, which showed an increase in the number of call minutes post-implementation in the six prisons for which pre- and post-installation data were available. When the data for all prisons with in-cell phones were aggregated and compared with the aggregated data for the four comparator prisons, analysis found that prisoners made phone calls significantly more often in those prisons with in-cell phones.

4.3 Telephone credit and cost of calls

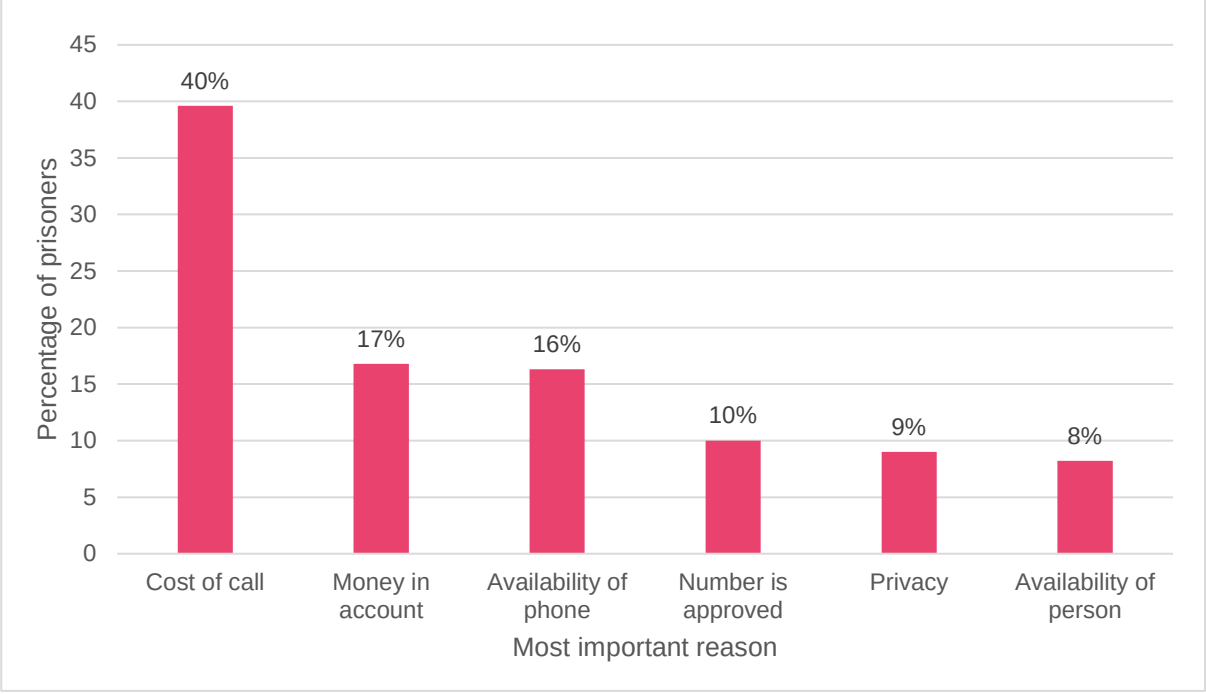
The policies concerning the allocation of credit to prisoners' telephone accounts were also determined locally; some prisons require prisoners to allocate money to telephone credit as part of their weekly canteen order, while other prisons permit daily top up of credit. Neither system seemed to raise particularly large concerns from either prisoners or staff. Possibly the main concern of prisoners relating to the in-cell telephones was the cost of the calls. Some prisoners stated that although the cost was lower than the landing

telephones, they were still too high, especially those to mobile phones and compared unfavourably with the cost of calls outside of prison:

> *"So a 20-minute phone call is £Xp[5] already. You know what I mean? And 20 minutes go so quickly as well when you got so much to say. You know, "Oh don't forget this," and the amount of times you find yourself going "Forgot that" pick the phone up again, and then if you get an answerphone, that's £Xp[5] straightaway." (Prisoner)*

The importance of the cost of calls in determining how often prisoners made telephone calls was supported by responses to the prisoner survey, in which 40% indicated that it was the most important reason (see Figure 4.2). This was found across all prisons, regardless of whether they had in-cell telephones.

Figure 4.2 Most important reason in determining how often prisoners make telephone calls for prisoners across all 11 prisons[6]



[5] Specific costs which were mentioned by interviewees have not been included as BT PIN Phone tariffs are commercial in confidence

[6] Total *n* = 719

4.4 Installation of telephones

Staff from more than one prison commented on the location of the in-cell telephones within the cell and the problems associated with this:

> *"The wiring … comes out very, very easily and that is generally what the damage is...What happens is they plug it in the corner, which is where the sockets are, and pull it to sit on the bed. ... and then the next minute, the curly whirly wire is at the bottom of the phone and the plug's still in the plug socket. So, maybe not quite fit for purpose." (Prison Officer)*

One member of staff commented that the prisoners had tried to get around this issue by extending the length of the cables themselves[7]:

> *"Prisoners are acquiring leads through workshops, slicing them together, extending them. If the cables were longer to start with, they wouldn't pull them and stretch them and break them, they wouldn't then have to adapt them and make their own." (Prison Officer)*

Prisoners commented that the leads had become currency on the wings due to this issue. Some prisoners commented that their cell contained a telephone but that they were not able to use it because of the lack of availability of a lead.

Staff were also of the view that the in-cell telephones had reduced the number of illicit mobile phones in the prisons. While it was recognised that it was unlikely that mobile phones would be eradicated from prison, it was thought that, for those who had been using mobile phones simply to keep in touch with family and friends, the incentive for them to continue to have them had been reduced:

> *"It helps stop the mobile phones for simple reasons. When there was no phones in the cells, the first thing I'd do was buy a mobile phone." (Prisoner)*

[7] The length of the leads is determined due to health and safety issues.

4.5 Access to applications on kiosks and laptops

The introduction of the digital applications system on self-service kiosks and laptops was seen to be an improvement on the previous arrangements and the majority of prisoners in the three prisons with self-service kiosks/laptops in cells, reported finding the kiosks easy to use (HMP C: 70%, HMP D: 83% and HMP E: 92%)[8]. Prisoners also reported using the kiosks frequently: in the two prisons with kiosks and in-cell telephones, over 90 per cent of prisoners reported using the kiosks at least "every 2 or 3 days a week". There was slightly lower use of the self-service kiosks in the prison with kiosks and laptops (HMP E), where 60% used the kiosks at least "every 2 or 3 days a week" (see Table 4.1). This is probably as a result of having laptops in cells with very similar functionality to the kiosks.

Table 4.1 Frequency of self-service kiosk use[9]

Prison	Most days	Every 2 or 3 days	Once a week	Once every 2 weeks	Once a month
HMP C	59%	31%	10%	0%	0%
HMP D	71%	20%	7%	2%	0%
HMP E	40%	19%	38%	0%	3%

For prisoners, the transparency of the digital applications system was a great improvement. They talked about how, under the paper-based system, applications would go missing or take a long time to be responded to. The ability to see that the application had been submitted directly to the appropriate department, to monitor the application, and to receive a response through the system was seen as an improvement:

> *"Yeah, you got a record. You can see the response. It's much easier to keep digitally than it is to keep paper versions of everything. So, you've got a digital trail which is really handy. And it's instant. If you put a paper app in today, there's no guarantee that it won't get to the right department in five, six, seven days even or it might go missing which used to happen a lot. Now, it's generated instantly." (Prisoner)*

[8] HMP C total *n* = 108; HMP D total *n* = 55; HMP E total *n* = 37

[9] HMP C total *n* = 107; HMP D total *n* = 55; HMP E total *n* = 37

Despite this, staff reported that concerns still existed as to response time under the digital system:

> *"From our point of view, we got told when it first came in and this is what we told the guys is that they get 72 hours as a maximum from when they put in the application to when they should have a response. That often doesn't happen. We have weeks sometimes." (Prison Officer)*

This concern about response times to applications not being improved by the self-service kiosks was echoed in the prisoner survey where prisoners from the prisons with kiosks reported no significant differences in promptness of response compared to the comparator prisons. Responses to other questions about applications in the prisoner survey showed mixed findings. Due to small sample size it wasn't possible to conduct statistical analysis for the prison with kiosks and laptops in cells, but of the other two prisons, one showed no significant differences in how often they were able to submit applications, the time available to do so, whether it was straightforward to submit them or how often they submitted them compared to their comparator prisons. For the other prison with self-service kiosks, prisoners reported submitting applications significantly[10] more often than their comparator prisons, but also reported significantly less agreement that they were able to submit applications when they wanted to[11] and had enough time to submit them[12].

The process for checking account balances was reported to be significantly better in the prisons with self-service kiosks than their comparators on the prisoner survey. Of the two prisons where sample size allowed statistical analysis, prisoners in both prisons reported they were able to check their balance when they wanted, that it was more straightforward to do, it was more up to date, and that they checked the balance more often than in their comparator prisons. Similarly, in the qualitative study, prisoners reported that the ability to monitor their account balance was a particularly useful function of the kiosks and laptops which helped them budget:

[10] HMP D: 2-3 days or more per week = 37.1% compared to HMP HJ: 2-3 days or more a week = 12.0%
[11] HMP D: strongly disagree/disagree = 29.7% compared to HMP HJ: strongly disagree/disagree = 13.8%
[12] HMP D: strongly disagree/disagree = 29.7% compared to HMP HJ: strongly disagree/disagree = 11.3%

> *"…as you're clicking the [canteen] items, you can see your available balance going down accordingly. So, for people that need to manage how much they're spending then that's really helpful." (Prisoner)*

Staff also commented on the timeliness of this information for prisoners:

> *"The fact that they can check their own balances on their laptop as opposed to having them come to us … gives them instant answers just like you and I when we do our online banking at home."* (Prison Officer)

The benefit of self-service kiosks/laptop in cells on canteen and meal orders was less clear-cut from the survey data. While prisoners in the prisons with self-service kiosks reported making canteen orders significantly more frequently than their comparators[13], they also reported significantly less agreement that there was suitable time to place canteen orders.[14] In one prison the process for submitting canteen orders was seen as more straightforward than its comparator. In another prison the only significant difference was that prison canteen orders were correct more often than in its comparator prison. There appeared to be no consistent results from the prisoner survey about whether enough time was available for meal orders and if it was a more straightforward process.

In prisons that did not yet have kiosks or laptops, there were many frustrations, from staff and prisoners, about the paper application system:

> *"I just think paper apps is so outdated, I just can't believe that we're still doing it. There's so much room for error, there's so much room for things to go missing which got longer waiting time on." (Prison Officer)*

4.6 Resilience and functionality of kiosks and laptops

Respondents reported that there had been a few significant outages since the technology had been introduced. These meant that all functionality of the systems was lost during these periods. Both staff and prisoners reported concerns about the adequacy of the

[13] HMP C: 2-3 days or more per week = 32.4% and HMP D: 2-3 days or more per week = 25.0% compared to HMP HJ: 2-3 days or more per week = 2.8%

[14] HMP C: strongly disagree/disagree = 21.8% and HMP D: strongly disagree/disagree = 31.5% compared to HMP HJ strongly disagree/disagree = 10.3%

response to these outages; it was clear from respondents that there was a lack of clarity as to the procedure for reporting outages and that the response time was not deemed to be appropriate given the potential for unrest in the prison:

> *"I know when it went down, we had a hell of a job getting somebody in initially to come back and try and get things reset." (Prison Officer)*

> *"As soon as cell phones down, bam, chaos on the wing, "Boss, my phones aren't working. Boss, boss, boss, boss, boss." and then obviously you got to fix it, and then when you say, "Oh, god, it's got to be someone from [the contractor] and it's coming in two weeks." (Prison Officer)*

Further, despite the potential for considerable impact, the contingency plans for continued operation of systems now managed through the kiosks during an outage were thought to be insufficient. One prisoner outlined how such plans were required:

> *"All I can say is as long as they have a backup for if there's ever an issue, that, you know, it's like if they can't order their canteen then, yeah, they know the system's gone down, we know you can't order your canteen, but this is what we're going to do instead of. And I think they have to be very, very clear." (Prisoner)*

The staff reported that during previous outages it had been assumed that they could revert to the paper-based systems. The problem in doing this, however, was that many of the staff were relatively new and hence not familiar with these systems:

> *"But then we had to do with the paper canteen sheets when that week went wrong, trying to explain because a lot of the officers are new as well, they don't know the old way" (Prison Staff)*

Further, in prisons with kiosks and in-cell telephones, the problem of the kiosks not operating had a knock-on effect on the ability to continue to operate the in-cell telephones. When the kiosk went down, the prison had to revert back to paper-based canteen sheets. This meant that the canteen charges were not deducted from prisoners' balances immediately (as they would if they had ordered through the kiosk). As such, the prison

could not allow prisoners to top up their telephone credit in case they drew on money that had already been spent on their canteen:

> *"If it runs smoothly and digital works, then it's great. If it doesn't, it's a massive impact. Like the other week, we had to go back to paper canteen sheets and there was massive problems...We had to turn the pin phone credit off as well because they can't order other stuff while the canteen sheets are being done because we can't touch their accounts until the canteen process is finished. Whereas when it's normally done on digital, it deducts their canteen straightaway, so they can order pin phone credit every day. And because they couldn't …, it was a massive impact." (Prison Staff)*

Prisoners and staff also spoke of minor software issues which impacted on functionality. For example, prisoners and staff commented on the small amount of space available for inputting the detail relating to an application. Prisoners from two of the prisons reported that once an application had been submitted to a department within the prison, it was not possible to submit a second one to that department, even if it related to a different issue, until the first application has been resolved:

> *"But if you send an app into reception … if they haven't replied to it and they're still pending on it, you cannot send another one. You have to wait. And it could take sometimes a month or whatever. And you will just sit and you'll be waiting." (Prisoner)*

Prisoners commented on the functionality of the kiosks and laptops; they thought that the way that the prisons were using this technology to provide information about events in the prison was good and could see how this could be developed further:

> *"The sharing of information has got a lot better...and the sharing of information is going to get lots better in terms of job vacancies and groups to take part, everything from regime, live regime information, all of that stuff is going to be built into this new system." (Prisoner)*

This comment suggests that the prisoners were thinking ahead about what the self-service kiosks and laptop could be used for, rather than the current functionality as the prisoner

survey didn't show any significant benefit in terms of having more access to information about services within the prison, although one prison did have a significantly higher level of agreement about knowing how to sign up to activities/services than comparator prisons. It was also observed from one self-service kiosk prison that visits were significantly more straightforward to organise than its comparator.

4.7 Functionality of P-NOMIS mobile devices

In relation to P-NOMIS mobile devices, the staff interviewed reported that there had been some initial problems with setting up the devices and with them crashing and/or not connecting to the network in certain areas of the prison:

> *"It doesn't get very good signal no matter where you are in a prison. And we've spent a lot of time and a lot of effort and a lot of money in the past trying to stop mobile phone signals and here we are encouraging them." (Prison Officer)*

These issues seemed to feed into a reluctance to incorporate these devices into their working practices.

> *"Because at the time I was on B-wing, I could never get a signal on B-wing...that's why I in the end just stopped using it as well because at the time I worked on B-wing when I got it issued to me, I couldn't get a signal in there and it…there's not much I could do with it." (Prison Officer)*

Those staff that did use P-NOMIS mobile devices, however, were largely enthusiastic about the available functionality, although some reported disappointment at the lack of some functions:

> *"Whereas NOMIS on the move is quite restrictive at the moment. So, like the visits, where they work, the spends, the release dates, so just basically the basic information….It's not as detailed as what the computer one is like. It hasn't got all the court dates and everything on it." (Prison Officer)*

The prisoner survey didn't show any evidence of P-NOMIS mobile devices impacting on prisoners' satisfaction with account balance checking compared with their comparator prisons. However, in both prisons (HMPs F and G), at the time of data collection the usage

of P-NOMIS mobile devices was low: in one prison, although 7-8 staff were trained only one person was using it; and at the other prison although there were around 40 handsets available for use, only 2 – 3 staff were using them. Therefore, it is likely that prisoners were not getting the opportunity to benefit from this technology.

Overall, prisoners and staff provided largely positive feedback on the functionality of the in-cell telephones, kiosks and laptops. The improved access to telephony and the ability to submit and monitor applications on the kiosks and laptops were seen to be a big improvement on the previous arrangements of telephones situated on the landing and the paper application system. There were some reservations from staff concerning P-NOMIS mobile devices. These stemmed from the connectivity issues and the perceived limited functionality; those who used the devices regularly, however, appreciated their utility. Finally, staff and prisoners reported that the impact of outages could potentially be detrimental to order and control within the prisons. Despite this, respondents reported that the contingency plans for such eventualities were not sufficiently robust and hence require review.

5. Uptake and use of technology

5.1 Key Findings:

- Some prisoners and staff were hesitant to engage with new ways of working with the kiosks, laptops and P-NOMIS mobile devices, some of which related to unfamiliarity and a general reluctance to use technology. It was recognised that, for some individuals, such changes can take time to embed but that with the right support they can be managed successfully. However, the prisoner survey didn't suggest there was any impact of the technology on their IT skills or knowledge.
- There was low usage of P-NOMIS mobile devices, with staff reluctant to use the handsets on the wings due to several reasons. These included the lack of familiarity with information technology generally, a perceived lack of convenience, concern over using a device within the prison environment, or due to the devices not being intuitive to use.
- Misuse of the digital technology was rare, although there were a few incidents reported, with the main concerns around inappropriate use of, and damage to, in-cell telephones.

This theme concerned issues around staff and prisoner resistance to, or reluctance to adopt, digital technology and related mainly to the introduction of the kiosks, in-cell laptops and P-NOMIS mobile devices.

5.2 Uptake of the technology

It was reported by staff and prisoners that some prisoners were initially resistant to the kiosks and laptops when they were introduced, or experienced language barriers, but that with support they were able to adjust to the new systems. It was felt by the staff, however, that this is something that takes time for some people:

> *"There's people who have been, "I'm never going to be able to use that, I'm too old or I've not used a computer, I've been jailed since I was 15," and stuff like that, but the guys are quite helpful with each other….Yeah. Reluctance and hesitation rather than not having the ability." (Prison Officer)*

The prisoner survey included questions on prisoners' IT skills and confidence. However, although there were some significant differences between digital technology prisons and their comparators for prisoners' self-reported confidence and skills using computers, there were no clear patterns from which to draw any conclusions about the potential impact of technology on these. Instead, it is likely that these results reflect pre-existing differences among prisoners, and a better picture of this issue was captured in the qualitative data.

Prison officers and prisoners both reported how the contracts that prisoners were required to sign before taking receipt of the in-cell laptop had discouraged some from having them. It was explained that the contract ensures that prisoners assume responsibility for their laptop and permits a charge in the region of £300 should they be damaged:

> *"Interesting. We had a lot of offenders that weren't keen on the idea. So when it came to giving out laptops and we were going cell to cell for the team that came in, there were quite a few people that said, "No, I don't want one." (Prison Officer)*

In relation to P-NOMIS mobile devices, as mentioned above, staff reported that there was some resistance to using this technology on the wings. This seemed to stem from a lack of familiarity with information technology generally, which impacted on staff confidence; a lack of convenience and practicalities; not feeling comfortable using the devices in a prison environment; and the device not being perceived as intuitive to use.

As a result of the issues reported above, the number of P-NOMIS devices utilised routinely by prison officers at the time of the research was perceived to be low:

> *"I think we've got about 40 now, I don't think anybody draws them anymore. I think it will literally be just me and this other officer until I locked myself out of it a few weeks ago." (Prison Officer)*

5.3 Misuse of the technology

Prisoners and staff reported that misuse of digital technology and the equipment associated with it does occur, but this is in small pockets. For example, staff in prisons where the in-cell telephones were operational during the night reported instances of nuisance telephone calls, others spoke of prisoners using other prisoners' PINs to make threatening calls, of prisoners making calls to commit or organise criminal activity, and of equipment (telephones, leads, laptops) being damaged either in anger or otherwise:

> *"The biggest issue we've had with PIN phones and I think most people would agree is phone wires. Now it's partly our fault, partly their fault especially with the smoking ban coming in and not having to access to lighters like they used to for smoking. When it comes to taking any sort of tobacco or substance, if they need a spark, they're stripping the wires." (Prison Officer)*

With any new technology, there are always likely to be some who are hesitant to adopt new ways of operating. It would seem that the issues relating to the uptake of digital technology in prison are: prisoner and staff unfamiliarity and reluctance to engage with technology in general, prisoner concern about taking responsibility for hardware given the financial penalty should it get damaged, and staff reluctance to use technology that they either do not feel to be intuitive or has the potential to attract unwanted attention on the wings.

