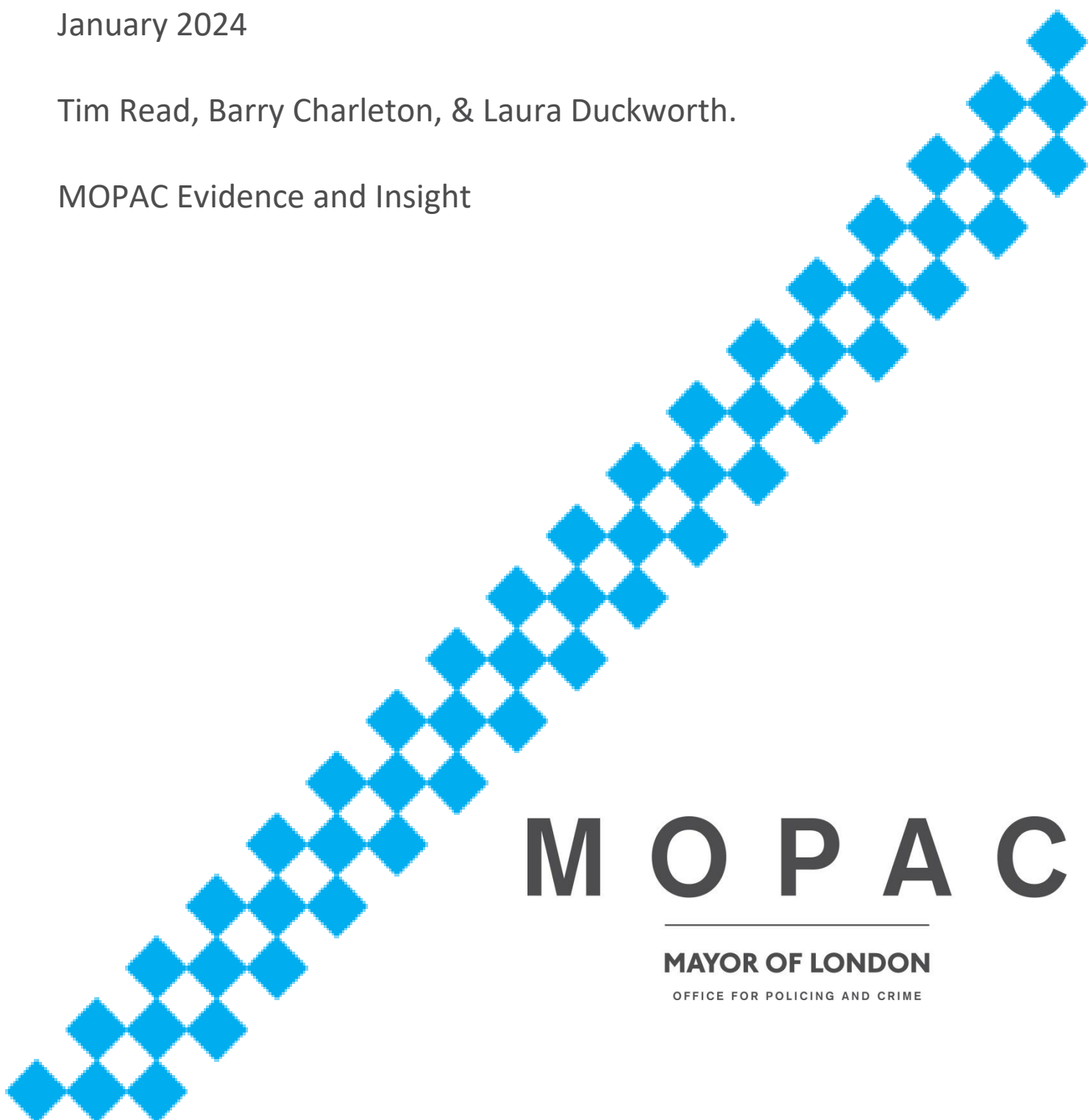

GPS Knife Crime Tagging Final Evaluation Report

January 2024

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MOPAC Evidence and Insight



M O P A C

MAYOR OF LONDON

OFFICE FOR POLICING AND CRIME

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Acknowledgements

Thanks to Roxanne Doyle for her assistance with the transcription and analysis of offender manager and service user interviews.

Thanks to our colleagues at E&I Abi McNeill and Lynne Conroy for their assistance.

Thanks to Dr Krisztian Posch from University College London for his advice on propensity score matching, and to Professor Olivier Marie from Erasmus University, Rotterdam for acting as peer reviewer for this report.

Thanks to Tom Dodsworth, Laura Norton and Marcus O'Halloran for their work in running the GPS knife crime pilot and the provision of data from the pilot.

Executive summary

London's approach to GPS Tagging of Knife Crime Offenders

The Mayor's Office for Policing And Crime (MOPAC) has been at the forefront in the use of electronic monitoring - first piloting Alcohol Abstinence Monitoring Requirement (AAMR) tags in 2014; then GPS tags in 8 London boroughs with persistent and knife crime offenders on community sentences between 2017-2019; before moving on to the current pilot from February 2019, initially in 4 boroughs, then pan-London later the same year with individuals who had committed knife-related offences released from prison on licence.

This final report details the **performance, process and impact evaluation** of the extended GPS knife crime tagging pilot, covering over a three and a half-year implementation period (Feb 2019 – November 2022).

Use of the GPS knife crime tag

- Between the pilot's start in February 2019 and the date of analysis (November 2022), a total of **971 GPS tags** had been imposed with 881 individuals - 799 people had been tagged once, with 82 tagged more than once.
- Three-quarters of tags (n=726) were imposed on release from prison, the remainder (n=243) as part of a licence variation for those already in the community.
- The mean *planned* tagging period was 138 days, with a minimum of 10 days and a maximum of 365.
- All bar one of the tag wearers (n=970) were subject to trail monitoring and over half (54% n=525) were subject to at least one exclusion zone.

Characteristics of those on the knife crime tag

- Almost all tag wearers were male (**98%**, n=948), with a mean age of **26.6 years** and over half (**52%**, n=453) are from a Black or Black British background²⁰. In fact, Black or Black British individuals aged under 25 years made up **30%** (n=258) of tag wearers, increasing to **32%**, (n=309) when including individuals from Mixed White and Black ethnic background.
- White tag wearers tended to be older compared to the overall cohort, with 30% (n=59) aged 35 years or over, compared to 16% (n=157) of tag wearers overall, and 12% (n=55) of those from a Black or Black British background.
- The mean OGRS¹ score (2 year) of tag wearers was 62%, which places the group on average to medium risk of offending (range 4% to 97%). Older tag wearers tended to have a lower OGRS score, with the mean score of those aged 45+ years being 49%.

Compliance with the GPS tag

- Of the **971** tags imposed by November 2022, **835** had been completed². Of these **537** ended without recall, yielding a successful completion of **64%** overall.

¹ The Offender Group Reconviction Scale (OGRS) is a predictor of re-offending based only on static risks – age, gender and criminal history. Howard *et al* (2009).

² 136 cases were still live at the time of analysis.

- Within the 835, there were a total of **298** (36%) that ended due to a recall. However, half (n=**153**, 51%) were for reasons unrelated to the GPS tag (i.e., missed probation appointment or new incident).
- When the research considers the reasons for recall, the effective compliance rate, that is the proportion of cases completed without recall for failure to comply with the GPS tag as a licence condition would be **98%** (n=815).

Learning from service delivery

- The general view from Probation Practitioners (PPs) was the operational delivery and implementation of the pilot improved as the wider London rollout occurred. Examples included improved use of GPS data for case management; not missing eligible cases; better management of risky areas for service users with a gang affiliation; better information provided to probation practitioners by Buddi (the tag provider); and improved guidance to PPs on faulty tags.
- Broadly speaking, partnership working functioned well, although there were some examples of differences of opinion across agencies, such as eligibility for the tag or who should be the lead provider. For example, MPS officers expected to see more 'gang' related nominals or those with higher OGRS scores and queried the restrictions around access to data.
- Most service users who responded to a survey agreed they understood why they received the tag (92%, n=607); knew how to comply (98%, n=645); and how the GPS requirement worked (93%, n=612). However, a small number of individuals reported that they had not been told in advance that the tag was being fitted and how it worked.
- For the 964 cases where the location of fitting was recorded, under half (**49%**, n=476) were at prison, with the remainder at probation (**47%**, n=454), or another approved premises (**4%**, n=34). There were a variety of explanations for this – some planned (the distance of certain prisons from London which made fitting there impractical, and those tagged via licence variation who were already in the community), a minority of non-prison fittings were unplanned (for example when an initial prison fitting had not been possible due to issues such as prison access or availability of field staff).
- Most surveyed users agreed the tag was comfortable to wear (76%, n=161) although individuals interviewed outlined a different picture, noting it was too bulky and raising other issues, such as charging. Analysis undertaken by Buddi suggests tagging equipment is replaced in around 2% of cases.