6. Interactions and relationships

6.1 Key Findings:

- The qualitative research indicated that the implementation of the technology, particularly in-cell telephones, had reduced the potential for tension on the wings between prisoners and staff. However, the findings from the prisoner survey were more equivocal, and the management data did not show a relationship between the implementation of the technology and proven adjudications.
- Staff and prisoners commented that the presence of digital technology, and in particular the in-cell telephones, was seen as an incentive for good behaviour by prisoners.
- There were mixed findings about whether the introduction of in-cell telephones and self-service kiosks led to staff having more constructive interactions with prisoners. Low levels of conflict between prisoners and staff when using the self-service kiosks were reported in the prisoner survey.
- It was felt that the introduction of in-cell telephones had reduced tension between prisoners. Some staff commented, however, that although in-cell telephones could potentially reduce the bullying and victimisation that can occur when prisoners use wing telephones, it could still be occurring behind cell doors. The prisoner survey showed low levels of conflict between prisoners when using the self-service kiosks.
- In-cell telephones were seen as contributing to prisoners' relationships with people outside the prison and helping to maintain family ties, particularly for those prisoners with young children. Prisoners reported having more privacy and time to make calls, and analysis of call data showed an increase in calls after the in-cell telephones were installed.

This chapter concerns the impact of the introduction of the technology on relations within (i.e. prisoner-prisoner and staff-prisoner) and outside of the prison (prisoner-family/friends).

6.2 Relationships between prisoners and staff

There were a range of responses concerning the impact of the digital technology on prisoner-staff relationships. Staff across all prisons spoke of how the introduction of the in-cell telephones had removed potential tension points between staff and prisoners, such as at lock up, and hence there was a perception that relationships had improved:

> *"it feels like you're herding sheep to get them away from the phones on their landings because until everybody is locked up, you can't then proceed with the next. There's a positive side where you're not having that confrontation there and then, you've got a phone in your cell, there's no reason that you need to be out on the landing." (Prison Officer)*

Prisoners were largely in agreement with these points. For example, one prisoner said:

> *"Because you're not arguing to go, "Oh, I need to make a phone call," or, "I need to stay on the phone longer… You're getting treated with decency with the phones and not being told, "Right, get out, you have to use the phones this time of the day." (Prisoner)*

From the prisoner survey, however, the findings were less clear cut. Of the six prisons where the sample size was large enough for robust statistical analysis, only three prisons with in-cell telephones reported significantly less conflict with staff when making phone calls than their comparator prisons (see Figure 6.1). This didn't seem to be influenced by the types of technology implemented in the prisons, with these three prisons including ones with in-cell telephones, kiosks and P-NOMIS mobile devices (for the prison with laptops, the sample size was too small for robust statistical analysis), and so it isn't clear what is driving this finding. This was supported by a comparison of aggregated data for all prisons with in-cell phones and data for the four comparator prisons, whereby prisoners from institutions with in-cell telephones reported significantly less conflict with staff when making calls.

Figure 6.1a Conflict between prisoners and staff when making phone calls (prisons A-D)[15]

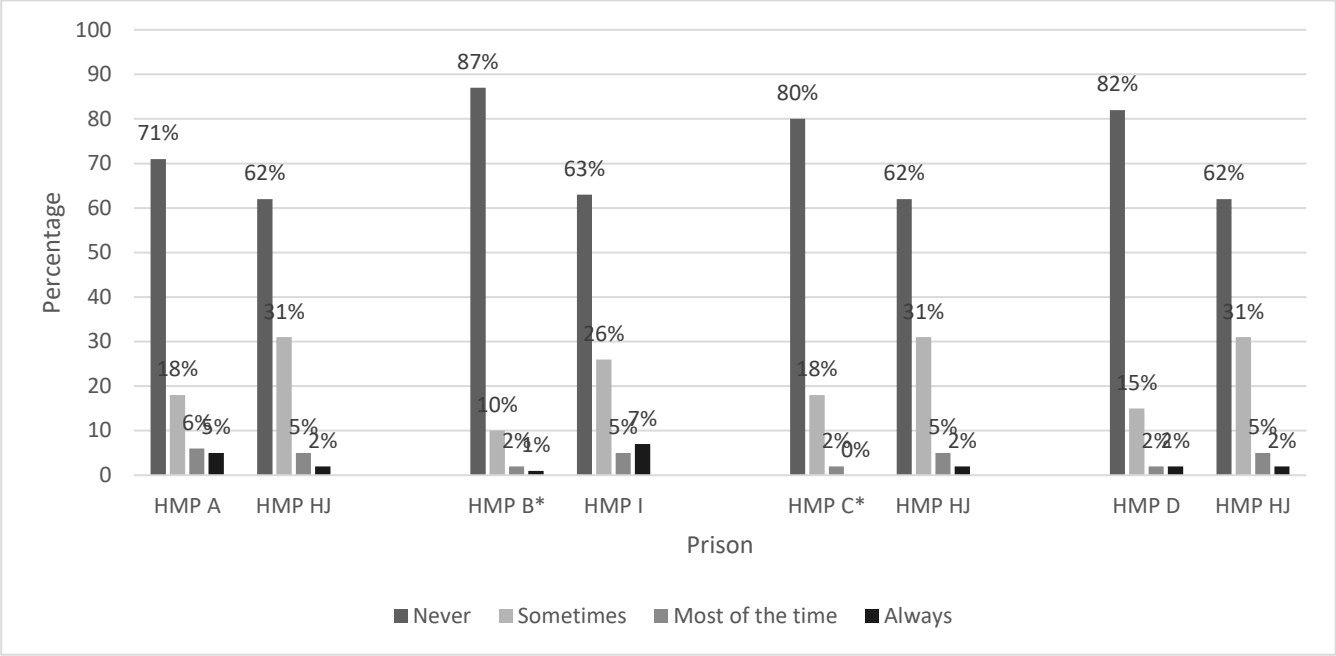
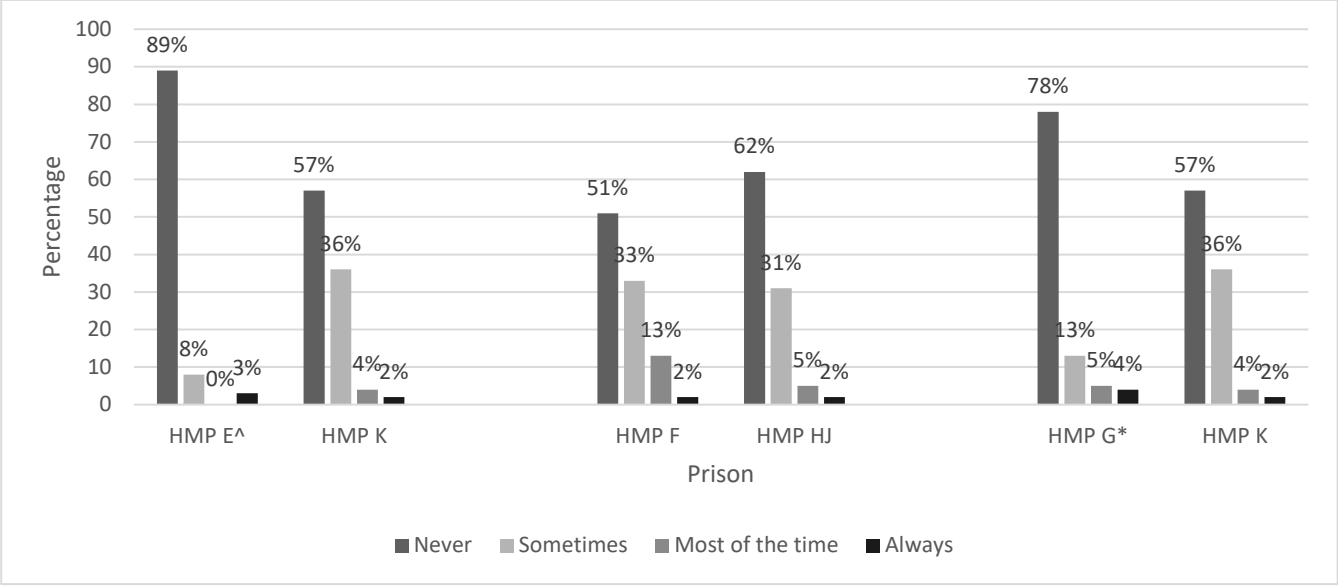


Figure 6.1b Conflict between prisoners and staff when making phone calls (prisons E-G)[16]



Notes: * Significant difference between prisons. ^ The sample size was not large enough for robust statistical analysis.

Both staff and prisoners spoke about digital technology acting as an incentive for good behaviour in prisons. In particular, the prisoners valued the benefits that the in-cell telephones brought and hence they did not wish to jeopardise access to the telephones:

[15] HMP A total *n* = 84; HMP B total *n* = 89; HMP C total *n* = 110; HMP D total *n* = 54; HMP HJ total *n* = 282; HMP I total *n* = 59

[16] HMP E total *n* = 37; HMP F total *n* = 45; HMP G total *n* = 99; HMP HJ total *n* = 282; HMP K total *n* = 47

> *"People aren't going to be kicking off as much and having a phone is a privilege, do you know what I mean? So I have to take the phone off you. You know, you're not going to want that taken away so prisoners are less likely to do something." (Prisoner)*

Moreover, staff also thought that as the prisoners were no longer needing to queue for the wing-based telephones, there were more opportunities for staff to engage with them in a meaningful way:

> *"It's better for us like building relationships and working with them. So now we've got that longer period for when they come back and work to lock up rather than they just want to go queue up and use the phone...And you get more time with them because you're doing that, you can be there and you know you haven't got to go round and start chasing people early." (Prison Officer)*

Other staff, however, reported that they either hadn't witnessed any change in staff-prisoner relationships or that they were dubious that all staff would use the extra time in a constructive manner with the prisoners:

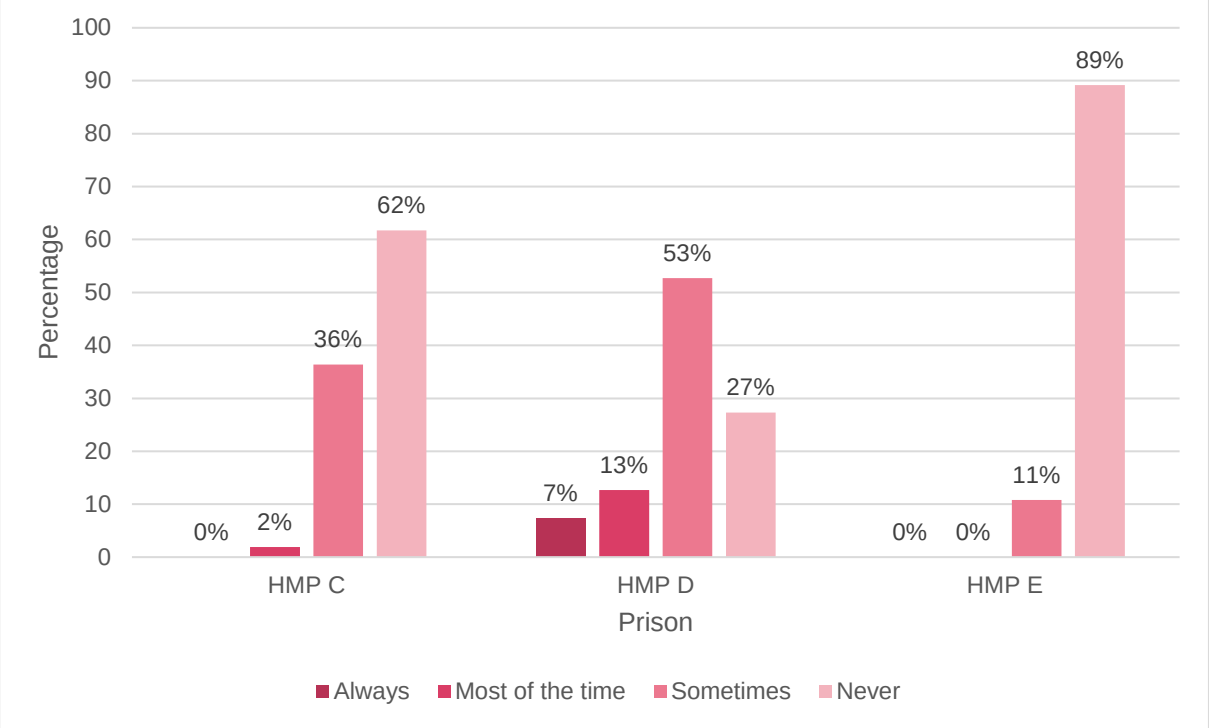
> *"I understand that it gives us more time to do stuff but will all staff do all the extra stuff?" (Prison Officer)*

A few staff, however, thought that the introduction of digital technology had worsened staff-prisoner relationships due to the perceived increase in distance between the groups. One wing-based uniformed member of staff commented:

> *"I feel staff have lost the ability to talk to prisoners. [Before the technology] they would come to you with a problem and talk to you about it, not only do they get to speak to staff, it increases that member of staff's knowledge, because they have to go away and find out the answers...but it broke down a lot of the barriers that now seem to be back up." (Prison Officer)*

In the survey, prisoners reported that there was little conflict with staff when using the self-service kiosks (see Figure 6.2), and this was particularly low in the prison with laptops in cells as well as self-service kiosks.

Figure 6.2 Frequency of conflict with staff when using the self-service kiosks[17]



Although the prisoner survey and qualitative results suggested that the digital technologies had the potential to improve relationships between prisoners and staff, the quantitative analysis of the EssenCES *Hold and Support* scale found no discernible pattern with respect to whether this was impacted upon by the digital technologies. However, it is likely that scores on this measure are influenced by many variables, of which prison technology is just one. Furthermore, in some prisons the prisoner survey was distributed on a small number of wings, and so the results may not be reflective of the whole prison. Therefore, it is not possible to draw any firm conclusions from this analysis. This explanation is also likely to apply to the fact that there were no changes in prison violence as assessed using the (admittedly crude) measure of the number of proven adjudications pre- and post-installation of the technologies.

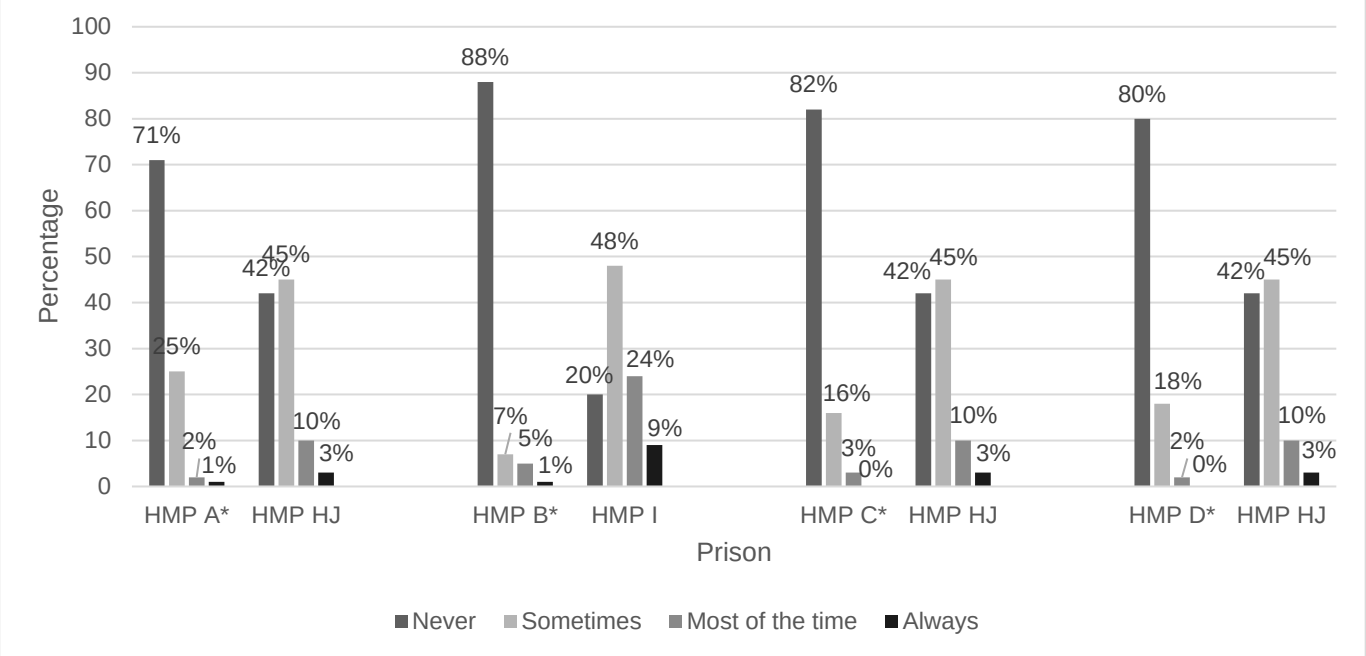
6.3 Relationships between prisoners

It was felt that the introduction of in-cell telephones had reduced tension between prisoners. Prior to the introduction of these telephones, there was very limited time in the regime to make calls and a limited number of landing telephones from which to make

[17] HMP C total *n* = 107; HMP D total *n* = 55; HMP E total *n* = 37

them. As such, the queue for the landing telephone was considered by both staff and prisoners to be a potential stress point that the in-cell telephones had eradicated. Similar findings were reported in the prisoner survey: of the six prisons with in-cell telephones where the sample size was large enough for robust statistical analysis, five prisons reported significantly less conflict with other prisoners when making telephone calls, than their comparator prisons (see Figure 6.3). This was supported when aggregated data for all prisons with in-cell phones and data for the four comparator prisons were compared, with prisoners in prisons with in-cell telephones reporting significantly less conflict with other prisoners when making calls.

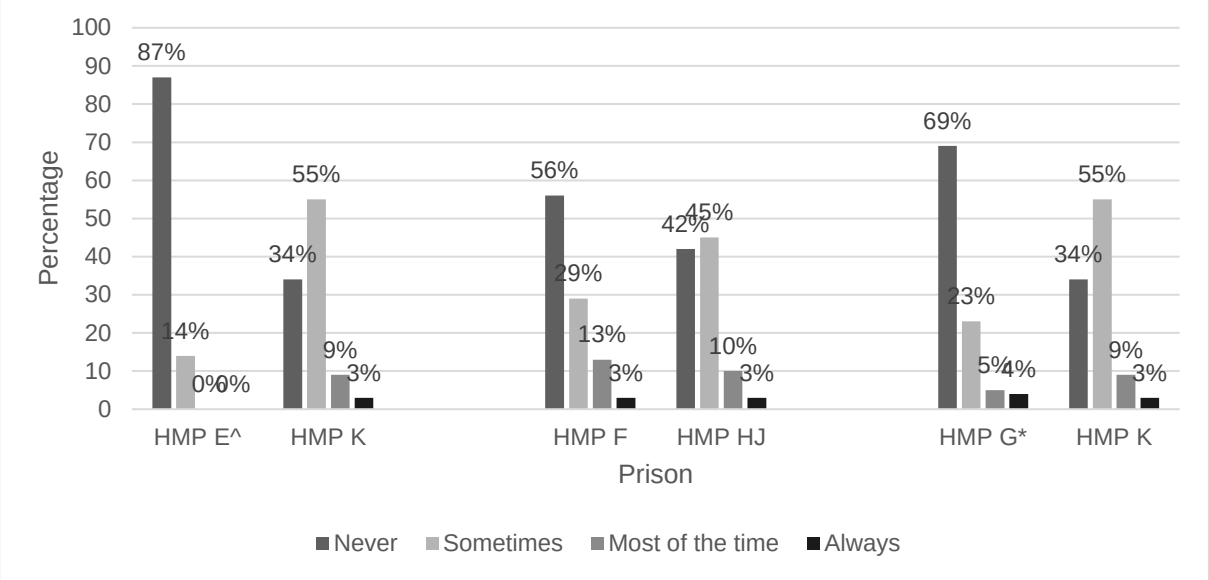
Figure 6.3a Conflict between prisoners when making phone calls (prisons A-D)[18]



Notes: * Significant difference between prisons. ^ The sample size was not large enough for robust statistical analysis.