Exploring the benefits of the GPS tag

- Probation Practitioners were overwhelmingly positive about the GPS tag. They identified a range of benefits such as provision of 'structure and discipline'; enhanced case management; aided supervision; potentially having a deterrence effect and so on. The belief that the tag positively affects offending behaviour was also shared, but there was uncertainty regarding long-term behaviour change.
- The majority (60%, n=of 382) of tag wearers who completed the end-point survey were on the positive side regarding their overall experience of the tag. The majority also reported they felt the tag had a positive impact on their offending behaviour (83%, n=529) and towards their life in general (60%, n=382). Two areas, that of 'financial situation' and 'employment situation' were identified as being 'worse' following the tag. Whilst positive, there may be a level of bias here as these individuals not only completed the tag, but they were also engaged enough to complete a survey on its use.
- The crime mapping aspect did not have the expected level of influence. Many crimes were uploaded but only resulted in a small number of 'matches' (i.e., a link between an individual and crime location), and led to just two additional prosecutions. More work on assessing this aspect would be essential to maximise the value of the technology.
- Understanding impact of any initiative is complex, and this is no different for the GPS tag. A variety of approaches were adopted, and analysis undertaken, including predicted versus actual offending comparisons using OGRS; comparisons of offending from the GPS tagged group across time points; and extending these comparisons to a Control group, constructed through Propensity Score Matching (PSM). The time points included offending before the order; on the order (unique to the individual); then fixed periods after the order start date; and after the order end date of 30, 60, 90 days, 12 months, and 24 months. As the Control group were not standardly subject to 'something' following prison release, the most useful comparison is from 'point zero' (when the GPS individual was tagged, or their match was released from prison) to the standardised number of days – either before or after.
- Analysis suggested that GPS tags positively affect offending behaviour, although the full impact cannot yet be robustly determined. This is demonstrated by:
 - **Predicted versus actual offending analysis** which indicated the GPS and control groups' actual offending was lower than their OGRS2 estimates would predict – with both groups reducing from a score of 63%. However, the GPS group (54%) was significantly³ lower than the Control (59%).
 - Across the time periods the proportion of individuals who reoffend in the GPS and Control groups were very similar – starting at 61% for both groups 24 months before point zero; reducing sharply 30 days after point zero; then slowly increasing over the next 2 years, although **24 months after point zero neither group have returned to their '24 months before' levels of offending.**

³ p=0.28, Pearson Chi-Square 4.816

- Although the GPS group was always lower than the control in terms of the proportion to offend; the number of offences; and the mean number of offences, these were not significantly different within 30-, 60-, and 90-days post point zero, however significant differences were observed at 12- and 24-months.
- At **12 months post point zero**, for individuals with available data (n=470), the number and mean number of offences for the GPS group are significantly lower to the control (291 vs 404⁴; and 1.6 vs 2.0 respectively). However, the proportion who offend is not significantly different (38% GPS versus 42% Control).
- At **24 months post point zero**, for individuals with data still available (n=244), there are significant differences between the GPS group versus the control in terms of the proportion to offend (54% vs 59%⁵); the number of offences (258 vs. 403⁶) and mean number of offences (2.0 vs. 2.8).
- Overall, there are broadly positive results regarding the impact on offending of the tag. However, caveats within the methodological design (i.e., historical comparison group, and the possible influence of Covid) preclude firm statements of impact.

Conclusion

- The evaluation of GPS use has spanned a period of 6 years with 5 published reports, prior to this one⁷. This report explores performance, process, and impact, seeking to bring the evaluation to a conclusion.
- Findings indicate the scheme has a high level of compliance; that delivery improved over the duration of the programme; and that both staff and tag users were generally positive about the technology, and whilst there were positive indications as to the impact on offending, methodological limitations preclude firm statements of success.

⁴ p = 0.050, Mann-Whitney U test = 103288.5

⁵ p=0.28, Pearson Chi-Square 4.816

⁶ p = 0.013, Man-Whitney U test = 26102.5

⁷ All available on MOPAC website: [MOPAC academic research | London City Hall](#)

London's approach to GPS Tagging of Knife Crime Offenders

The Mayor's Office for Policing And Crime (MOPAC) has been at the forefront in the use of electronic monitoring, demonstrated by first piloting the Alcohol Abstinence Monitoring Requirement (AAMR) tags in 2014. In 2017 MOPAC published the London Knife Crime Strategy against a background of increases in levels of knife crime nationally (from 2014) and within London (from 2016). The strategy included a commitment to pilot the use of GPS tagging with knife crime offenders, something reaffirmed in MOPAC's current 2021-25 Police and Crime Plan.

Using GPS tags with persistent and knife crime offenders on community sentences was first piloted in eight North and East London boroughs between 2017 and 2019. Since February 2019, MOPAC's pilot was extended, to include the tagging of individuals being released from prison on licence as part of a knife crime sentence. The pilot was endorsed by the Ministry of Justice (MoJ) and designed to work alongside their national GPS programme. In March 2021 the use of GPS tags on licence was extended to offences of domestic abuse (DA) across London.⁸

MOPAC's interest in GPS tags is reflected in national developments. HMPPS started their own national GPS tagging programme in April 2019 for those on Community orders, Suspended Sentence Orders, Court Bail, Home detention curfew and certain cases on parole. HMPPS launched its original alcohol monitoring services in October 2020, for offenders sentenced in the community, but later extending the scheme to those leaving prison in Wales and England (in November 2021 and June 2022 respectively). In April 2021 HMPPS launched an acquisitive crime trial, monitoring imposed locations for prison leavers convicted for theft; burglary; or robbery offences. Later that year, in August 2021, HMPPS launched its Immigration Enforcement project, on behalf of the Home Office, extending the use of GPS tags to Foreign National Offenders subject to deportation proceedings (HoC PAC 2022). In September 2021 the Government announced additional funding of £183m over the next 3 years to kickstart the Electronic Monitoring Expansion Programme, with plans to increase the EM caseload from around 13,500 in 2021 to 25,000 by 2025. Between 2021/22 and 2030/31, HMPPS predicts £1.2 billion will be spent on an enhanced electronic monitoring service, extending to wider groups of offenders (HoC PAC 2022).

However, during 2022 three highly critical reports were published regarding HMPPS's previous implementation of electronic monitoring.⁹ All three identified the evidence for the effectiveness of tagging was slim. One described it as *'unacceptable that, despite our previous recommendations, the Ministry and HMPPS still do not have sufficient data to understand the outcomes of tagging.... [they] still do not know what works and for who, and whether tagging reduces reoffending'* (HoC PAC 2022), while another concluded evidence for tagging *'still remained weak'* (NAO 2022).

This conclusion came despite the fact that over the last 15 years there have been a number of studies, undertaken in a variety of countries (albeit not in England and Wales), which

⁸ Findings for all these pilots are available on MOPAC's website.

⁹ By the House of Commons Public Accounts Committee (PAC), the National Audit Office (NAO) and Her Majesty's Inspectorate of Probation (HMIP).

suggest the positive impact of electronic monitoring on recidivism.¹⁰ Recent Australian research looking into the use of domestic violence electronic monitoring (DVEM) (Boiteux and Teperski, 2023) found that offenders participating in DVEM were around 7 percentage points (p.p.) less likely to return to custody within a year and significantly less likely to reoffend (for any offence [7.1 p.p.]) and for domestic violence offences [10.5 p.p.] in particular. However, even in this study the authors concluded that they were *'unable to exclude the possibility that unobserved variables and/or factors related to participation in DVEM'* might be influencing their results.

The current report details the performance, process and impact evaluation of London's GPS tagging of knife crime offenders, over a three and a half-year implementation period (Feb 2019 – November 2022). Whilst crime across London (as elsewhere), temporarily changed during this period due to the covid pandemic, since this time knife offences have subsequently begun to increase in London. The need to evaluate the effectiveness of specialist violence prevention and intervention services has never been greater and this report is a timely comprehensive evaluation of such a service.

GPS Knife Crime Tagging: Service Design

Using GPS tags for individuals convicted of knife crime offences, released from prison on licence began in February 2019. Initially in four London boroughs (Croydon, Lambeth, Lewisham, and Southwark), the pilot subsequently rolled out to all 32.¹¹ Originally due to finish in April 2020, the pilot has been extended with the agreement of the MoJ in annual increments, with its current end date being March 2024. Key partners in the pilot have included the London Probation Service (previously the National Probation Service (NPS) (London division) and London Community Rehabilitation Company (CRC)), the Metropolitan Police (MPS), Her Majesty's Prison and Probation Service (HMPPS) and Buddi Ltd (the GPS monitoring provider).

At its core the pilot harnessed GPS locational technology, to track individuals released from prison back in the community. Data provided to probation staff enabled monitoring of specific license conditions and the subject's offending behavior. Probation Practitioner's (PP) were encouraged to use GPS data openly with service users in supervision meetings, to examine and challenge both lifestyle and risk factors linked to offending, especially knife crime. It was anticipated that GPS could help monitor compliance with 'exclusion zones'¹²; and attendance at rehabilitation programmes or treatment interventions. Data could also be provided about bespoke and flexible key locations for the individual in 'real time', via notifications and summary reports, such as heat maps and 'top addresses' visited.

¹⁰ See, for example, Marklund and Holmberg (2009 Sweden), Di Tella and Schargrodsy (2013 Argentina), Henneguelle, Monnery and Kensey (2016 France), Andersen and Telle (2016 Norway), Williams and Weatherburn (2020 Australia), Grenet, Gronqvist and Niknami (2022 Sweden) and Rivera (2023 USA).

¹¹ The initial 4 boroughs were selected because they were amongst the highest boroughs in terms of those with knife crime convictions in prison and because a cluster of boroughs next to each other to make training and engagement easier with police and probation.

¹² See Table 1.