[18] HMP A total *n* = 83; HMP B total *n* = 88; HMP C total *n* = 110; HMP D total *n* = 55; HMP HJ total *n* = 282; HMP I total *n* = 59

Figure 6.3b Conflict between prisoners when making phone calls (prisons E-G)[19]



Both prisoners and staff spoke of how the potential for bullying and victimisation had been reduced and how the ability to make calls to family improved the atmosphere in the prison more broadly:

> *"The more vulnerable ones will just be pushed to the back of the queue so they wouldn't even get a phone call for maybe two, three, four, five days because the more dominant prisoners are getting on it. They'd have an argument about who's next on the phones. So it prevents a lot of violence as well and potential bullying." (Prisoner)*

> *"I think generally, it's for the good of the prison, it works well for them when it's all working fine and dandy, creates a better atmosphere, because obviously they can use their phones to call family which makes them happy, as opposed to 18 of them queuing behind one phone, which can obviously cause a lot of tension on the wing." (Prison Officer)*

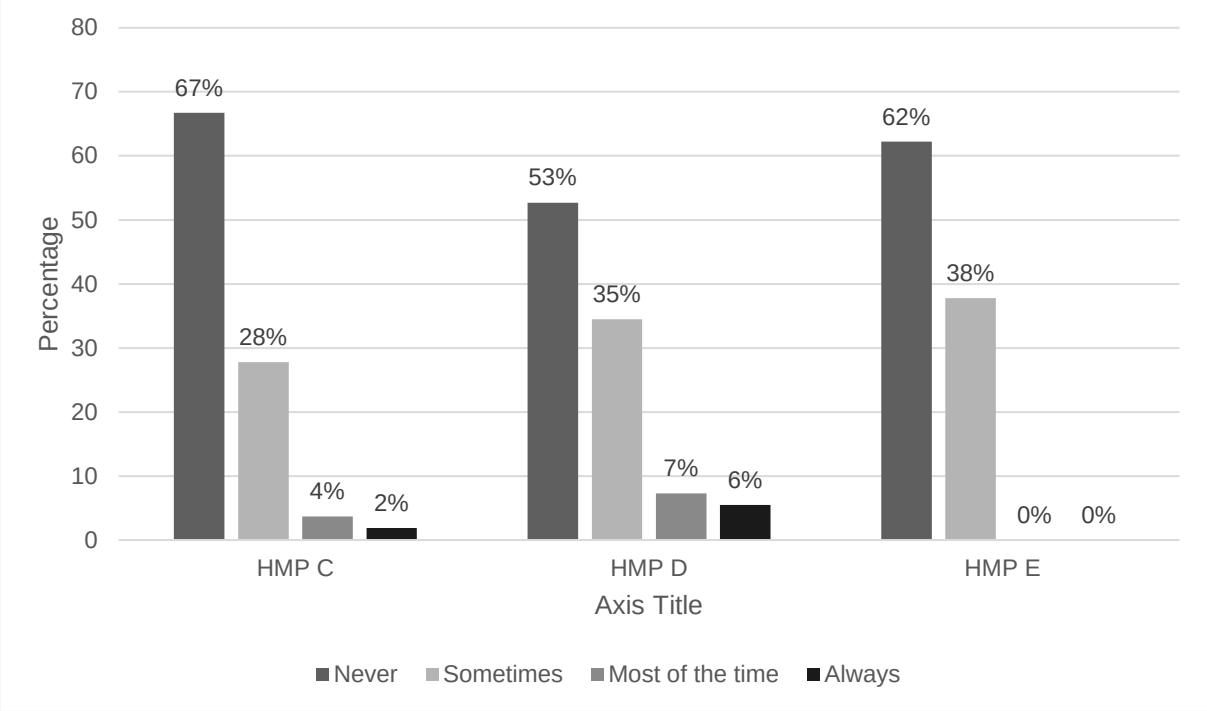
Notwithstanding, some staff had concerns about whether the victimisation of vulnerable prisoners had been displaced rather than eradicated:

[19] HMP E total *n* = 37; HMP F total *n* = 45; HMP G total *n* = 100; HMP HJ total *n* = 282; HMP K total *n* = 47

"Has it put some of that bullying underground now where they're in a cell with somebody forcing them to make a phone call to their family to get payment for something? Unless you're monitoring those calls, you don't pick that up, whereas before with the phones on the landing, you can pick it up, you can see that going on, you can challenge it better. Yes, some of that's now gone underground and we don't see it, so." (Prison Officer)

Conflict with other prisoners when using the self-service kiosks was also reported to be relatively low in the prisoner survey (see Figure 6.4), particularly in HMP E which had laptops in cells as well as the kiosks.

Figure 6.4 Frequency of conflict with prisoners when using the self-service kiosks[20]



6.4 Relationships between prisoners and family and friends

A large topic of conversation was the impact of the in-cell telephones on external relationships with family and friends. The increased flexibility as to the timing of calls and the increased access to a telephone meant that relationships with family and friends could be maintained more easily:

[20] HMP C total *n* = 108; HMP D total *n* = 55; HMP E total *n* = 37

> *"One of our main key things is they are keeping family ties if and when possible. And actually, you've now given them … all the time that they're on the wing, the opportunity if they've got the money to be able to speak to their friends, their family, their children, their grandchildren and be able to feel like they're more involved in what is going on the outside even though they can't be there." (Prison Officer)*

Many prisoners spoke about how the in-cell telephones permitted them to be more involved in family relationships; this was particularly pertinent in cases when the prisoner had children:

> *"Now I'm able to sort of be a dad to my son and speak to him on that level, do you know what I mean? Just like, just be able to—even if it's only like a little two-way phone call before bed just saying goodnight, I love you." (Prisoner)*

The prisoner survey gave some more indirect support for the impact of in-cell telephones on keeping in contact with people outside prison. Responses from all 11 prisons showed a high level of agreement that PIN telephones helped them to keep in contact with people outside of prison (Strongly Agree/Agree ranged from 83% - 96%[21]). Together with the qualitative results, it seems that the in-cell telephones do, mostly, help prisoners keep in touch with people outside of prison. One of the prisons that did not show this effect had the highest proportion of respondents sharing cells (86%), which may impact on privacy for phone calls, even though it had the highest level of agreement (96%) for the importance of PIN telephones in keeping in touch. For all prisons, the number of calls showed an increase post-installation of the in-cell telephones.

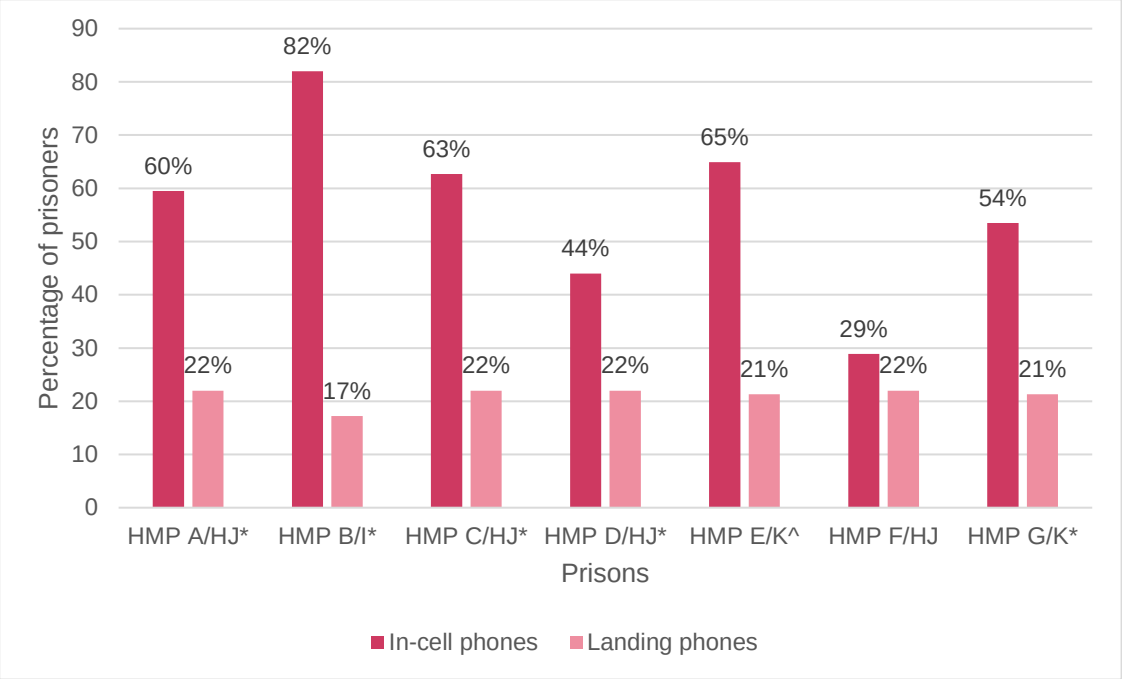
Moreover, prisoners spoke of the increase in privacy and how this meant that the conversations with family and friends could be more open and honest:

> *"I think for me I can be more open to family members now I'm just in room by myself on the phone...Be more honest, open, and it's more of a chilled-out atmosphere." Prisoner.*

[21] Total *n* = 906

The increased privacy afforded by in-cell telephones was seen in the prisoner survey whereby prisoners in five of the digital technology prisons reported significantly greater agreement than their comparators that they had more privacy to make calls (see Figure 6.5). This result was also found when comparing the aggregated data from all prisons with in-cell phones with data from the four comparator prisons.

Figure 6.5 Percentage of prisoners who strongly agree/agree that they have privacy when making calls[22]



Note: * Significant difference between prisons. ^ The sample size was not large enough for robust statistical analysis

Overall, the introduction of digital technology, especially the in-cell telephones, was reported to have impacted on staff/prisoner and prisoner/prisoner relationships, reducing the potential for tension on the wings. Moreover, the opportunity to speak more regularly, privately, and freely with family and friends outside of the prison contributed to the maintenance of external ties and permitted prisoners to contribute more fully to familial and other important relationship dynamics.

[22] HMP A total *n* = 84; HMP B total *n* = 89; HMP C total *n* = 110; HMP D total *n* = 55; HMP E total *n* = 37; HMP F total *n* = 45; HMP G total *n* = 99; HMP HJ total *n* = 282; HMP I total *n* = 59; HMP K total *n* = 47

7. Wellbeing

7.1 Key Findings:

- The overarching view from staff and prisoners across all prisons was that the introduction of digital technology, in particular the in-cell telephones, had contributed to an improvement in the psychological wellbeing of prisoners.
- Both staff and prisoners reported that the introduction of all the technologies had led to an increase in feelings of agency and autonomy amongst prisoners. This increase in personal responsibility was seen to be a key benefit of the technologies.
- Staff and prisoners reported a perceived reduction in incidents of friction and feelings of tension in prison. However, staff did not seem to think there had been a direct impact of any of the technology types on their wellbeing.
- Telephone call volume data showed an increase in the number of calls made to the Samaritans after the implementation of in-cell telephones, indicating that prisoners were using the telephones to access professional support.
- The analysis of the prison management data did not suggest an impact of the technology on proven adjudications, rates of prisoner self-harm or staff sickness rates. The volume of calls in general and to the Samaritans were not associated with rates of prisoner self-harm.

This chapter reports on staff and prisoners' views about the impact of the introduction of technology on prisoner and staff wellbeing from the qualitative research and prisoner survey. The prison management data and call data are used to look at the impact on wellbeing using adjudications, prisoner self-harm and staff sickness.

7.2 Prisoner wellbeing

The impact of digital technology on the emotional wellbeing of prisoners was discussed by many participants and across all prisons. The overarching view from both staff and prisoners was that the ability to contact your family and friends more readily using in-cell telephones was hugely beneficial to the emotional, and potentially physical, wellbeing of the prisoners:

> *"I think it's potentially gone as far as potentially saving some prisoners lives….in a cell, you're able to have a lot more privacy. So a prisoner that's potentially vulnerable or potentially suicidal, is able to speak on a different level to his family inside the privacy of his cell as opposed to being on the landing." (Prisoner)*

> *"it's got to be good for them and it's got to be good for their wellbeing because it's actually encouraging family ties, and it's encouraging them to keep in contact…it gives them less stress and it gives them less anxieties, and less of any of that usually creates better wellbeing." (Prison Officer)*

However, the qualitative findings relating to prisoner wellbeing were not reflected in the analysis of prisoner rates of self-harm.

In one prison, staff spoke about how prisoners had been using the functionality of the in-cell telephones to seek support from the Samaritans to increase their emotional wellbeing:

> *"I have heard that they use the Samaritans number a lot more now.... on the phone and that's quite a good thing. We have a free phone PIN number that we put money on every – well, whenever is needed... and there has been a big uptake in them using the Samaritans phones in their cell whereas before there was a Samaritans phone they had to go out and ask staff." (Prison Staff)*

This was supported by the five prisons for which call data on volume of calls to The Samaritans were available before and after implementation of the in-cell telephones. As seen in Appendix F, in all five prisons there was an increase (sometimes quite substantial) in both the number of calls and call minutes to the Samaritans.

Moreover, staff and prisoners commented that the kiosks and laptops also boosted emotional wellbeing. Kiosks were seen to reassure prisoners that their applications were being processed:

> *"You've got a digital trail which is really handy. And it's instant. If you put a paper app in today, there's no guarantee that it won't get to the right department in five, six, seven days even or it might go missing which used to happen a lot. Now, it's generated instantly." (Prisoner)*

The radio function on the laptops was thought to also help alleviate stress and anxiety:

> *"The godsend for me is that they can get radio stations on it, so…they can actually listen to music which does help." (Prison Staff)*

Despite some initial concerns from staff about the potential impact of prisoners having negative telephone conversations (bad news, disagreements, and so on) during the evening/night when support was less readily available to them, the incidence of such situations was reported to be very low. Notwithstanding, the potential for such distress was also a concern for some prisoners:

> *"It might be sad news and that person might not be able to cope with it and take their life or self-harm." (Prisoner)*

Some staff also commented that with telephones now situated within cells they were less able to monitor prisoner wellbeing and mood.

> *"If they're out in the wing, you'd be able to see that they're having a bad phone call, they're upset and you might be able to have a conversation with them, calm them down or speak to their friends or something whereas now they're locked behind their door. You can't open the door because you're down to, you know, minimum staffing levels." (Prison Officer)*

More broadly, the introduction of all forms of digital technology in the prisons was thought to provide prisoners with the opportunity of greater autonomy and the chance to learn and rehearse life skills that would be useful on release from prison.

"And there's a sense of pride about being able to manage your own life to some extent. You know, you relinquish so much of the control over your own life that it is actually quite nice just to organise yourself. In terms of living more independently, it lets you do that for sure." (Prisoner)

"I think having their own laptop gives them responsibility, and it gives them a link to the outside world so they feel like actually, you know, this is what I'm going to do when I get out and I'll get a laptop. And they'll see a little bit of what laptops can do.... The phones and the contact of the family is a big, big control of them." (Prison Officer)

7.3 Staff wellbeing

In relation to the impact of digital technology on the job satisfaction and wellbeing of staff, aside from the comments relating to the reduced friction between staff and prisoners at certain points in the day (see page 12), most staff commented that the technology had not impacted on their job satisfaction or wellbeing in any considerable way. This was supported by the time series analysis for staff sickness rates, in which there was only one prison (HMP G), where the rate was very close to the lower confidence interval of the forecast. This prison had in-cell telephones and P-NOMIS mobile devices, although as noted elsewhere in this report, very few officers were actually using the P-NOMIS mobile devices. Therefore, it cannot be concluded that this finding was necessarily due to the introduction of the handsets. Staff sickness rates were also not consistently associated with the call data on prisoners' telephone usage.

The one potential impact of the introduction of technology on staff wellbeing was reported by the staff using P-NOMIS mobile devices and it concerned the possibility of an increase in staff vulnerability on the wing:

"I just feel uncomfortable getting that out because it's a…when I first got it out, it was 'Miss you've got a phone, you got a phone ….they get round you and I'm like, there's no need to be. And that to me feels a bit like one of them could grab this at the moment." (Prison Officer)

One member of staff commented on how he had taken precautionary action to limit any potential for victimisation:

> *"[I] made sure that was in view of cameras until prisoners got used to it you know so that like if one of them tried to grab it off me then, do you know what I mean." (Prison Officer)*

In summary, the overwhelming feedback from staff and prisoners was that the introduction of digital technology had contributed to an improvement in the psychological wellbeing of, and perception of autonomy amongst, prisoners. It was thought a potential consequence of these improvements was the reduction of incidences of friction and feelings of tension in the prison making it a somewhat less oppressive place to work and reside. Notwithstanding, the staff interviewed in prisons where handheld P-NOMIS was in use held a perception that the devices increased their vulnerability on the wings.

8. Impact of staff workload

8.1 Key Findings:

- Both the task time data and interviews/focus groups indicated that the introduction of digital technology had impacted on staff workload. The nature and scale of this impact varied between staff groups, on the type of technology installed, and on the type of activity/task undertaken.
- The greatest reductions in task time as a result of kiosks/in-cell laptops being installed were associated with processing prisoner balance requests (mean percentage reduction = 100%, 8 minutes/request) and processing prisoner applications (mean percentage reduction = 82%, 5461 minutes/week), menu orders (mean percentage reduction = 64%, 271 minutes/week) and canteen orders (mean percentage reduction = 89%, 634 minutes/week). The installation of these technologies did not, however, appear to impact on the time taken to book visits (mean percentage reduction = 0%, 0 minutes/request).
- The amount of staff time saved varied across prisons, particularly where prisons currently utilise prisoners to complete the most time-consuming elements of these tasks.
- In those prisons that do not currently have kiosks/in-cell laptops, the future implementation of these technologies may have the potential to reduce the time it takes to complete certain activities/tasks.
- There may be scope for additional time savings to be achieved in the future, for example, by addressing issues relating to functionality and by making changes to how the technology is implemented and used in prisons.
- The introduction of digital technology appears to save time for wing-based staff, but in some circumstances may increase the workload of other staff.

This theme concerned identified time savings, along with instances where staff workload was impacted upon by the implementation of the technology.

8.2 Time savings

As shown in Table 8.1, the implementation of self-service kiosks and/or in-cell laptops in prisons was estimated to have led to reductions in the time taken to complete key activities/tasks. Furthermore, in those prisons where these forms of technology are yet to be installed there is the potential for time savings to be achieved (see Table 8.2)[23].

Table 8.1 Percentage reduction in task time pre- vs. post-technology

Activity/Task	Mean Percentage Reduction[1] (Mean Mins.)	Range (Range Mins.)
Collating prisoner applications and returning responses to prisoners (e.g. healthcare, education etc.)[2]	82% (5461 mins/week)	47% - 100% (482 - 9650 mins/week)
Menu orders	64% (271 mins/week)	46% - 75% (240 - 317 mins/week)
Canteen orders	89% (634 mins/week)	77% - 96% (371 - 770 mins/week)
Booking visits	0% (0 mins/booking)	0% - 0% (0 - 0 mins/booking)
Prisoner balance requests	100% (8 mins/request)	100% - 100% (5 - 10 mins/request)
Distributing prison wide notices/messages to prisoners	73% (76 mins/notice)	46% - 87% (30 - 102 mins/notice)

[1] The figures for collating prisoner applications, menu order and canteen orders refer to the mean reduction in time when dealing with that particular activity across the whole prison on a weekly basis (summing the time taken on each prison wing). This is because these tasks were typically conducted once a week in the prisons studied. The figures for booking visits, prisoner balance requests and distributing prison-wide notices were based on the time taken to deal with a single booking/balance request/notice.

[2] It should be noted that the percentage reductions reported in this table for prisoner applications are based just on the process of receiving/collating applications and distributing responses; they do not include reductions in the time it takes to answer individual applications (referred to hereafter as processing time). This is because processing times will vary widely based on a range of factors (e.g. type of application, content of the application, person processing the application etc.), thus meaning that human estimates of these times would be highly unreliable/inaccurate. An attempt was made to obtain more accurate processing time data, but this was not possible.

[23] The numbers in Table 8.2 were calculated by: (1) Mapping the processes used by the no technology prisons to deal with the different tasks; (2) Identifying the stages that would no longer required if technology were to be installed (based on the knowledge gained from the technology prisons); (3) Deducting the amount of time those stages took from the overall time taken. This gave the estimated time it would take to complete that task if technology were installed; and (4) Dividing the time reduction by the total time it currently takes the prison to complete the task and multiplied that by 100 to give a percentage.

Table 8.2 Potential percentage reduction in task time if technology were installed

Activity/Task	Mean Percentage Reduction[1] (Mean Mins.)	Range (Range Mins.)
Collating prisoner applications and returning responses to prisoners (e.g. healthcare, education etc.)[2]	82% (650 mins/week)	50% - 100% (68 - 2225 mins/week)
Menu orders	60% (546 mins/week)	0% - 97% (0 - 1840 mins/week)
Canteen orders	84% (536 mins/week)	72% - 95% (180 - 1260 mins/week)
Booking visits	0% (0 mins/booking)	0% - 0% (0 - 0 mins/booking)
Prisoner balance requests	100% (7 mins/request)	100% - 100% (5 - 12 mins/request)
Distributing notices/messages to prisoners	58% (46 mins/notice)	0% - 92% (0 - 165 mins/notice)

[1] As above, the figures for collating prisoner applications, menu order and canteen orders refer to the mean reduction in time when dealing with that particular activity across the whole prison on a weekly basis, and the figures for booking visits, prisoner balance requests and distributing prison-wide notices were based on the time taken to deal with a single booking/balance request/notice. For further details regarding methodology, please see Appendix A.