Aims

The overall pilot aim was to test GPS tags, as a tool for reducing the likelihood of reoffending. For this cohort specifically, further weapon-related offending was a key focus, although any impact on the frequency, severity or time taken to reoffend is to be explored. To determine success of the pilot other outcomes were identified, including the use of GPS location data to:

- improve the management of risk posed to adults, children, and the public.
- improve the enforcement of licence conditions and increase deterrence.
- challenge the offenders' thinking and lifestyle and improve rehabilitation.
- enable the MPS to map individual crimes effectively to support crime detection.

Eligibility criteria

GPS tags are most often fitted as part of the individual's licence conditions at the point of prison release.¹³ Licence conditions are nominated by PPs based on what is necessary and proportionate for the management of the case following release, as informed by the pre-release risk assessment. All licence conditions are formally approved by the Prison Governor before they are added to the licence and the pilot followed the existing HMPPS processes for identifying and imposing appropriate licence conditions. The length of the tag is specified by the PP, normally up to a maximum of 6 months.¹⁴ To be eligible for the MOPAC pilot an offender must be:

- Aged 18+.
- Subject to a determinate prison licence.¹⁵
- Serving a sentence for either a knife possession offence or another offence which involved the use of a knife or bladed object.
- Released from an eligible prison.¹⁶
- Being released to a London borough.
- Being released to viable accommodation (to enable tag charging).

Most tag wearers were fitted with tags at the point of prison release on licence, however some were also fitted with tags at licence variation, having already been in the community for a period of time. In addition, in January 2020 there was agreement in principle for the eligibility criteria to be extended to include cases being considered for re-release after recall by the Parole Board, if GPS conditions were deemed necessary and proportionate.

Data provision to Probation Practitioner's (PP)

The GPS tag and monitoring provider (Buddi) supplied a range of data to probation, including information about the tag, as well as locational data for the individual. For example, when the tag reaches 30% battery life, the wearer receives a series of automated text messages and

¹³ There are a variety of reasons this may not happen, including Buddi being unable to attend, the releasing prison being outside of the immediate London region or agreement that the fitting would be more effective at probation premise, rather than at prison release.

¹⁴ In some circumstances (cases of identified risk) the maximum length of the tag may exceed 6 months, but this requires probation line management approval.

¹⁵ Where the court sets a fixed length for a prison sentence.

¹⁶ Eligible releasing prisons from Feb 2019 were Belmarsh, Brixton, Bronzefield, Coldingley, Downview, Feltham, High Down, Highpoint, Isis, Onley, Pentonville, Send, Thameside, Wandsworth and Wormwood Scrubs, expanded from February 2020 to include HMPs Onley and High Point.

phone calls reminding them to charge for at least an hour, if the tag has still not been placed on charge after two hours the PP will receive a notification of the battery being flat.

Exclusion/inclusion and interest zones

As part of the licence conditions for the GPS tag it is possible for the PP to specify an area(s) in which the tag-wearer cannot enter or leave. Zones can vary in type (see table for more details), but the PSI 12/2015¹⁷ states ‘the purpose of an exclusion zone condition must be clear and necessary, and the size of the exclusion zone reasonable and proportionate’. PPs are provided with real time email alerts in the event of an exclusion zone breach. Interest zones function in a similar way, but are not linked to an enforceable licence condition, instead being linked to the ‘trail monitoring’ condition that allows more flexible monitoring of areas linked to risk or rehabilitation.

Table 1: Zone types

Zone Type	Buddi alert
Exclusion zones	PP is provided with an alert immediately as the tag-wearer <i>enters</i> the specified area(s). ¹⁸
Exclusion zone with a ‘grace period’	PP/tag-wearer is not alerted until a specified period has elapsed (typically requested by the PP if, for example, the tag-wearer must pass through the exclusion zone for work/when travelling).
Inclusion zones	Alert is provided when the tag-wearer moves <i>outside</i> a specified area during a specified time period.
Interest zones	Zones which generate an alert for the PP but are not linked to an enforceable licence condition.

Additional Data

In addition, for tag wearers with the ‘trail monitoring’ licence condition a weekly summary email detailing the tag wearer’s charging patterns and ‘top visited addresses’ were provided, enhanced as the pilot progressed to include more location and duration details. If applicable as a concurrent licence condition, PPs also receive respective summary details of **curfew compliance** (as this is a licence condition rather than a GPS licence condition, PPs do not receive real time alerts for any violations).