[2] As above, the percentage reductions reported in this table for prisoner applications are based just on the process of receiving/collating applications and distributing responses; they do not include reductions in the time it takes to answer individual applications (processing time).

The extent of these time savings varied depending on type of task. In some activities/tasks (e.g. booking visits), the introduction of kiosks/in-cell laptops did not appear to facilitate reductions in task time, whereas in other activities/tasks there appears to be the potential for significant time savings. The largest percentage reductions related to processing prisoner balance requests (mean percentage reduction = 100%) because (with access to kiosks/in-cell laptops) prisoners can check their own balance rather than relying on wing-based staff, meaning very few (if any) prisoner balance requests are received by staff post-implementation of technology.

Time savings were also identified in relation to prisoner applications (mean percentage reduction = 82%, 5461 minutes/week), menu orders (mean percentage reduction = 64%, 271 minutes/week) and canteen orders (mean percentage reduction = 89%, 634 minutes/week). Pre-technology, staff would be required to manually collect and sort applications and manually return responses to prisoners. Similarly, menu and canteen sheets would need to be regularly printed and distributed to prisoners and responses

manually collated. These manual processes involved significant staff time, which was reduced following the introduction of kiosks/in-cell laptops. As explained by one prisoner:

> *"In terms of being able to handle applications yourself, check your own balances and things like that on the laptops has probably reduced the workload for staff." (Prisoner)*

Likewise, kitchen staff in one prison reported that the introduction of kiosks had saved time, as they no longer had to scan the paper menus and the technology had led to a more streamlined process, from menu ordering through to the distribution of food in the serveries.

It is important to note, however, that some prisons utilised prisoner orderlies to oversee the printing, collation and distribution of applications/menus/canteen sheets. This is an important consideration, as the time savings achieved when installing kiosks/in-cell laptops will be less in those prisons where prisoner orderlies (rather than staff) undertake these roles, which explains the wide variation in some figures reported in Tables 8.1 and 8.2 (e.g. 0% - 92% for distributing notices and 0% - 97% for menu orders in Table 8.2). Furthermore, the introduction of kiosks/in-cell laptops in these prisons would take a work role away from a prisoner, and - unless an alternative role can be found - this might have negative effects on him/her.

It should also be noted that manual processing of applications, menus and canteen sheets was still necessary in some circumstances in those prisons where kiosks and/or in-cell laptops had been installed. For example:

- Menu/canteen sheets were still processed due to system-related issues and the fact that some prisoners (e.g. in healthcare or segregation) were unable to access the kiosks/in-cell laptops.
- Certain types of request such as correspondence requests and requests to transfer funds were still dealt with manually at one prison.

Thus, there may be scope for further time savings if the need for such manual processing can be reduced (e.g. by making changes to how the technology is implemented and used).

Furthermore, if the problems regarding functionality and uptake of P-NOMIS mobile devices (discussed in chapters 6 and 7) can be addressed, there is evidence to suggest that this form of technology may support staff in their duties:

> *"..and if a prisoner says, 'Miss, can you tell me how many visiting orders I've got?' To go find a computer to log on to then go back and tell that prisoner, it's harder that you think because you've got 70 or 80 other prisoners on your landing, you're the only person on your landing….So, having that handheld device that you can go… 'Yeah, that's when your VO is, that's your release date'." (Prison Officer)*

8.3 Staff workload

While the task time data indicated overall reductions in the time taken to complete key activities/tasks, some staff commented that the introduction of kiosks/in-cell laptops had increased workload. For example, staff commented on an increase in the number of applications received, which, for some, was a temporary increase:

> *"When it first came out, I probably had about 12, 13 apps a day, that's probably dropped to three or four a day now, because either people just find other ways of finding out what they want or they just don't bother asking that now because the novelty has worn off." (Prison Officer)*

Whereas, for others (e.g. kitchen staff), the increase did not appear to be temporary:

> *"We get 10-fold more apps than we ever did in paper version because [before] they would have to go to the office to get the paper version so if they're locked behind their cell, they wouldn't do that. Whereas if they're sitting bored in the evening ……they'll sit and go, "I didn't enjoy that tonight."" (Prison Staff)*

Finance staff in one prison also reported an increase in workload because the technology allowed prisoners to see their canteen and balance simultaneously, which was encouraging more items to be purchased. However, this was perceived by staff as a good thing, as it was felt that this was helping to enhance prisoners' use of services and their quality of life.

While the introduction of in-cell telephones does not appear to impact on the six activities/tasks examined in the task time analysis, the data from the interviews/focus groups indicates that the telephones do seem to impact on the workload of some staff:

> *"…I think the phones have brought us more work but not in a bad way. We're here to help them with their problems. We're here to keep them safe, we're here to lookout for them, and if they make the phone call every night and every night there is an issue from that phone call then we then have to deal with the next day, that's fine, because that's our job" (Prison Officer)*

The introduction of in-cell telephones was also said to have impacted on the workload of operational support grade (OSG) staff:

> *""…put a lot of strain on the OSG staff because obviously, we monitor all the calls and there's an OSG on nights who listens to all the phone calls. Instead of just having that 8:00 in the morning 'til half 7:00 at night with the breaks in between, it's now consistent from 6:00 in the morning until midnight. So it's a lot more work for the staff." (Prison Officer)*

In summary, the self-service kiosks/in-cell laptops have reduced the time taken to complete key activities/tasks in prisons C and E, and the future introduction of these technologies has the potential to deliver time savings in other prisons. However, the scale of these savings will differ between prisons and between different staff groups, and will vary depending on the particular activity/task undertaken. Thus, while time savings are anticipated, the introduction of self-service kiosks/in-cell laptops will not necessarily guarantee time savings in all prisons within which they are implemented.

9. Conclusions

Bringing together the key findings from the research, overall, the implementation of the digital technologies seems to have had a positive impact on prisoners and staff and met many of the expected outcomes, particularly the in-cell telephones.

The specific questions addressed whether prison technology:

- Increases access to and improves the communication of knowledge within prisons for both prisoners and staff
- Improves prisoner confidence in using IT
- Improves prisoner relationships with staff, other prisoners and those outside of the prison, and reduces prison violence
- Increases staff job satisfaction and prisoner wellbeing
- Reduces prison officer time spent completing key activities/tasks

The impact of the in-cell telephones came through in the interviews/focus groups, the prisoner survey, some aspects of prison management data, and call data. It was clear that the in-cell telephones increased the use of telephones, enhancing prisoners' relationships with family and others outside of prison, something which could be built upon for reducing reoffending after release. Both prisoners and staff recognised the benefits of this. The removal of 'pinch' points when queueing for the wing telephones was also seen as reducing the potential for conflict between prisoners, although there was less support for impact on prisoner relationships with staff. The privacy of in-cell telephones also meant that prisoners were making greater use of support services such as the Samaritans, although the fluctuations that occurred in some prisons post-implementation of the phones are more difficult to account for and likely reflect events in individual prisons, and the qualitative research also showed a positive impact of the in-cell telephones on prisoner wellbeing. However, a complaint from prisoners across all prisons was the cost of calls, even though the costs were lower for the in-cell telephones than wing telephones. Reducing the cost may bring further improvements in prisoner wellbeing by allowing them longer contact with people outside of prison, although this would need to be tested empirically. Although the telephones were reported to impact on the work of some staff,

there was also a recognition that this was not necessarily a bad thing if it helped flag up prisoners needing help.

The self-service kiosks and laptops were also seen as a good resource by staff and prisoners, as found in the interviews/focus groups and prisoner surveys. The qualitative research found that both staff and prisoners thought that the self-service kiosks and laptops had led to an increase in prisoners' feelings of agency and autonomy, with this seen as a key benefit of the technologies. Giving prisoners more responsibility for the tasks that could be completed on the kiosks and laptops was also seen as having potential to reduce friction between prisoners and staff.

The qualitative research found that some prisoners and staff were hesitant to engage with new ways of working with the technology, some of which were related to unfamiliarity and a general reluctance to use technology. However, the prisoner survey did not suggest there was any impact of the technology on their IT skills or knowledge. Furthermore, we weren't able to obtain precise data on the take up of the technology, and so it isn't possible to ascertain if it was used to the extent that was expected. A small number of prisoners were concerned about taking on the responsibility of a laptop due to the financial penalty should they be damaged. Not only were these benefits felt at an individual level, but the task-time analysis reported a range of time savings in the prisons who had implemented the technology. We were also able to identify potential time savings in those prisons without the technology. Interviews with staff indicated that kiosks have made it easier for applications to be submitted by prisoners. While this is useful from a prisoner's perspective, an unintended consequence can be that more applications are submitted, at least initially, meaning a higher volume for staff to process. Another unforeseen result of the kiosks and in-cell laptops was that these technologies may take roles away from prisoners. In these circumstances, however, introduction of the self-service kiosks and laptops may provide an opportunity for additional, more meaningful roles to be identified for prisoners.

The low usage of P-NOMIS mobile devices made it difficult to draw any conclusions about this technology. However, staff who did use it found it to be useful.

9.1 Implications

A number of implications have been identified for any future roll-out of technology across the prison estate.

- A wider roll-out of in-cell telephones appears likely to result in wide usage and benefits to prisoners' relationships with people outside of prison. Not having to queue for the wing telephones may also lead to less conflict on the wing.
- Where in-cell telephones are used, any potential negative consequences (e.g., bullying in cells), despite likely to be infrequent, should be monitored.
- Self-service kiosks have the potential to bring about time savings but this can differ between prisons.
- Implementing kiosks may take roles away from prisoners, which may have an adverse impact, but alternatively might provide an opportunity for prisons to identify more meaningful and suitable alternative roles that better prepare them for release.
- If laptops are implemented in other prisons, it may be useful to take account of prisoner concerns about the cost if they were damaged.
- More work needs to be done to identify the barriers and obstacles to using P-NOMIS mobile devices before there is enough evidence to support whether or not it should be rolled-out further.

Any further roll-out would benefit from an evaluation strategy that collects data prospectively to provide more robust findings about changes over time. A longer time frame may also allow larger samples to be achieved for both qualitative and quantitative data collection. These will provide a more robust examination of whether implementation of the technology achieves the expected outcomes.

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Appendix A
Methodology

For the research, data were collected from eleven prisons. Of these, seven prisons had one or more digital technologies and four prisons without any technology acted as comparator prisons (see Table A.1).

Table A.1 Prisons involved in the research

Prison	Technology	Length of time technology installed
HMP A	In-cell telephony only	12 months
HMP B	In-cell telephony only	12 months
HMP C	In-cell telephony and self-service kiosks	In-cell telephony: 17 months Self-service kiosks: 13 months
HMP D	In-cell telephony and self-service kiosks	In-cell telephony: 22 months Self-service kiosks: 17-21 months[24]
HMP E	In-cell telephony, self-service kiosks, and laptops in cells	In-cell telephony: 27 months Self-service kiosks and laptops: 23 months
HMP F	In-cell telephony and mobile devices for officers (P-NOMIS on the move)	In-cell telephony: 6 months P-NOMIS mobile devices: 6 months
HMP G	In-cell telephony and mobile devices for officers (P-NOMIS on the move)	In-cell telephony: 9 months P-NOMIS mobile devices: 10 months
HMP H	Comparator for HMP A, HMP C, HMP D and HMP F	Not applicable
HMP I	Comparator for HMP B	Not applicable
HMP J	Comparator for HMP A, HMP C, HMP D and HMP F	Not applicable
HMP K	Comparator for HMP E and HMP G	Not applicable

[24] The roll-out of self-service kiosks took place over a number of months.

Qualitative interviews and focus groups

Data Collection

In the seven prisons with digital technology, semi-structured interviews and/or focus groups were conducted with prisoners and a range of staff whose jobs were likely to have been impacted by the implementation of the technologies. The staff sampled included prison officers and other prison staff, such as administrative, business hub, and kitchen staff. Topic guides were used for interviews and focus groups. The guides incorporated questions about participants' perceptions and experiences of the technologies available at the prison, including their access to and use of the technology, any obstacles and challenges associated with it, relationships with staff and prisoners, and life on the wing. Separate topic guides were developed for staff and prisoner participants. Participants were selected through opportunity sampling. Table A.2 shows the number of staff and prisoners interviewed in each prison. Interviews and focus groups were recorded and transcribed in five prisons. Permission to take voice recorders into the prison was not obtained for two prisons, so comprehensive notes were taken and used for analysis. In total the research comprised 32 interviews and 21 focus groups (with between 2 and 6 participants in each).

Table A.2 Number of staff and prisoners interviewed/participated in a focus group in each prison

Prison	Staff	Prisoners
HMP A	4	11
HMP B	5	13
HMP C	9	7
HMP D	8	6
HMP E	7	2
HMP F	7	8
HMP G	4	6
Total	44	53

Analysis

Three anonymized transcripts (6%) were independently subjected to two constant comparison framework analyses by a Research Assistant and the second author[25]. The resultant coding schemes were compared to assess consistency of coding across researchers. No problems were identified. The remaining transcripts were therefore coded by the Research Assistant. The finalized scheme was given to the second author who independently coded three further transcripts (6%) against the coding scheme for the presence and absence of each theme.

Prisoner survey

Data Collection

A survey was distributed to prisoners in the eleven prisons (see Appendix C). This asked about use of PIN telephones, account balance, canteen, prison meals, applications, information on prison activities and messages, confidence using technology, and self-service kiosks (for the three prisons where they were available). All questions required the prisoner to 'tick' their response. Relationships between prisoners and staff was also explored using the *Hold and Support* scale of the Essen Climate Evaluation Schema (EssenCES, Schalast & Tonkin, 2016), which is a questionnaire measuring the social and therapeutic aspects of prison wings. Originally developed in Germany for secure forensic health settings, this measure was subsequently adapted for prisons and translated into English. The English version has good reliability and validity, with the Hold and Support scale having an alpha coefficient = 0.82 (Tonkin, Howells, Ferguson, Clark, Newberry, Clark, & Schalast, 2012). This measure was chosen due to its well established psychometric properties (Tonkin et al., 2012). It has the additional benefit for a self-reported questionnaire of being short (5 items for this subscale) in contrast to some other similar measures (e.g., the Ward Atmosphere Scale (Moos, 1989) comprises 100 items and the Correctional Institutions Environment Scale (Moos, 1987) comprises 90 items). However, it is acknowledged that the EssenCES scores are likely to be impacted on by many variables, of which prison technology is just one, which needs to be considered when interpreting the findings.

[25] Constant comparison framework analysis is a form of content analysis.

In each prison, 250 questionnaires were distributed, giving a total of 2,750 questionnaires. The number of questionnaires completed was 916, giving an overall response rate of 33.3 per cent. However, this varied between the prisons, ranging from 19 per cent to 70 per cent. Questionnaires were distributed with the help of prisoners (e.g. prisoner council). However, due to limiting the burden of the research on prisons, there was variation across the prisons as to where the questionnaires were distributed (e.g. one or multiple wings). Therefore, the sample may not be representative of the whole prison, and this point needs to be borne in mind when interpreting the results. The researchers briefed these prisoners about the research and the purpose of the questionnaires, so that this information could be disseminated to potential participants and encourage participation. Information about cell sharing, age, length of time in prison for current sentence and length of time in current prison for current sentence is presented in Appendix D.

Analysis Approach

Statistical comparisons were conducted between each prison with digital technology and their comparator prison(s). Where responses were categorical data, chi-square was used, whereas for the EssenCES scale, scores were continuous data and so independent *t*-tests were conducted. Table A.3 shows the comparator prisons for these analyses. Statistical analysis for between prisons comparisons were only conducted where sample sizes were of a sufficient size as shown by a power analysis, whereby power was set at 0.80 and $\alpha = .05$ to detect a medium effect size. Where unequal distribution of responses across the categories impacted on the expected cell size in chi-squares, this is noted in the findings as a caveat. For some questions relating to how often they would like to/do make calls/check account balances etc., responses categories were collapsed where there were a low number of responses to ensure robustness of the analysis.

Table A.3 Prison comparators for survey analysis

Digital Prison	Comparator Prison(s)
HMP A **In-cell telephony only**	HMP H and HMP J combined
HMP B **In-cell telephony only**	HMP I
HMP C **In-cell telephony and self-service kiosks**	HMP H and HMP J combined

Digital Prison	Comparator Prison(s)
HMP D **In-cell telephony and self-service kiosks**	HMP H and HMP J combined
HMP E **In-cell telephony, self-service kiosks and laptops in cells**	HMP K
HMP F **In-cell telephony and P-NOMIS on the move**	HMP H and HMP J combined
HMP G **In-cell telephony and P-NOMIS on the move**	HMP K

Prison management data

Data collection

Data were obtained from the Ministry of Justice Hub on variables relating to prison violence (number of proved adjudications, assaults on staff and assaults on prisoners), prisoner self-harm rates, and rates of staff sickness absence. However, due to low volumes for assaults on staff and assaults on prisoners, only number of proved adjudications was used in the analysis. Call data from July 2017 – December 2018 on the volume of calls (all calls, free calls and calls to the Samaritans) was also provided.

Analysis

The prison management metrics and call usage data were used to explore the impact of technology on adjudications, rates of prisoner self-harm and staff sickness rates. While no one analysis provided a complete picture of the potential impact, it was hoped that taken together, the results would provide some insight. Prison data often shows longer-term trends on these indices (e.g. prisoner self-harm has increased in recent years across the whole estate) and there may also be ‘normal’ fluctuations. Therefore, 12 month rolling averages were calculated to ‘smooth’ out these fluctuations.

First, time series analyses were conducted to better distinguish between normal fluctuations (present even in rolling averages) and changes that could reasonably be attributed to a specific intervention/change in practice. Time series models allowed the generation of a forecast for the likely level of the variable after the implementation date of technology assuming that this had not occurred and then compare this to what did happen, by seeing if the actual trend post-implementation is within the ‘forecasted severity region’

in the model. The benefit of using a 'within-prison' analysis, rather than conducting comparisons between prisons, is that it allows each prison to act as its own control and avoids results being distorted by staff or prisoner numbers. Monthly data from April 2015 onwards were used and followed up until December 2018 (with the exception of adjudications where data was available up to June 2018). More information on the time series methods and the time series graphs are in Appendix E.

Second, the call data were used to identify any changes in phone use (number of calls and number of minutes) and calls to the Samaritans specifically (see Appendix F). Third, correlations were conducted between the call phone usage data and the Hub variables of proven adjudications, prisoner self-harm rates, and staff sickness rates (see Appendix G).

Task-time analysis

Data Collection

To examine the impact of implementing technology within prisons on the time taken to complete key activities/tasks, two approaches were taken:

1. In those prisons where technology has already been implemented, has that technology contributed to a reduction in time spent completing key activities/tasks; and
2. Does technology have the potential to deliver time-savings in those prisons where it has yet to be implemented?

To address these two questions, data collection proforma were designed. The design of these proforma involved several stages. A list of key activities/tasks that are most likely to be impacted by the introduction of digital technology were compiled and a process map created for each task detailing the different stages that might be required to complete that task. This was created with input from Ministry of Justice staff who have expertise in digital technology and have been closely involved in the implementation.

Given the considerable variation that existed in how individual prisons dealt with these various tasks, it was not appropriate to draw group comparisons (e.g. between the time taken to complete key activities/tasks in digital vs. non-digital prisons or in prisons with kiosks vs. prisons without kiosks). Instead it was more appropriate to collect data indicating how long each activity/task took to complete before the implementation of digital technology and how long each task/activity took after implementation. The final data

collection proforma was designed on this basis and reviewed/signed off by the Ministry of Justice. This proforma was distributed to prisons and completed by key operational staff (with the support of the researchers). We received responses from nine prisons (two prisons did not return the proforma by the data collection deadline).

Analysis Approach

In addressing the first question (has technology contributed to a reduction in time spent completing key activities/tasks?), it is important to note that only certain types of technology (self-service kiosks and in-cell laptops) were introduced with the purpose of reducing the time it takes staff to complete key activities/tasks. The intended benefits to staff and prisoners of introducing in-cell telephones and P-NOMIS on the Move related to wellbeing (rather than saving staff time) and are, therefore, explored using the other three methodological approaches[26]. With this in mind, the first approach to analysis focused on the data received from two prisons with kiosks and/or in-cell laptops. We calculated the number of minutes of staff time spent completing each of the six key activities/tasks before the implementation of digital technology and the number of minutes post-implementation. The pre- and post-implementation time estimates were then compared and the percentage reduction/increase in time spent on each of the six activities/tasks was calculated[27].