Additional *ad hoc* data requests were also available for PPs from Buddi, including:

- patented ‘heat maps’** - indicate the most popular locations, visited by a service user over a certain period (see Figure 1).
- trail maps** - showing the tag-wearer’s movements.
- specific addresses/location visits.**

After November 2019 some PPs were given direct access to the Buddi system via the secure customer portal, allowing them to produce the various outputs above as required. This access was initially offered to all NPS PPs who had live cases at the time (15 PPs), about half of whom accepted. More recent data provided by Buddi showed that in the last 12 months 198 PPs had accessed the Buddi Eagle system directly, 31 in the last month (August 2023).¹⁹

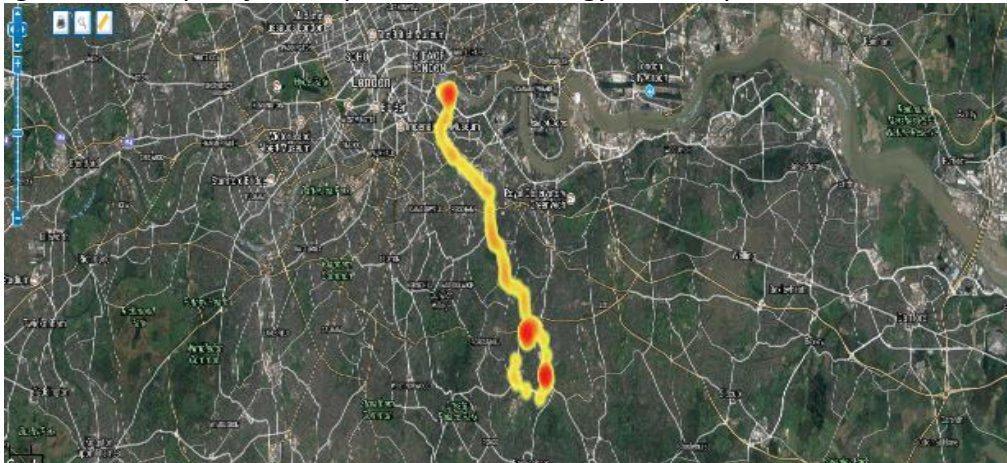
¹⁷ Prison Service Instructions (PSIs) outline the rules, regulations, and guidelines by which prisons are run. Prison Reform Trust. <https://prisonreformtrust.org.uk/adviceguide/licence-conditions-and-recall-indeterminate-sentences/>.

¹⁸ There is also the facility for Buddi to phone the on-call emergency probation manager in the event of an emergency out-of-hours breach of an exclusion zone.

¹⁹ This figure covers both MOPAC’s domestic abuse and knife crime tags.

The MPS and other agencies can also request specific GPS data through an External Agency Request (EAR) process. This can be used to assist in investigation and conviction. Where justified, a RIPA (Regulation Investigatory Powers Act) request is also possible for police teams to gain direct access to the Buddi system to live monitor the location of an offender on tag.

Figure 1. Example of Buddi patented technology Heatmap



GPS monitoring & crime mapping

Crime mapping allows offenders to have their movements automatically cross referenced against the location of reported crimes. Within the pilot crime mapping is only carried out for offenders assessed as “more likely than not” to reoffend within 2 years, i.e., individuals with an OGRS (Offender Group Reconviction Scale) score of 50%+. Only when a match between an offender and a crime location occurs would data be released to police for initial assessment of the significance of the match. Once this initial match has been assessed, then further data can be requested by MPS to support investigation if required. Crime mapping has been taking place since June 2019, and since November 2019 has been undertaken by a dedicated analyst based in the MPS Central Intelligence team.

Evaluation

The Evidence and Insight (E&I) Unit - MOPAC's in-house social research and analytical team - were commissioned to undertake a multi-year evaluation of the GPS Knife Crime Tagging pilot. The broad aim was to gather a holistic understanding of the overall delivery, combining learning from across the three-and-a-half-year period (2019-2022). Findings are split into three main sections:

- *Performance* - monitoring key indicators of the innovation, including numbers receiving the tag; types of orders; compliance rates; violations; breaches; order completions; crime mapping hits; crime mapping outcomes.
- *Process* - understand the context of service delivery; implementation over time; learning about the model design; and experiences of practitioners and tag wearers involved in the pilot through surveys and interviews.
- *Impact* - examining the impact of the GPS tag upon tag wearer offending behaviour (while tagged, and once the tag has been removed) compared against an appropriate counterfactual or un-tagged control group.

Methodology

The current report draws upon a mixture of quantitative data analysis and qualitative feedback from service providers and tag wearers:

Performance Data

A range of sources have been brought together, mainly from the tagging provider Buddi and MOPAC delivery staff. Information about the tag wearers; the types of orders they were on; and their compliance with the tag. In addition, data was provided by the MPS about the crime mapping element of the pilot (i.e., numbers of crimes up-loaded, numbers of matches, and subsequent actions taken by the police).



Data Analysis

Tag wearer survey

Those tagged during the pilot were asked to complete a short survey at the point of fitting and again at removal. The survey, designed by E&I, consisted of 3 topics: the wearers' anticipated/actual perception of the impact of wearing the tag on their behaviour; their relations with friends and family; and their lifestyle. Data was available from **657 individuals during fitting** (where the tag wearer had agreed to take part in the survey), and **448 individuals during tag removal**²⁰. Surveys were administered by the tag fitter (Buddi staff).