In addressing the second question (does technology have the potential to deliver time-savings in those prisons where it has yet to be implemented?), data from all other prisons that do not have kiosks and/or in-cell laptops were focused on. Process analysis was used to identify the different steps involved in completing each of the six activities/tasks and we calculated the percentage reduction in time that might be achieved if digital technology were implemented in these prisons[28].

[26] Note that P-NOMIS on the move might in theory save staff time when, for example, answering prisoner queries. However, the two prisons included in this evaluation with access to this form of technology reported that very few staff had access to/used this facility. As such, the process for dealing with the six activities/tasks had not changed as a result of being given access to P-NOMIS on the move.

[27] For example, if the pre-technology time estimate was 10 minutes and the post-implementation time estimate was 5 minutes there would be a 50% reduction in task time.

[28] This was achieved by identifying those stages of the process that would no longer be necessary if digital technology was available and calculating the percentage reduction in time this would offer. For example, if the time estimate for a task was 60 minutes, but 30 minutes of that time would no longer be required if technology was installed there would be a 50% potential reduction in task time.

Ethical Considerations

Participants in the interview/focus groups and prisoner survey gave informed consent to participate in the research. Consent forms, surveys, recordings, and transcripts of the interviews and focus groups were stored securely at the University of Leicester. Once the analysis was complete, the recordings of the interviews and focus groups were destroyed. The project received clearance through the MoJ's Data and Analytical Services Directorate research commissioning assurance process, and was therefore exempt from the HMPPS National Research Committee approvals process. In addition ethical approval was obtained from the University of Leicester Research Ethics Committee.

Appendix B
Prisoner Survey

The following questions are about your use of PIN phones. When answering these questions please think about your experience in the last month.

1. I have privacy when making calls using a PIN phone:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

2. I have enough time to speak to people when making calls using a PIN phone:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

3. I experience conflict with staff when I use the PIN phone:

□ Always □ Most of the time □ Sometimes □ Never

4. I experience conflict with other prisoners when I use the PIN phone:

□ Always □ Most of the time □ Sometimes □ Never

5. Making calls on the PIN phone helps me keep in touch with people outside of prison:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

6. How often do you make phone calls using the PIN phone in a typical month?

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

7. How often would you **like** to make phone calls using the PIN phone in a typical month?

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

8. What is the **most important** factor affecting how often you make PIN phone calls (only choose one):

□ Availability of the phone □ Availability of the person I'm trying to call

□ Cost of calls □ Money available in phone account

□ Privacy to make the call □ Waiting for a phone number to be approved

□ Other Please specify: ……

The following questions are about getting things done in prison. Please answer these questions thinking about your experience in the last month.

ACCOUNT BALANCE

9. I can check my prison account balance when I want to:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

10. It is straightforward to check my prison account balance:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

11. My prison account balance is up to date when I get it:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

12. How often do you check your prison account balance in a typical month?

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

13. How often would you like to check your prison account balance in a typical month?

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

CANTEEN

14. I have enough time to order canteen items:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

15. It is straightforward to order canteen items:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

16. My canteen orders are correct:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

17. How often do you order canteen items in a typical month?

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

PRISON MEALS

18. I have enough time to order my prison meals:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

19. It is straightforward to order my prison meals:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

20. My prison meal order is correct:

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

APPLICATIONS

21. I am able to submit applications when I want to:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

22. I have enough time to submit applications:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

23. It is straightforward to submit applications:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

24. Applications are dealt with promptly:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

25. How often do you submit an application in a typical month?

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

PRISON ACTIVITIES AND MESSAGES

26. I have access to information on what services are available in this prison e.g. education, chaplaincy, health appointments, training, prison jobs:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

27. I know how to sign up to the different services and activities available in this prison e.g. education, chaplaincy, health appointments, training, prison jobs:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

28. It is straightforward to arrange visits with those outside of prison e.g. family, friends.

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

The following questions are about your confidence using technology.

29. Which of these options best describes how you feel about your ability to read and write?

□ Very confident □ Fairly confident □ Neither confident nor not confident

□ Not very confident □ Not at all confident □ Don't know

30. I find using a computer easy:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

31. I get anxious when I use a computer:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

32. I would find it hard to learn new things on a computer:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

The following questions are about your use of the self-service kiosks. When answering these questions please think about your experience in the last month.

33. I can use the kiosk at times suitable to me:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

34. I have privacy when using the kiosk:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

35. I experience conflict with staff when I use the kiosk:

□ Always □ Most of the time □ Sometimes □ Never

36. I experience conflict with other prisoners when I use the kiosk:

□ Always □ Most of the time □ Sometimes □ Never

37. The kiosk is easy to use:

□ Strongly agree □ Agree □ Neither agree or Disagree □ Disagree □ Strongly disagree

38. How often do you use the kiosk in a typical month?

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

39. How often would you like to use the kiosk in a typical month?

□ Most days □ 2-3 days a week □ Once a week □ Once every 2 weeks

□ Once a month □ Less than once a month

The following questions are about day to day life on the wing.

40. For each statement please tick the box that you agree with most.

	Not at all	*A little*	*Somewhat*	*Quite a lot*	*Very much*
The wing has a liveable atmosphere					
In this wing, prisoners can openly talk to staff about all their problems					
Staff take a personal interest in the progress of prisoners					
Staff members take a lot of time to deal with prisoners					
Often, staff seem not to care if prisoners succeed or fail in the daily routine/program					
Staff know prisoners and their personal histories very well					
Both prisoners and staff are comfortable in this wing					

Finally, I would like to ask you some questions about you.

41. Are you currently in a: □ Single cell □ Shared cell

42. How old are you?

□ 18-20 □ 21-24 □ 25-29 □ 30-39 □ 40-49 □ 50-59 □ 60 and over

43. How long have you been in prison for your current sentence?

□ Less than 1 month □ 1 month to less than 3 months □ 3 months to less than 6 months

□ 6 months to less than 12 months □ 12 months to less than 2 years □ 2 years or more

44. How long have you been in **this** prison for your current sentence?

□ Less than 1 month □ 1 month to less than 3 months □ 3 months to less than 6 months

□ 6 months to less than 12 months □ 12 months to less than 2 years □ 2 years or more

Note: the questions about use of self-service kiosks were only included in the surveys in the prisons where they were installed.

Appendix C

Survey Data: Descriptive Statistics for Age, Time in Prison for Current Sentence and Time in 'This Prison' for Current Sentence by Prison

Table C.1 Response rate and Shared cell

Prison	Response rate[1]	% Shared cell
HMP A	85 (34%)	41 (53%)
HMP B	90 (36%)	28 (32%)
HMP C	111 (44%)	59 (55%)
HMP D	55 (22%)	47 (86%)
HMP E	37 (15%)	6 (16%)
HMP F	47 (19%)	31 (68%)
HMP G	101 (40%)	64 (65%)
HMP H	175 (70%)	129 (75%)
HMP I	59 (24%)	20 (35%)
HMP J	109 (44%)	94 (90%)
HMP K	47 (19%)	11 (23%)
TOTAL	**916 (33%)**	**530 (60%)[2]**

[1] 250 questionnaires were distributed in each prison
[2] 891 prisoners indicated if they were in a single or shared cell

Table C.2 Age

Prison	18-24 yrs	25-29 yrs	30-39 yrs	40-49 yrs	50-59 yrs	60 yrs or over	Total
HMP A	8 (10%)	9 (11%)	27 (34%)	21 (26%)	8 (10%)	7 (9%)	80 (100%)
HMP B	9 (10%)	11 (12%)	42 (47%)	13 (15%)	10 (11%)	4 (4%)	89 (100%)
HMP C	15 (14%)	23 (21%)	25 (23%)	20 (18%)	15 (14%)	11 (10%)	109 (100%)
HMP D	5 (9%)	10 (18%)	20 (36%)	12 (22%)	7 (13%)	1 (2%)	55 (100%)
HMP E	1 (3%)	5 (14%)	9 (24%)	12 (32%)	7 (19%)	3 (8%)	37 (100%)
HMP F	6 (13%)	11 (23%)	17 (36%)	9 (19%)	4 (9%)	0 (0%)	47 (100%)
HMP G	8 (8%)	17 (17%)	28 (28%)	18 (18%)	17 (17%)	11 (11%)	99 (100%)
HMP H	5 (3%)	32 (19%)	41 (24%)	33 (19%)	39 (23%)	22 (13%)	172 (100%)
HMP I	5 (9%)	9 (15%)	23 (39%)	13 (22%)	6 (10%)	3 (5%)	59 (100%)
HMP J	15 (14%)	21 (20%)	42 (39%)	17 (16%)	9 (8%)	3 (3%)	107 (100%)
HMP K	3 (6%)	9 (19%)	19 (40%)	10 (21%)	2 (4%)	4 (9%)	47 (100%)
TOTAL	**80 (9%)**	**157 (17%)**	**293 (33%)**	**178 (20%)**	**124 (14%)**	**69 (8%)**	**901 (100%)**

Table C.3 Length of time served in prison for current sentence so far

Prison	Less than 1 month	1 month – less than 3 months	3 months – less than 6 months	6 months – less than 12 months	12 months – less than 2 years	2 years or more	Total
HMP A	9 (12%)	17 (22%)	17 (22%)	15 (20%)	9 (12%)	9 (12%)	76 (100%)
HMP B	2 (2%)	27 (31%)	9 (10%)	14 (16%)	22 (25%)	14 (16%)	88 (100%)
HMP C	1 (1%)	21 (19%)	28 (26%)	22 (20%)	15 (14%)	22 (20%)	109 (100%)
HMP D	1 (2%)	7 (13%)	10 (18%)	15 (27%)	10 (18%)	12 (22%)	55 (100%)
HMP E	0 (0%)	0 (0%)	0 (0%)	6 (17%)	11 (31%)	19 (53%)	36 (100%)
HMP F	5 (11%)	8 (17%)	17 (37%)	5 (11%)	6 (13%)	5 (11%)	46 (100%)
HMP G	2 (2%)	6 (6%)	7 (7%)	15 (16%)	27 (28%)	40 (41%)	97 (100%)
HMP H	1 (1%)	1 (1%)	14 (8%)	39 (23%)	41 (24%)	75 (44%)	171 (100%)
HMP I	0 (0%)	7 (12%)	4 (7%)	7 (12%)	5 (9%)	35 (60%)	58 (100%)
HMP J	13 (12%)	32 (30%)	20 (19%)	25 (24%)	11 (10%)	5 (5%)	106 (100%)
HMP K	0 (0%)	1 (2%)	0 (0%)	8 (17%)	11 (24%)	26 (57%)	46 (100%)
TOTAL	**34 (4%)**	**127 (14%)**	**126 (14%)**	**171 (19%)**	**168 (19%)**	**262 (30%)**	**888 (100%)**

Table C.4 Length of time in this prison for current sentence so far

Prison	Less than 1 month	1 month – less than 3 months	3 months – less than 6 months	6 months – less than 12 months	12 months – less than 2 years	2 years or more	Total
HMP A	8 (11%)	18 (24%)	24 (32%)	14 (19%)	9 (12%)	1 (1%)	74 (100%)
HMP B	3 (4%)	26 (30%)	10 (12%)	13 (15%)	22 (26%)	12 (14%)	88 (100%)
HMP C	4 (4%)	24 (22%)	30 (28%)	23 (21%)	17 (16%)	10 (9%)	108 (100%)
HMP D	1 (2%)	6 (11%)	12 (22%)	15 (28%)	13 (24%)	7 (13%)	54 (100%)
HMP E	2 (6%)	1 (3%)	4 (11%)	12 (33%)	8 (22%)	9 (25%)	36 (100%)
HMP F	7 (16%)	10 (23%)	14 (32%)	6 (14%)	4 (9%)	3 (7%)	44 (100%)
HMP G	10 (10%)	16 (17%)	12 (13%)	15 (16%)	27 (28%)	16 (17%)	96 (100%)
HMP H	11 (6%)	27 (16%)	47 (28%)	27 (16%)	45 (27%)	13 (8%)	170 (100%)
HMP I	1 (2%)	7 (12%)	7 (12%)	8 (14%)	7 (12%)	28 (48%)	58 (100%)
HMP J	14 (14%)	33 (32%)	24 (23%)	24 (23%)	6 (6%)	3 (3%)	104 (100%)
HMP K	0 (0%)	4 (9%)	4 (9%)	13 (28%)	18 (38%)	8 (17%)	47 (100%)
TOTAL	**61 (7%)**	**172 (20%)**	**188 (21%)**	**170 (19%)**	**176 (20%)**	**110 (13%)**	**877 (100%)**

Appendix D
Time Series Analysis

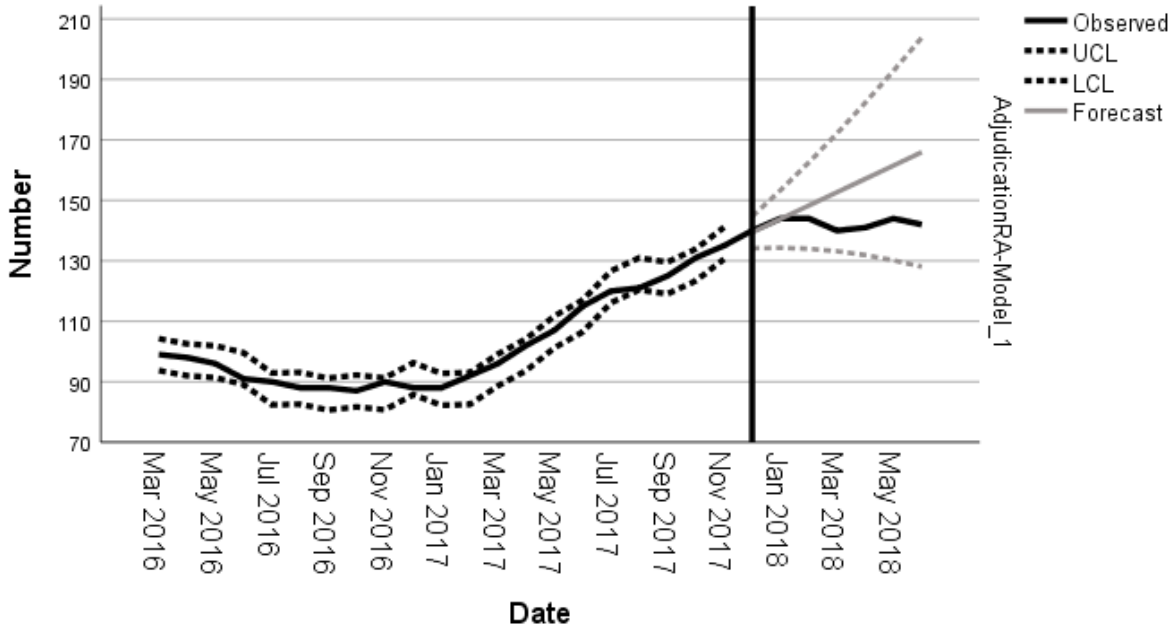
Methodological note

Analysis of pre- and post-averages and/or comparisons between prisons do not take account of 'normal' fluctuations in proved adjudications, prisoner self-harm rates and staff sickness rates within a prison. Therefore, prison management data were used to conduct a time series analysis. Time series analysis allowed us to distinguish between these 'normal' fluctuations and changes that could reasonably be attributed to the digital technology, by taking historic trends into account and using these to predict what future values might have been in the absence of the digital technology. These time series modules allowed us to forecast likely proved adjudications, prisoner self-harm rates and staff sickness rates in the absence of the digital technology and then compare this to what did happen, by seeing if the actual trend was within the 'forecasted region' after implementation. If the actual figures stayed within the 'forecasted region' then this suggests that the digital technology did not have an impact, whereas if the figures went outside of this region then the digital technology may have caused the changes. Statistical software was used to determine the best fitting time series model for the variables. These models were then used to produce the forecasts. These forecasts are represented on the graphs as the region between the dotted lines, with the actual trend represented by the dark line.

On the graphs, the number on the vertical axes refers to the number of proved adjudications/ self-harm in prisoners rate/staff sickness rate. UCL refers to the upper 95% confidence interval limit. LCL refers to the lower 95% confidence limit. The dotted lines show the confidence interval (also called the margin of error) of the estimate. At the 95% confidence level, it is expected that over many repeats of data collection under the same conditions, the confidence interval would contain the true values 95 times out of 100. While there is no specific rule about the number of data points pre or post installation, it should be noted that the more points post installation, the differences between the confidence limits will become larger.

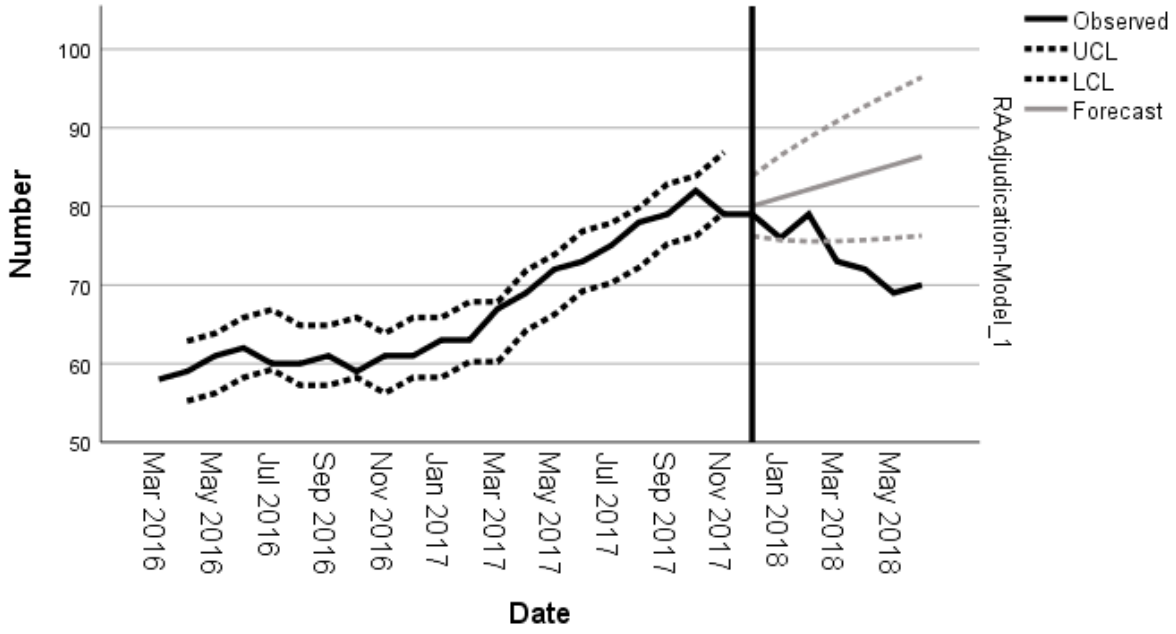
Adjudications

Figure D.1 HMP A Number of proven adjudications



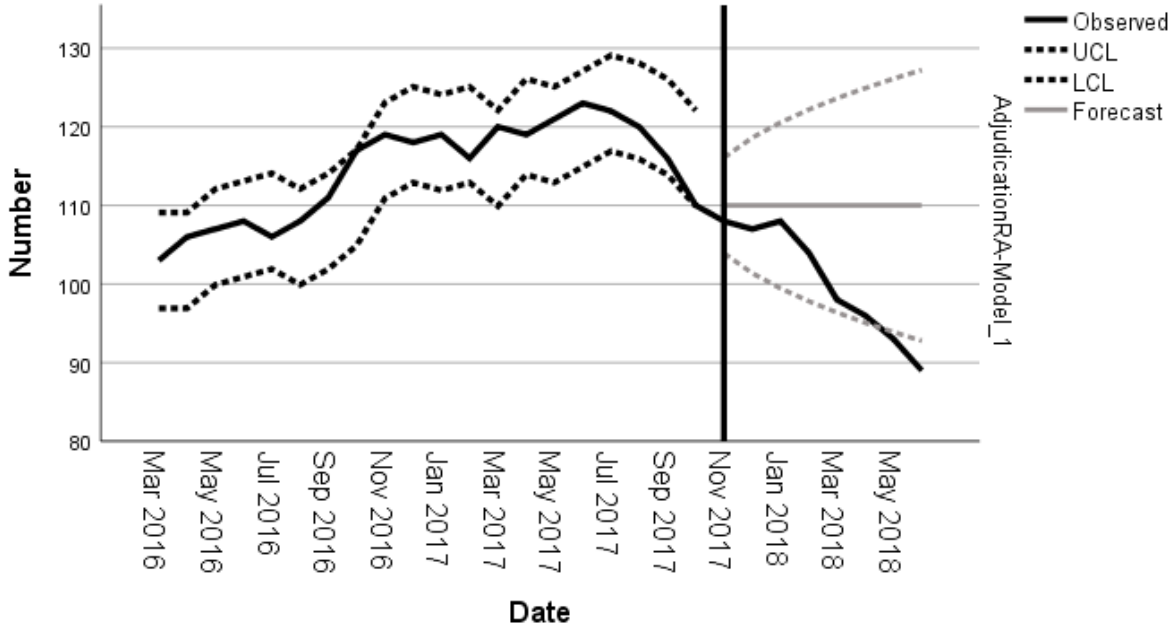
Note: Black vertical line is installation of digital technology (December 2017)

Figure D.2 HMP B Number of proven adjudications



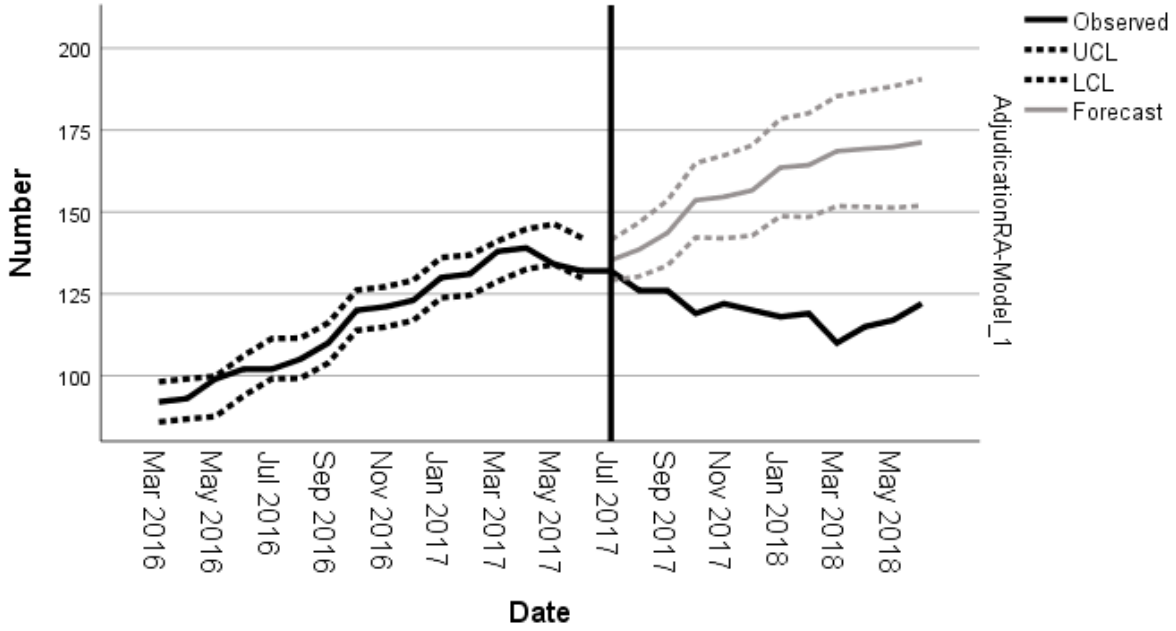
Note: Black vertical line is installation of digital technology (December 2017)

Figure D.3 HMP C Number of proven adjudications



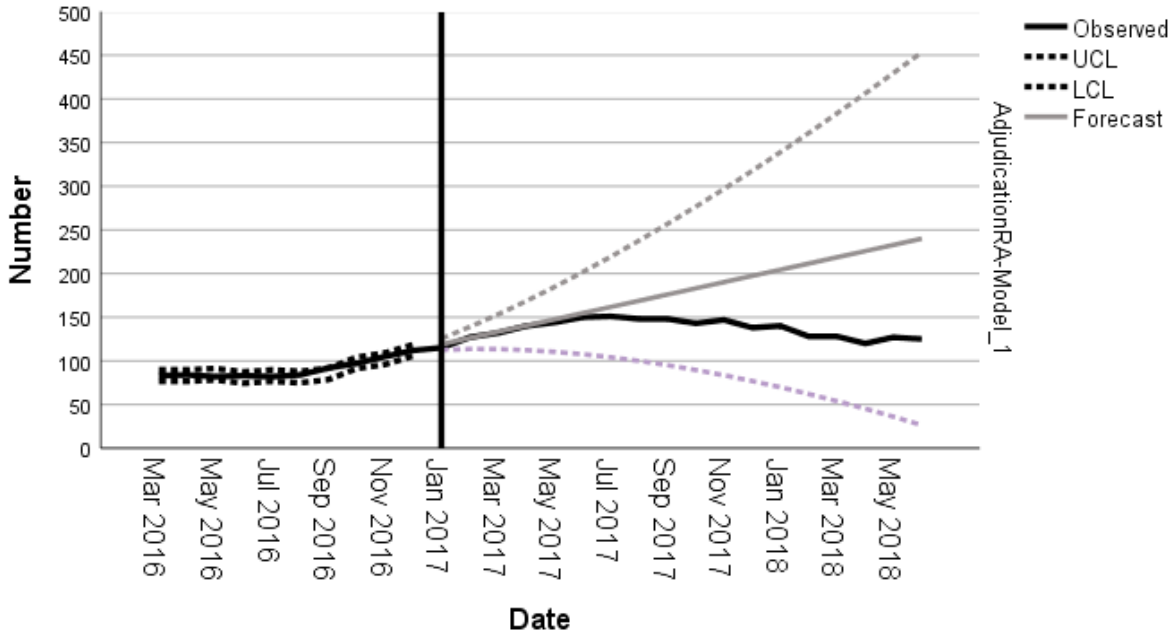
Note: Black vertical line is installation of digital technology (November 2017)

Figure D.4 HMP D Number of proven adjudications



Note: Black vertical line is installation of digital technology (July 2017)

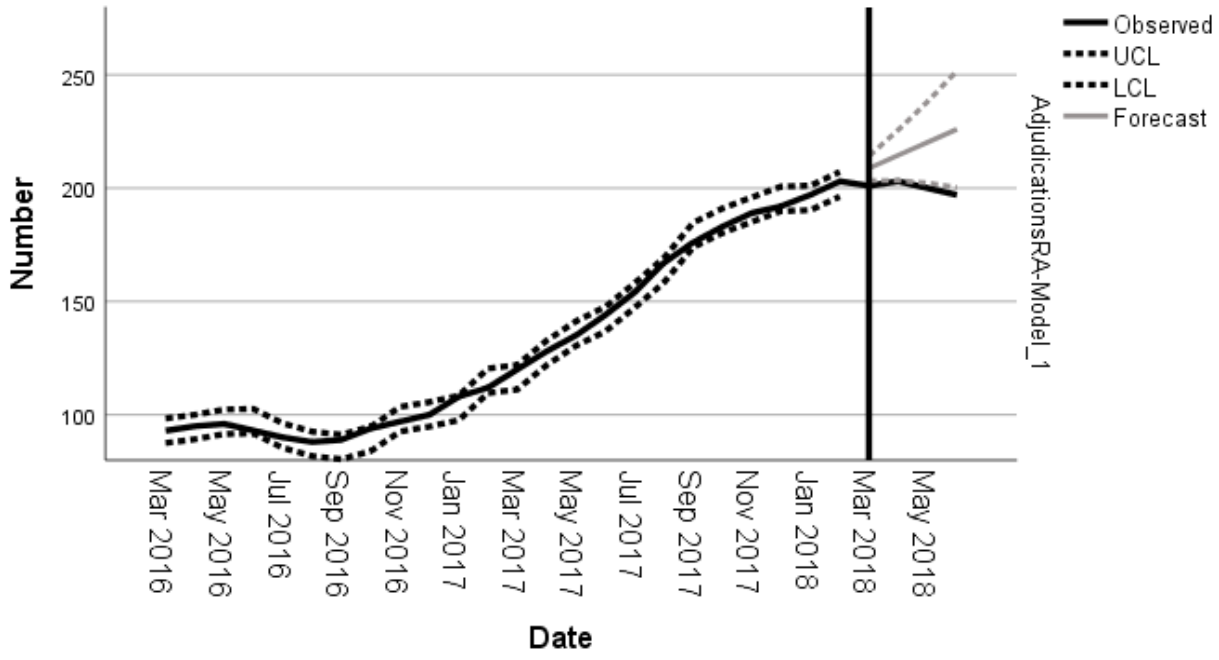
Figure D.5 HMP E Number of proven adjudications



Note: Black vertical line is installation of digital technology (January 2017)

HMP F There was no post-technology data for number of proven adjudications for HMP F.

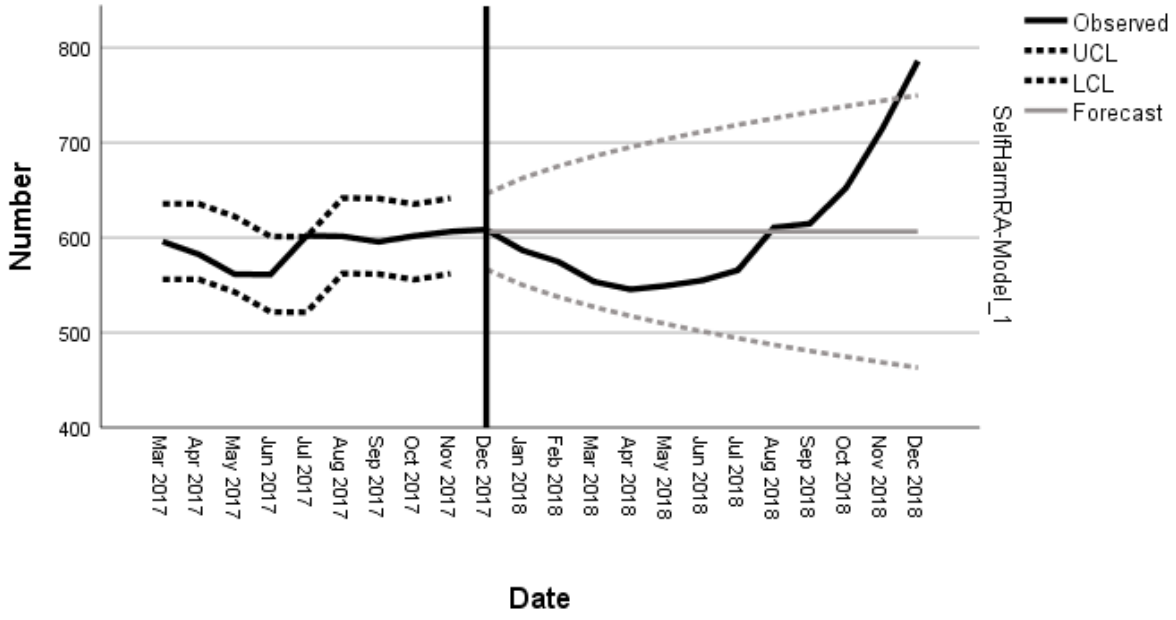
Figure D.6 HMP G Number of proven adjudications



Note: Black vertical line is installation of digital technology (March 2018)

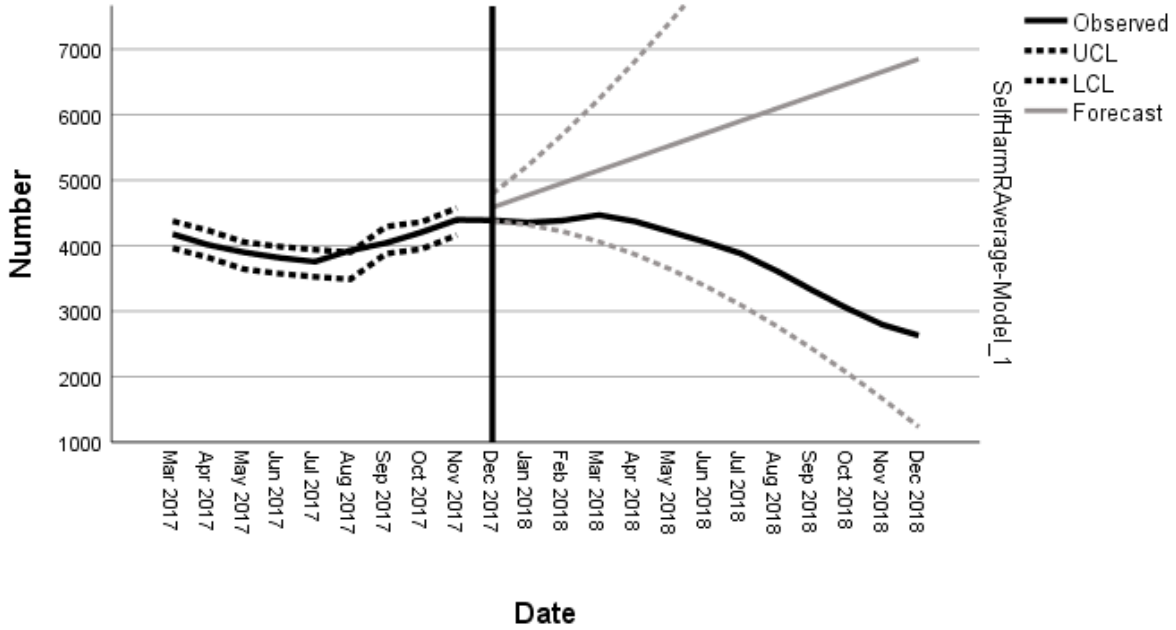
Prisoner self-harm rates

Figure D.7 HMP A Prisoner self-harm rates per 1,000 prisoners



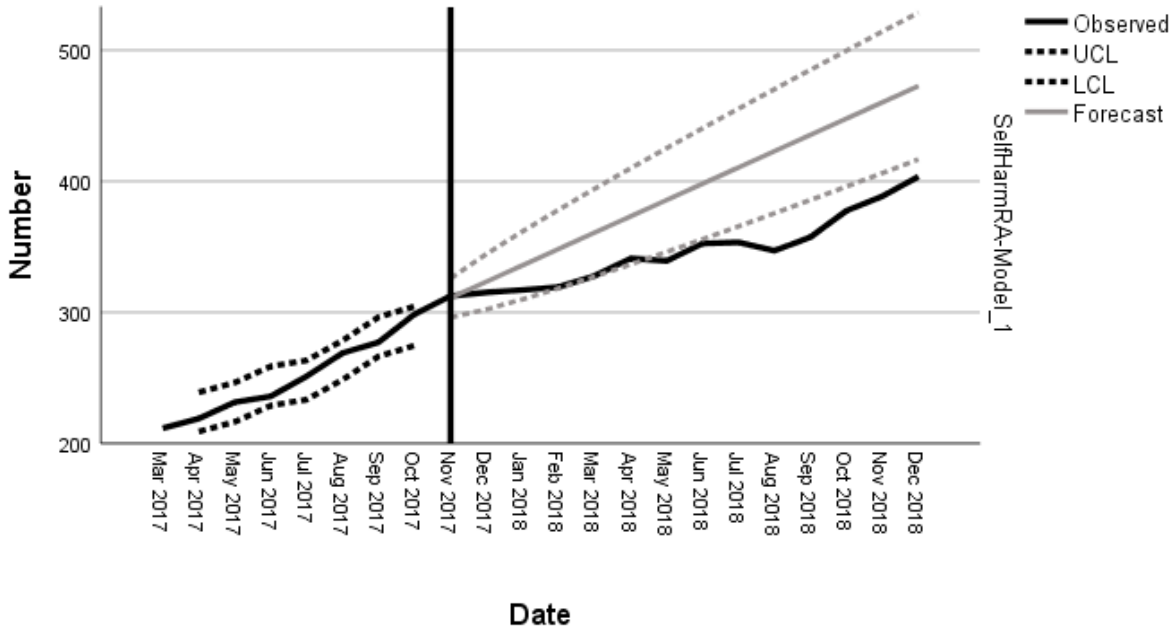
Note: Black vertical line is installation of digital technology (December 2017)

Figure D.8 HMP B Prisoner self-harm rates per 1,000 prisoners



Note: Black vertical line is installation of digital technology (December 2017)

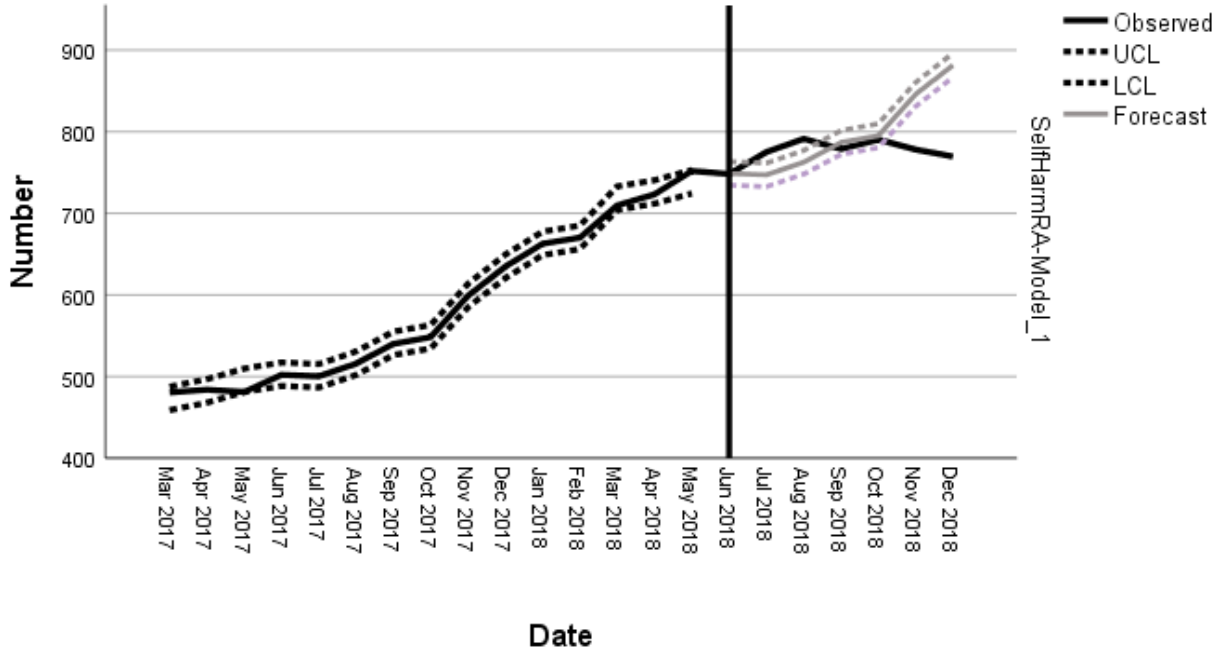
Figure D.9 HMP C Prisoner self-harm rates per 1,000 prisoners



Note: Black vertical line is installation of digital technology (November 2017)

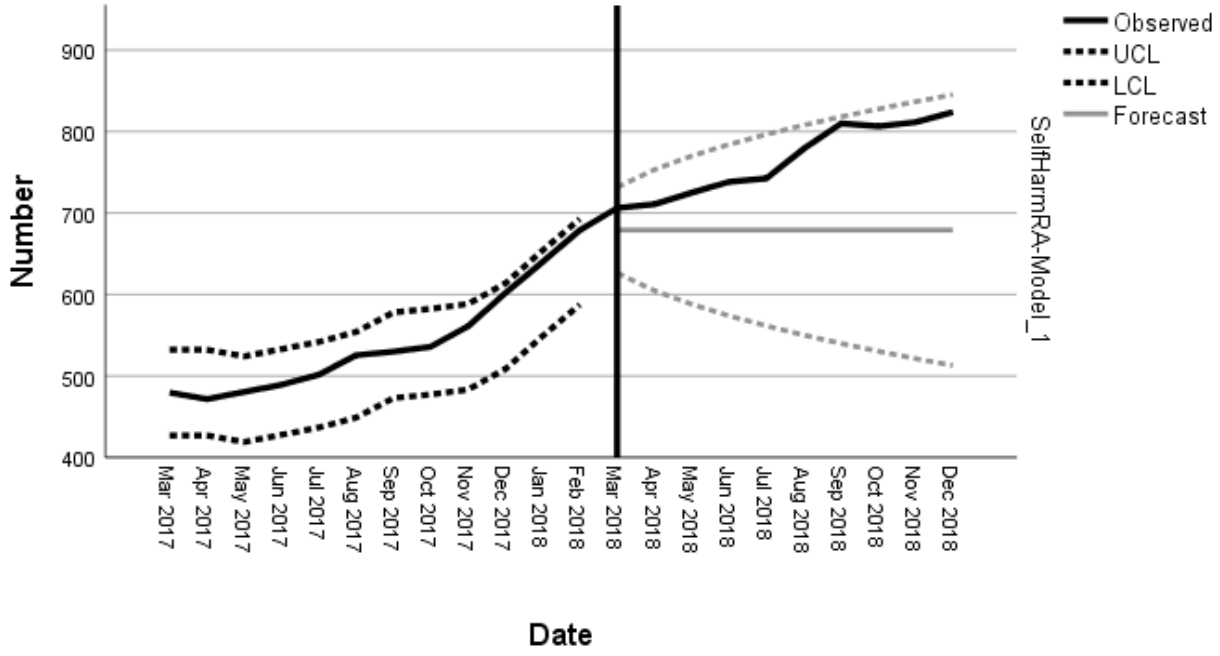
HMP D/HMP E As there were few data points before implementation of the technology, time series analysis was not conducted for HMP D or HMP E.