Surveys, Interviews & Focus Groups

Interviews with offender managers

Thirty-four semi-structured interviews were undertaken between the start of the pilot and August 2020, with PPs supervising those on GPS tags. Individuals were asked about specific cases details; how they had used data from the tag in supervision; and for their general views of the tag. Interviews with PPs were undertaken regardless of whether the individual(s) they supervised was/were recalled or not (see appendix for various interview schedules).

²⁰ The difference between the numbers of tag fitting and removal surveys is accounted for because of the number of recall cases, and the fact that some tags are still active.

In addition, **6 focus groups** were undertaken with probation teams during May and June 2021. Teams were selected either because they had high/medium/low caseloads; or high/medium/low take-up of tags. The primary purpose was to ascertain why take-up varied across PPs, and to try and establish why some PPs had not used GPS knife crime tags for their supervised offenders.

Interviews with tag wearers

Semi-structured interviews with a **small (10 people) convenience sample of service users** were completed between November 2019 and March 2021. Individuals were asked about their experiences wearing the tag; their understanding of why they had been tagged; and views of the tag overall. Tag-wearer interviews were only undertaken with those who had not been recalled and were still in the community, which clearly introduces a degree of bias into the sample.

Interviews with MPS officers

Interviews in relation to the crime mapping element of the GPS pilot were undertaken in July 2020 and November 2021 with **16 MPS officers**, some who were borough single points of contact (SPOCs) for the crime mapping process and others who were members of the central analysis team that did the crime matching.

Data considerations

There were several data challenges for the evaluation. The criteria for selection for inclusion on the tag, particularly the broadness of the offence category ('serving a sentence for either a knife possession offence or another offence which involved the use of a knife or bladed object') and the level of discretion provided to PPs over selection, produced a treatment group that was difficult to match for subsequent analysis. The specific difficulties in creating an appropriate control group for the impact analysis undertaken for this research are discussed in the section below.

Impact analysis

To examine the impact of the GPS knife crime tag on offending, the research compared offending patterns whilst on and off tag for two matched groups (treatment, who had received the tag, and control, who had not) created using propensity score matching (PSM). PSM consists of four phases: 'estimating the probability of participation, i.e., the propensity score, for each unit in the sample; selecting a matching algorithm that is used to match beneficiaries with non-beneficiaries to construct a comparison group; checking for balance in the characteristics of the treatment and comparison groups; and estimating the programme effect and interpreting the results'²¹.

The creation of the control group for the impact analysis was not a simple task. The knife crime tag had a staged roll-out across London. In addition, as has been mentioned elsewhere in this report, offenders released from non-London prisons were not eligible for the GPS knife crime tag, but data was not available to use them as a counterfactual group. Initially the

²¹ <https://www.betterevaluation.org/methods-approaches/methods/propensity-scores>.

intention for the control group was to take account of the time lag in the rollout of implementation and the non-eligible prisons to create a natural control group of those who would have been eligible for the tag elsewhere in London. Therefore, the initial request to probation was for all those released on determinate licence between 1/1/2019 and 31/3/2020 from specific prisons and from non-participating boroughs for a range of specified offence types (possession of weapons/blades, robbery, violence), aged 18 or older.²²

However, analysis of the control group showed that there were insufficient cases (n=69) to allow appropriate matching to the treatment group. As a result, it was decided to increase the size of the control pool by revising the date criteria for inclusion to cover the period between 1/7/2017 and 31/12/2018, i.e., the period before the GPS knife crime tag had been implemented. While this provided a larger pool for comparison, it meant the control and treatment groups were taken from different time periods, which was not ideal, and had implications for the analysis that are discussed later. The same selection criteria were used, and data fields requested, returning records for 3,869 people. Exclusion of cases where data was missing from CRIS, or where there was no knife crime feature code, or knife crime prior to release (identified from offending histories), reduced the size of the control dataset down to 1,951 cases, that was matched against the 600 treatment cases.

The planned core variables for the propensity score matching were age, ethnicity, sex, OGRS2 and offence type. For the last, it was initially planned to use 10 Home Office offence groups (burglary, criminal damage, drugs, fraud, other offences, robbery, sexual offences, theft, violence, and blank/no crime/crime related incident). However, concern about the broadness of these groups, and the presence within them of offences which were qualitatively quite different led to the decision to produce bespoke offence groupings that took into consideration relatable behaviours, intent, type of victim and / or victim interaction.

As a result, the following 15 offence groupings were used in the analysis.