Figure D.10 HMP F Prisoner self-harm rates per 1,000 prisoners



Note: Black vertical line is installation of digital technology (June 2018)

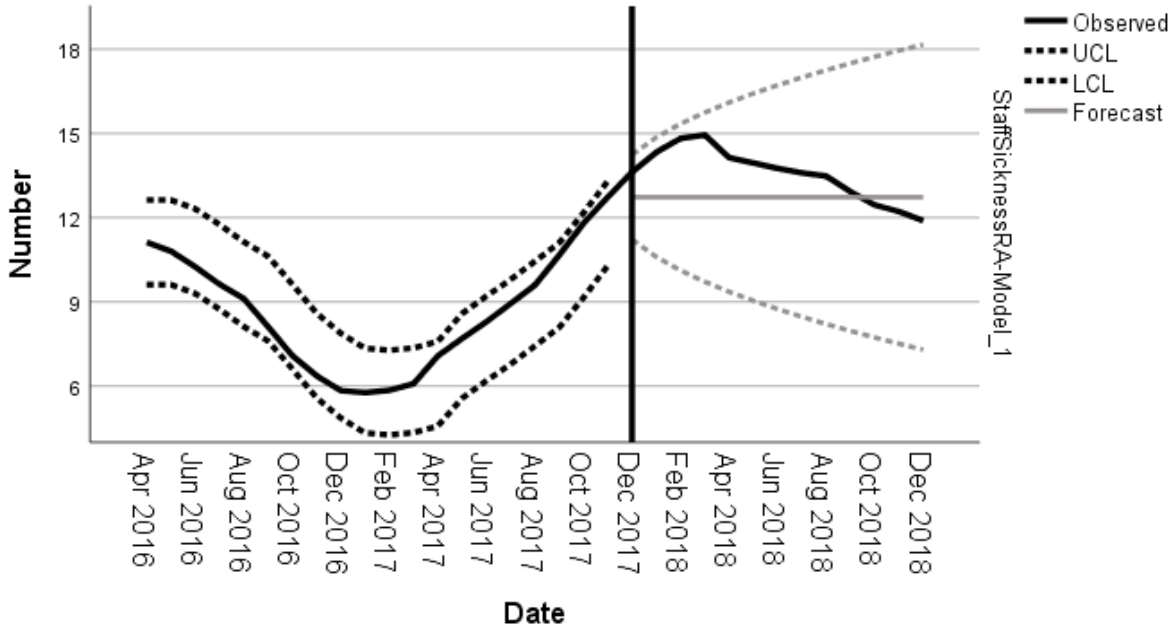
Figure D.11 HMP G Prisoner self-harm rates per 1,000 prisoners



Note: Black vertical line is installation of digital technology (March 2018)

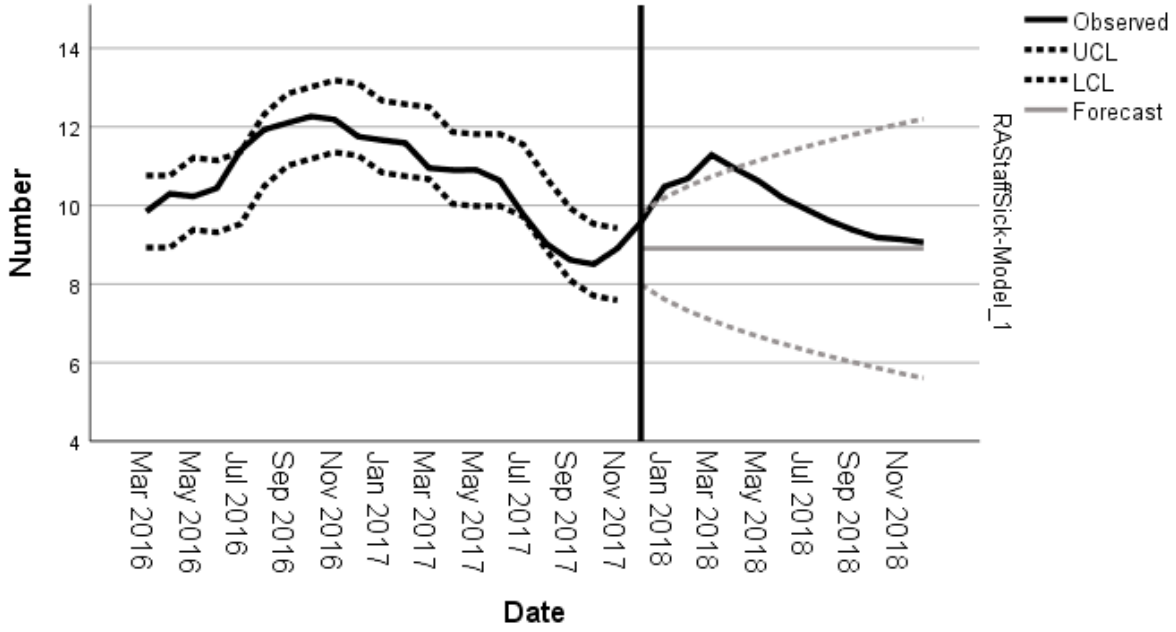
Staff sickness rates

Figure D.12 HMP A Staff sickness rates (days per 1 fte)



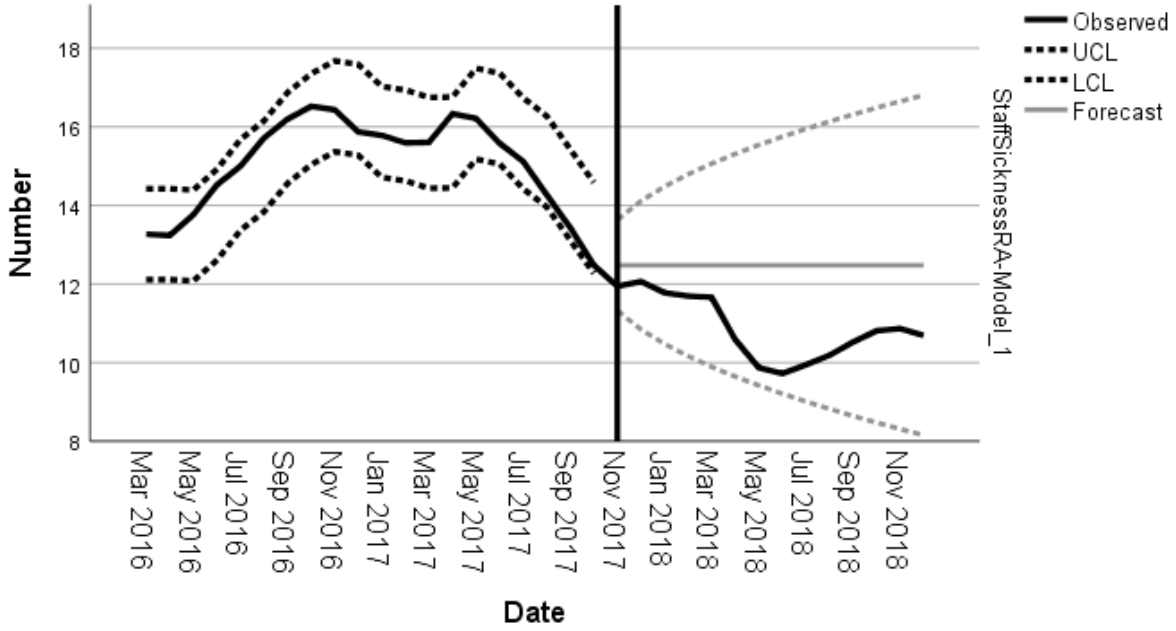
Note: Black vertical line is installation of digital technology (December 2017)

Figure D.13 HMP B Staff sickness rates (days per 1 fte)



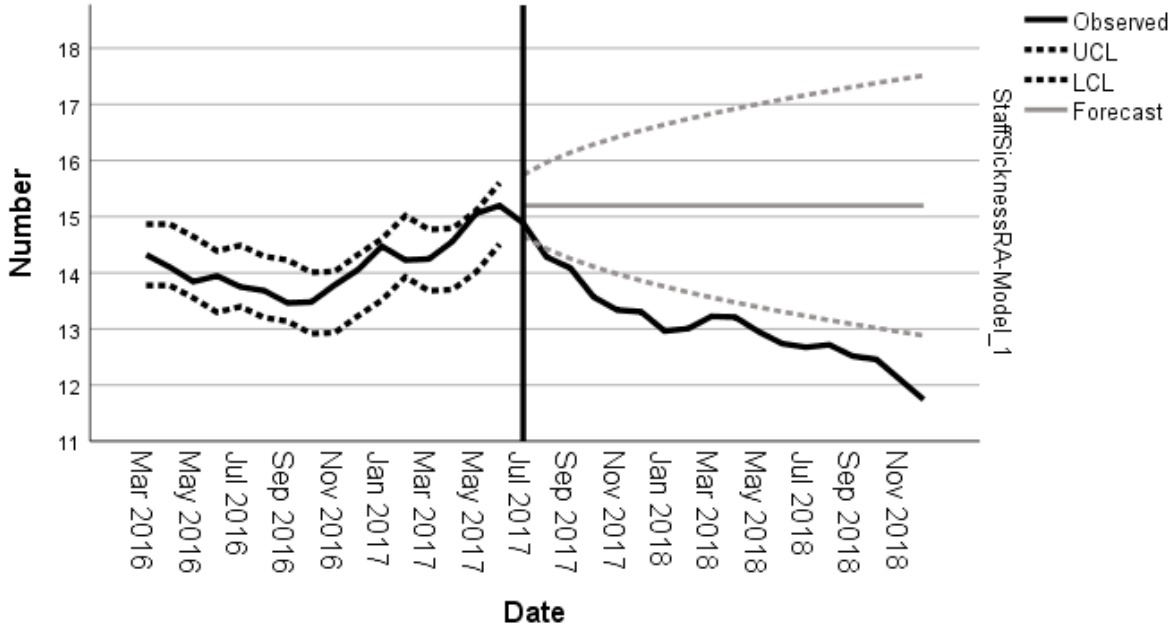
Note: Black vertical line is installation of digital technology (December 2017)

Figure D.14 HMP C Staff sickness rates (days per 1 fte)



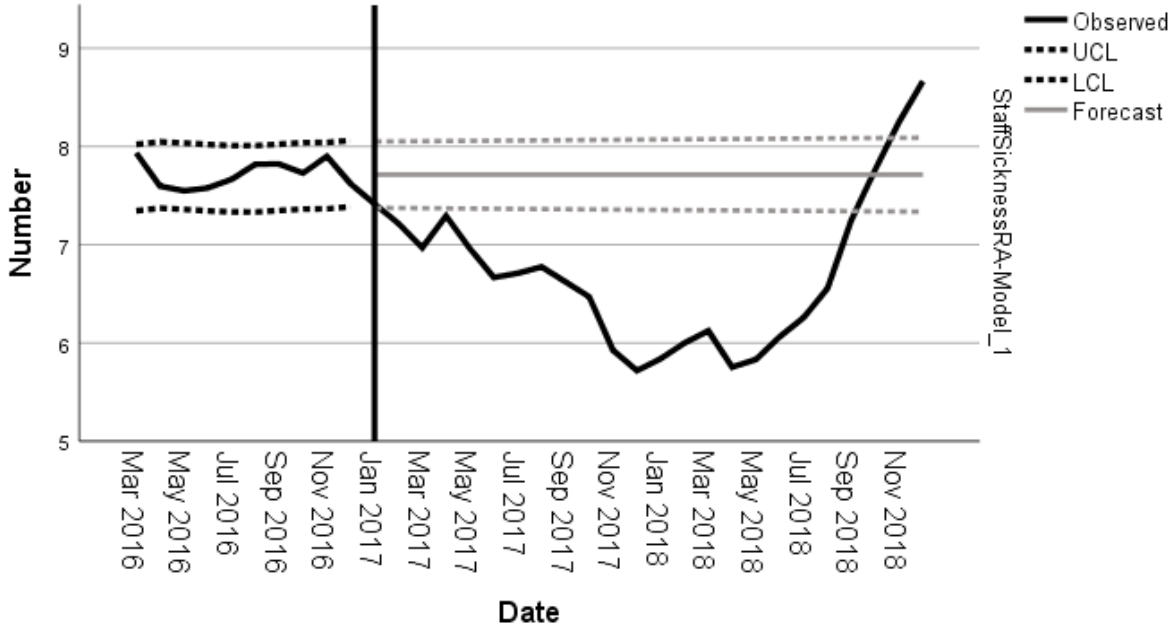
Note: Black vertical line is installation of digital technology (November 2017)

Figure D.15 HMP D Staff sickness rates (days per 1 fte)



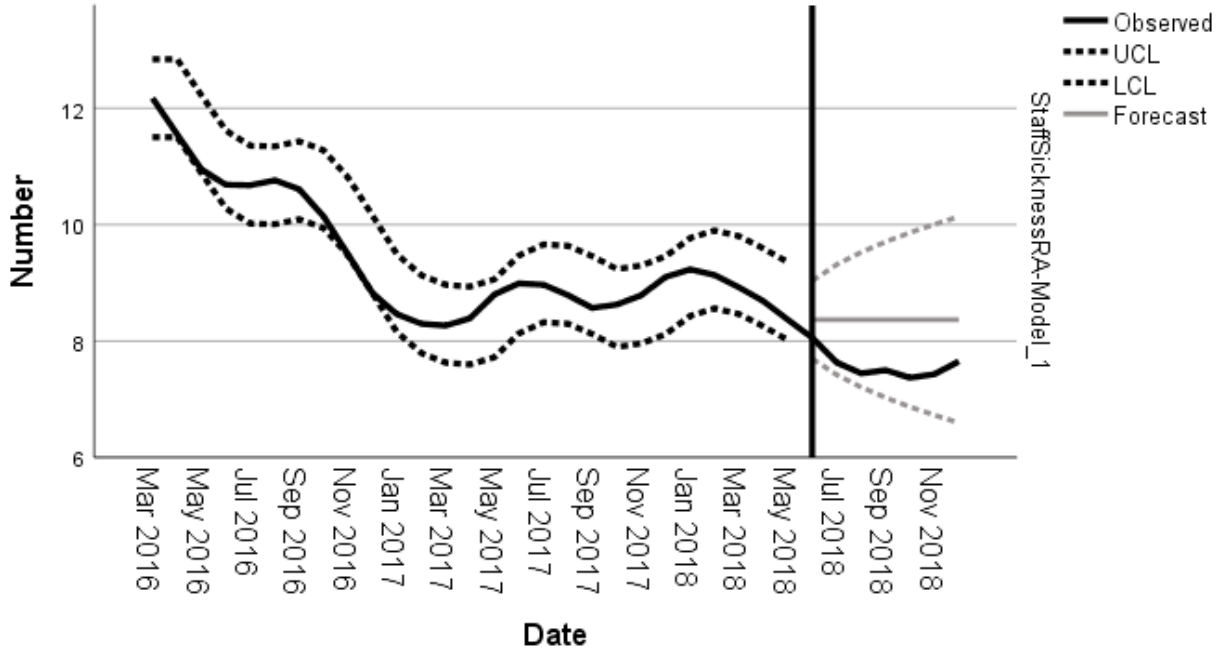
Note: Black vertical line is installation of digital technology (July 2017)

Figure D.16 HMP E Staff sickness rates (days per 1 fte)



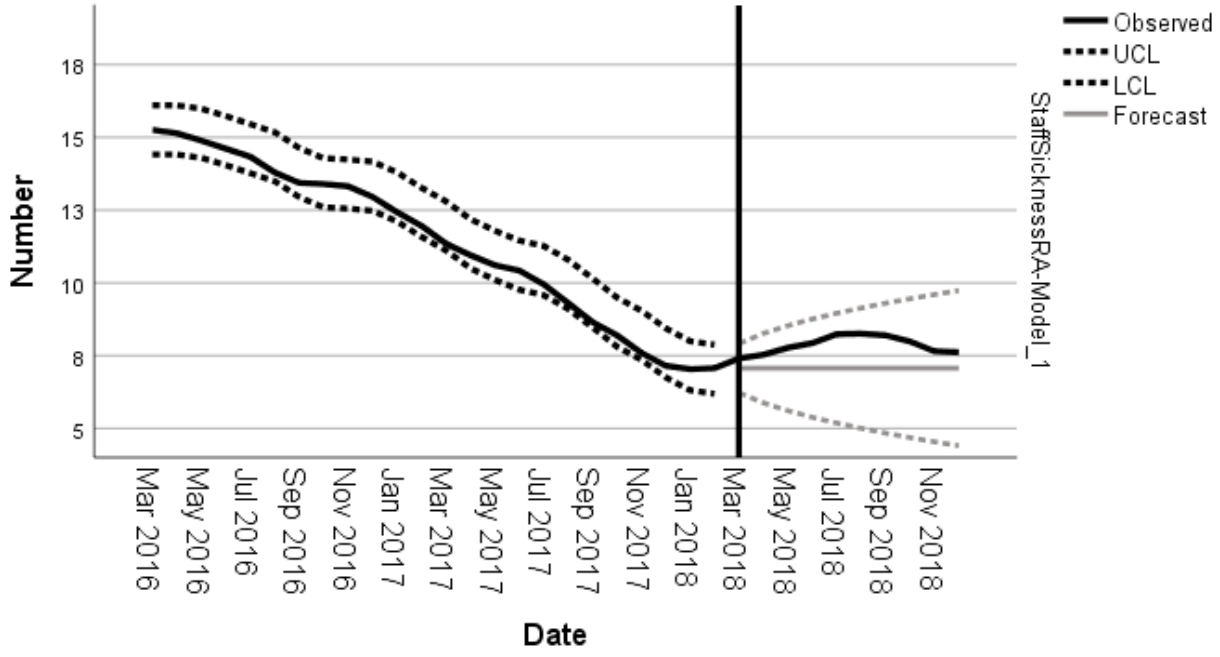
Note: Black vertical line is installation of digital technology (January 2017)

Figure D.17 HMP F Staff sickness rates (days per 1 fte)



Note: Black vertical line is installation of digital technology (June 2018)

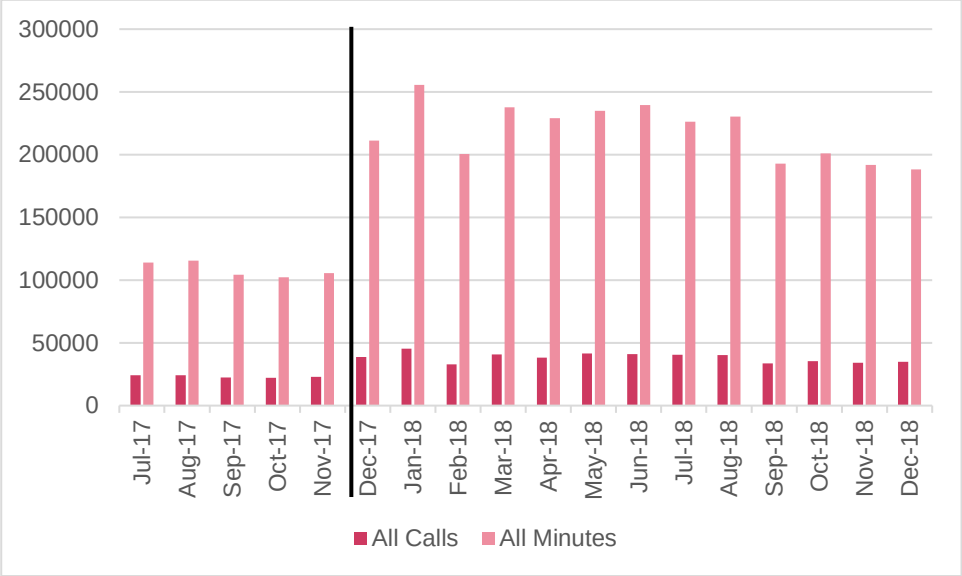
Figure D.18 HMP G Staff sickness rates (days per 1 fte)



Note: Black vertical line is installation of digital technology (March 2018)

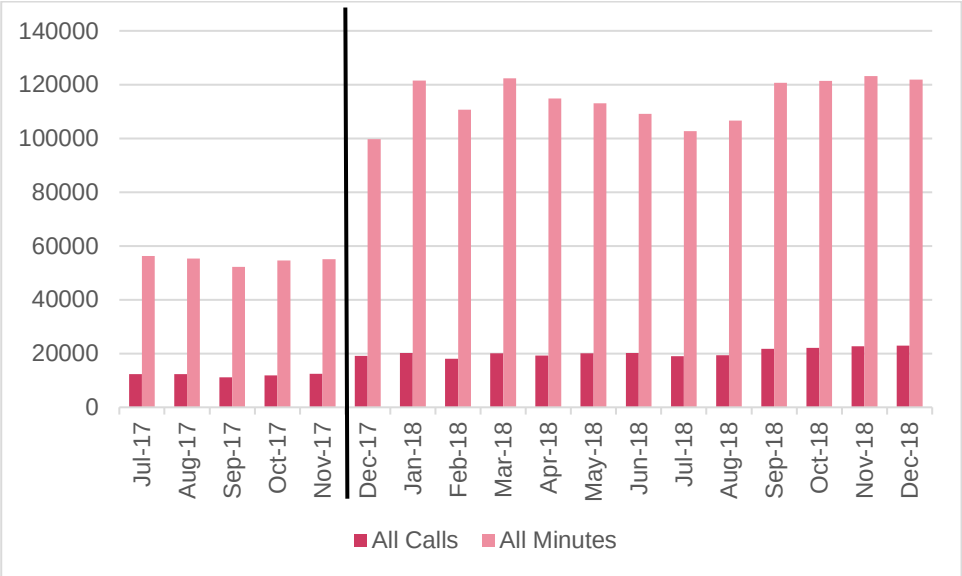
Appendix E
Call Phone Data

Figure E.1 Total calls: HMP A



Note: Black vertical line is installation of in-cell telephones (December 2017)

Figure E.2 Total calls: HMP B

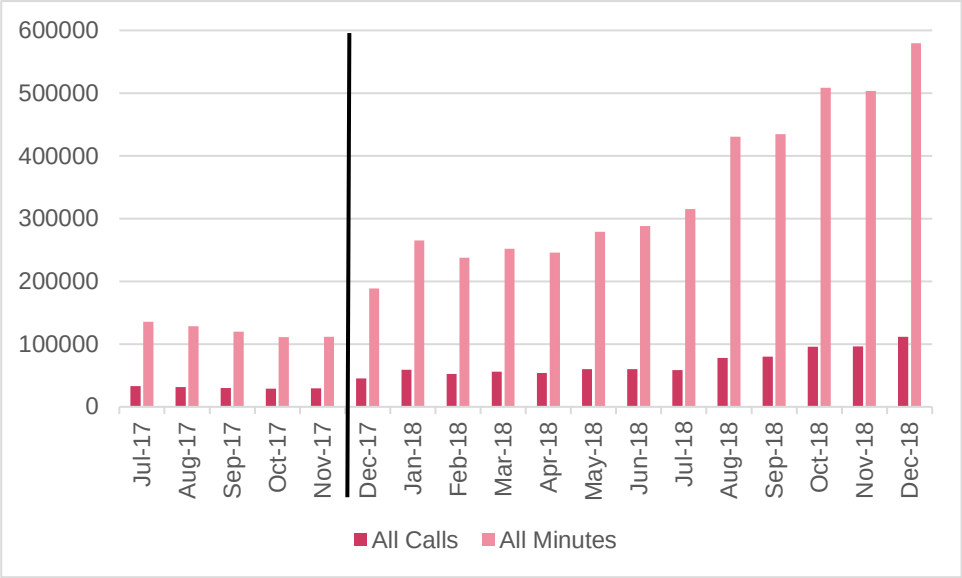


Note: Black vertical line is installation of in-cell telephones (December 2017)

HMP C

In-cell telephones were installed in July 2017, so there is no BT data before this date.

Figure E.3 Total calls: HMP D

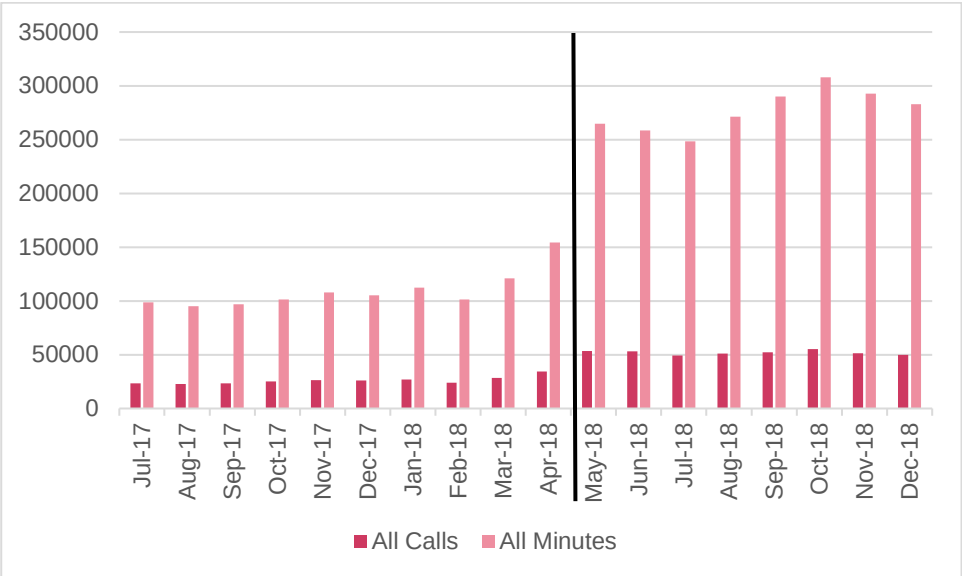


Note: Black vertical line is installation of in-cell telephones (December 2017)

HMP E

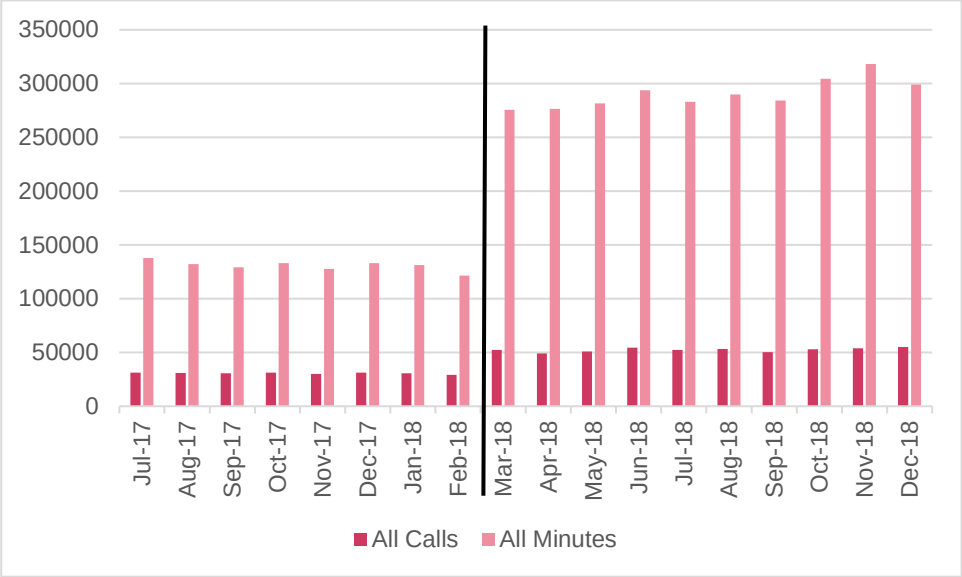
In-cell telephones were installed in September 2016, which was before the date where BT data were available.

Figure E.4 Total calls: HMP F



Note: Black vertical line is installation of in-cell telephones (May 2018)

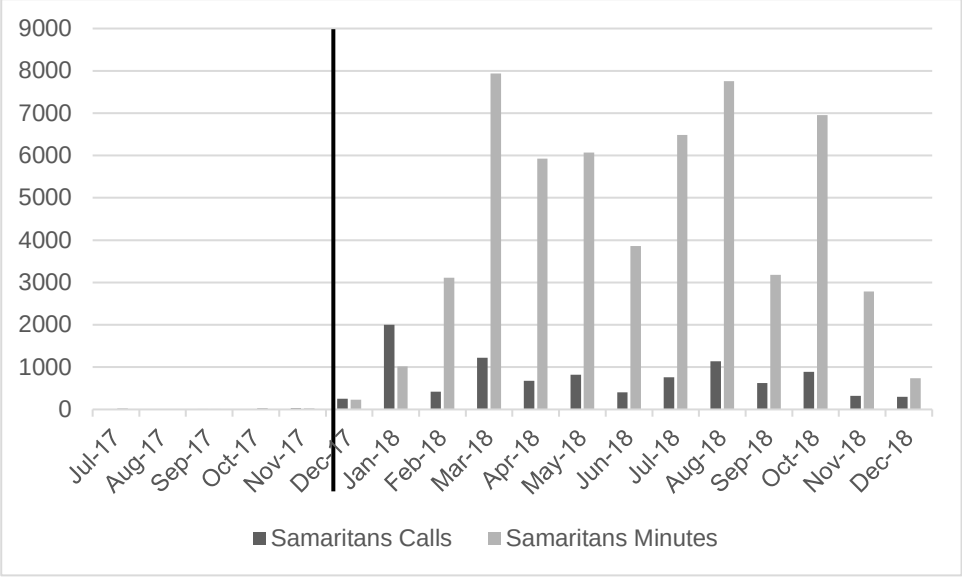
Figure E.5 Total calls: HMP G



Note: Black vertical line is installation of in-cell telephones (March 2018)

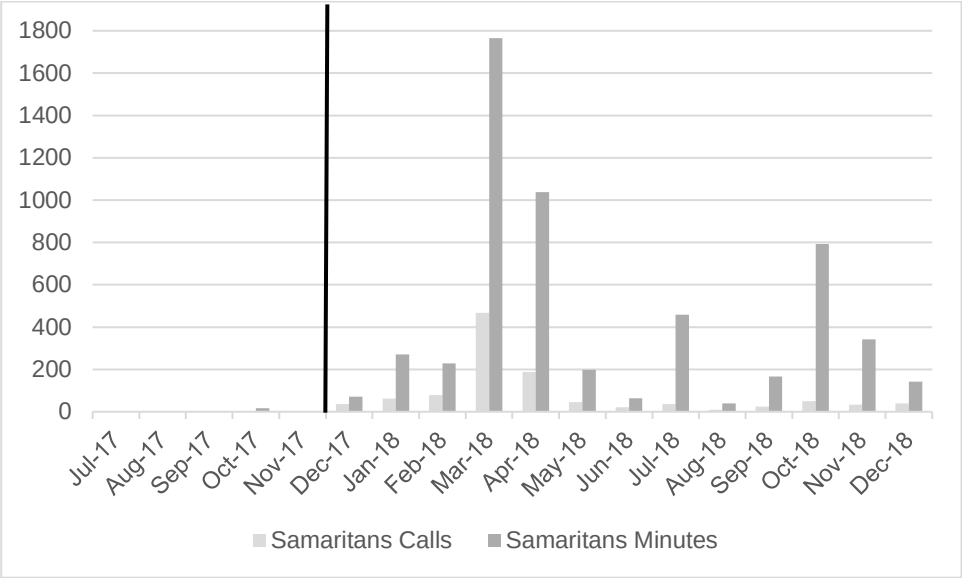
Calls to the Samaritans

Figure E.6 Calls to the Samaritans: HMP A



Note: Black vertical line is installation of in-cell telephones (December 2017)

Figure E.7 Calls to the Samaritans: HMP B

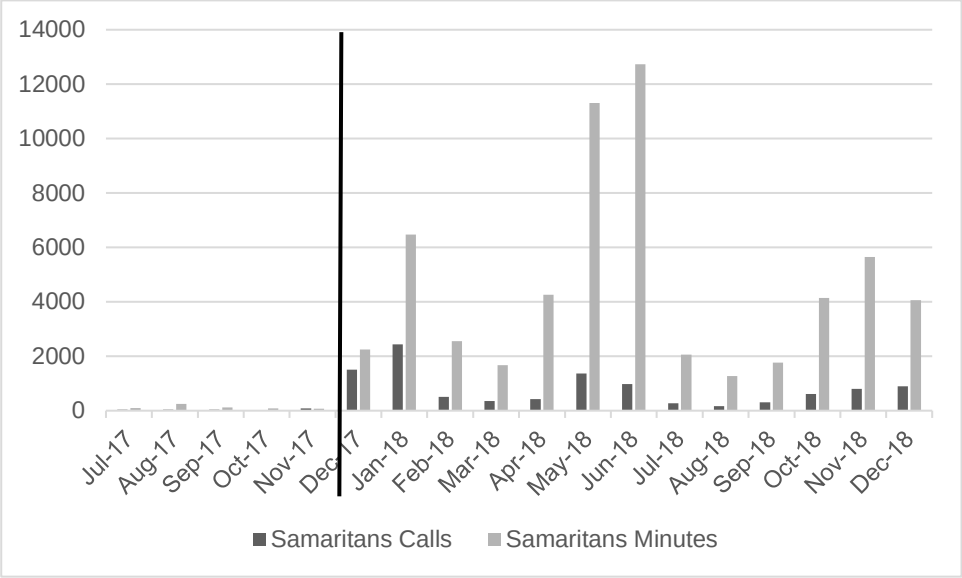


Note: Black vertical line is installation of in-cell telephones (December 2017)

HMP C

In-cell telephones were installed in July 2017, so there is no BT data before this date.

Figure E.8 Calls to the Samaritans: HMP D

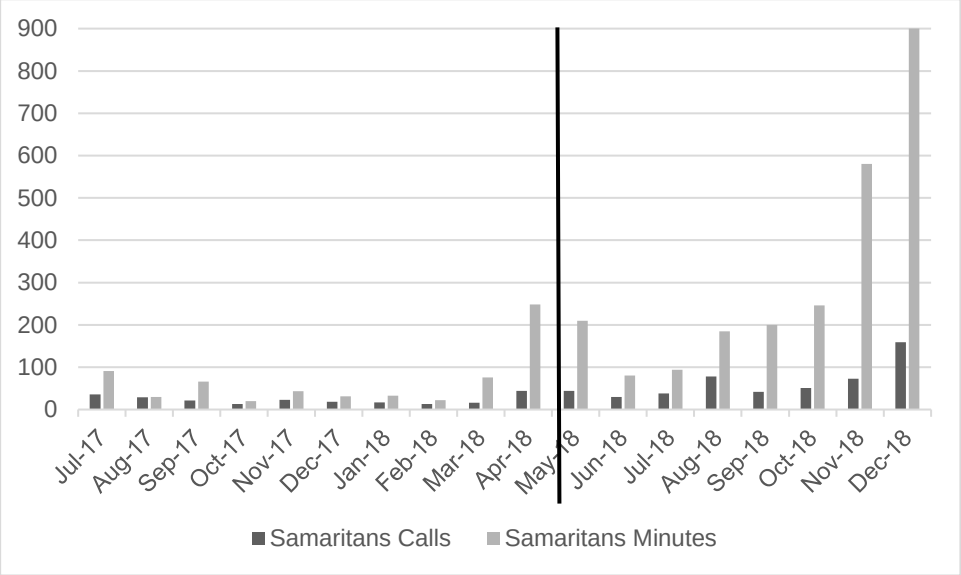


Note: Black vertical line is installation of in-cell telephones (December 2017)

HMP E

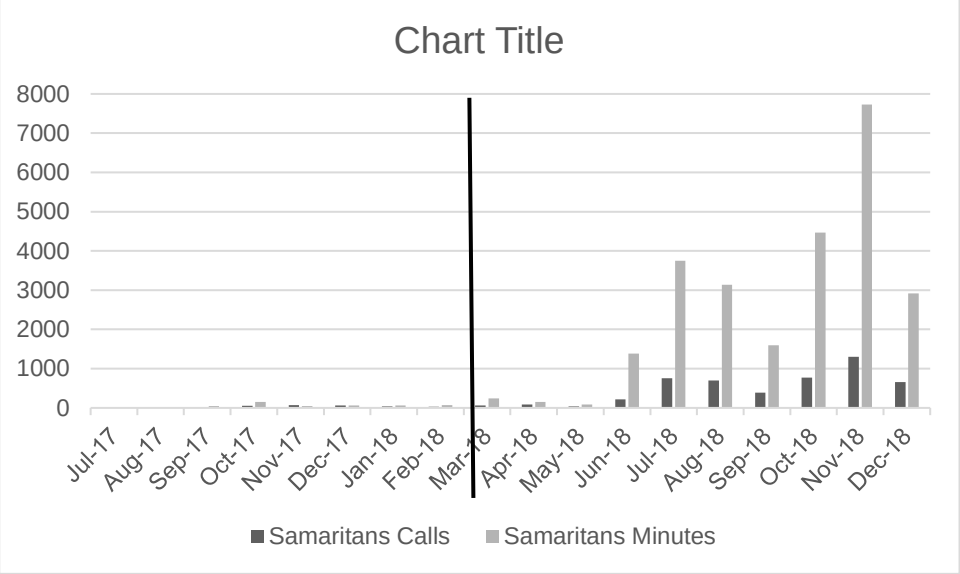
In-cell telephones were installed in September 2016, which was before the date where BT data were available.

Figure F.9 Calls to the Samaritans: HMP F



Note: Black vertical line is installation of in-cell telephones (May 2018)

Figure E.10 Calls to the Samaritans: HMP G



Note: Black vertical line is installation of in-cell telephones (March 2018)

Appendix F

Correlations between prison management metrics and BT data

Table F.1 Correlations between prison management metrics and BT data for HMP A

	Prisoner self-harm	Staff sickness	Adjudications
All Calls	.126	-.579 *	.520
All Minutes	.126	-.638 **	.483
Free Calls	.407	-.453	.641 *
Free Minutes	.445	-.589 *	.369
Samaritans Calls	.022	-.297	.460
Samaritans Minutes	.198	-.679 **	.083

* $p < .05$ ** $p < .01$

Table F.2 Correlations between prison management metrics and BT data for HMP B

	Prisoner self-harm	Staff sickness	Adjudications
All Calls	-.856 ***	-.003	-.537
All Minutes	-.841 ***	.066	-.509
Free Calls	-.225	.243	-.443
Free Minutes	-.524 *	.268	-.480
Samaritans Calls	.041	.385	-.696 *
Samaritans Minutes	-.151	.239	-.674 *

* p < .05 *** p < .001

Table F.3 Correlations between prison management metrics and BT data for HMP C

	Prisoner self-harm	Staff sickness	Adjudications
All Calls	.298	.252	-.004
All Minutes	.263	.279	-.023
Free Calls	-.099	.552 *	.191
Free Minutes	.054	.549 *	.343
Samaritans Calls	-.528 *	-.388	.065
Samaritans Minutes	-.323	-.555 *	.270

* p < .05

Table F.4 Correlations between prison management metrics and BT data for HMP D

	Prisoner self-harm	Staff sickness	Adjudications
All Calls	.042	-.172	.325
All Minutes	-.002	-.252	.347
Free Calls	.322	.302	.308
Free Minutes	.091	-.086	.554
Samaritans Calls	.413	.530 *	.270
Samaritans Minutes	.107	.246	.494

* p < .05

Table F.5 Correlations between prison management metrics and BT data for HMP E

	Prisoner self-harm	Staff sickness	Adjudications
All Calls	.610 **	.292	.087
All Minutes	.588 *	.227	.141
Free Calls	-.284	.183	-.420
Free Minutes	-.160	.160	-.449
Samaritans Calls	-.093	-.151	-.214
Samaritans Minutes	-.105	-.166	.037

* p < .05 ** p < .01

Table F.6 Correlations between prison management metrics and BT data for HMP F

	Prisoner self-harm	Staff sickness	Adjudications
All Calls	.204	-.077	.330
All Minutes	.198	-.008	.305
Free Calls	.251	-.176	.205
Free Minutes	.203	-.163	.060
Samaritans Calls	.083	.369	-.009
Samaritans Minutes	.070	.351	.141

Table F.7 Correlations between prison management metrics and BT data for HMP G

	Prisoner self-harm	Staff sickness	Adjudications
All Calls	.239	.0060	-.762 **
All Minutes	.218	.000	-.750 **
Free Calls	.170	-.437	-.398
Free Minutes	.010	-.518 *	-.270
Samaritans Calls	.305	-.444	-.584 *
Samaritans Minutes	.209	-.455	-.560

* p < .05 ** p < .01