- Commercial robbery. Any robbery or aggravated burglary where the victim was a business/commercial rather than personal.
- Drugs possession. Any drugs offence separated from those where the intent was to produce, sell, supply.
- Drugs supply. Any production, actual or intent to sell or supply drugs, separated from possession only offences.
- Kidnap, blackmail et cetera. Offences commonly grouped with violence, but having specific characteristics which indicate specific intentions potentially linked to organised crime.
- Lower threat and all other offences.
- Murder.
- Other assault and violence. Any personal violence offence not included under murder or serious violence, plus public disorder.
- Other sexual offences. Any sexual offence which does not involve a physical assault.
- Other Theft, Acquisitive and Fraud Offences. Any offence whereby the intent is acquisitive (such as Burglary, Motor Vehicle theft, Other theft), but there is no or minimal direct interaction with a victim (such as during a robbery, artifice/distraction burglary).

²² The data fields requested were date of birth, gender, ethnicity, offence type, sentence type, sentence length, OGRS (1- and 2-year score), borough (OM team), release data, releasing prison, CRN, PNC number, whether the individual had been recalled and, if so, the date of recall.

- Personal Robbery. All robbery and aggravated burglary offences where the victim is a person/s, not business or commercial.
- Serious Violence. Violent offences where injury is caused / intended / threatened.
- Sexual Assault. All forms of sexual assault and rape.
- Stalking, Harassment et cetera. Any form of stalking or harassment which may be either sexually, racially, religiously or otherwise personally motivated.
- Theft Person and Artifice / Distraction Burglary. Acquisitive offences where there is a direct interaction with a victim.
- Weapons. Any weapons offence.

Three sets of variables were created based upon the 15 offence classification groupings.

- a binary variable to show whether each subject had any accused record on CRIS for that offence type.
- the number of accused records on CRIS for each offence type.
- the accumulated severity or harm score for each offence type – the Cambridge Harm Index (CHI) score.²³

Ahead of the PSM, a series of binary logistic regressions were conducted on various iterations of the data. Following this analysis, the decision was taken to remove the OGRS2 variable from the analysis because of its limited contribution to the model, and because of the overlap with the offence variables (detailed above) being used as alternatives. In the subsequent regression analysis, 3 core variables were used in all (age, sex and ethnicity), together with all binary offence variables, total frequency of offence variables and CHI offence variables (as a measure of severity).

Propensity score matching was initially undertaken using the 3 core variables and each of the offence variables (binary, volume and CHI). Matching was done with randomised case order on, without replacement, and using a range of match tolerances (0.25, 0.2 and 0.1). Subsequently the distribution of the matches was examined within different bandings for the propensity score (between 0.00001- 0.2) (0.20001 – 0.4) (0.4001 - 0.6) (0.600016-0.8) and judged to be sufficiently equal (see appendices for distribution). A final decision was taken to use the matching from the number of offences variable rather than the CHI variable, because the latter had less model strength and there were concerns about the large variation in offence groups in the CHI scale.

T-tests were undertaken on all the variables. Some offence groups, whilst significant were deemed to be irrelevant to the analysis, as they were felt to not be theoretically tied to the eligibility criteria of the pilot (e.g., lower threat offences, other theft/acquisitive offences, other sexual offences, and theft person including artifice burglary offences) and were therefore excluded. PSM matching was re-run for offence totals at 0.1 match tolerance, producing 600 fuzzy matched cases. Mann-Whitney U tests were run on the output. There were still significant differences on age and ethnicity, but after applying a standardised mean difference test, these were not significant and allowed the analysis of reoffending to proceed (appendix A provides comparative details for the control and treatment groups of the distribution of the variables used in the analysis).

²³ There are several measures of offence severity/harm available. Variations have been produced by the Ministry of Justice (MoJ), the Office for National Statistics (ONS) and the Cambridge Harm Index (CHI). While none were ideal, ultimately the decision was taken to use the CHI because it was felt to be more robust.

Results from Service Delivery: Performance Insights

This section provides an understanding of what the service delivered over its duration, drawing upon basic performance data; tag wearer demographics; and information about compliance with the tag.

971 tags imposed

75% (n=726) imposed at point of **prison release**.

- 19% (n=154) HMP/YOI Isis.
- 13% (n=104) HMP/YOI Feltham.

138 days mean **planned tagging period**.

Main offence of tag wearer

- **22%** (n=214) **possession of article with a blade or point in public place**.
- **8%** **possession of an offence weapon** (without lawful authority or reasonable excuse).
- **14%** (n=139) **robbery**.
- **10%** (n= 93) **shooting, wounding etc** with the intent to do grievous bodily harm or to resist apprehension.
- **9%** (n=85) **wounding or inflicting grievous bodily harm**.

Enforceable licence conditions

- **All bar one of the tag wears were subject to trail monitoring** (n=970).
- **54%** (n=525) of tags were subject to **exclusion zone(s)**
- **27%** (n=258) requirement to attend **specified location**.
- **24%** (n=231) requirement to report to **approved premises**.
- **2%** (n=15) were required to **report to a police station**.

GPS tags imposed

Between the pilot's start in February 2019 and the date of analysis (November 2022), a total of **971 GPS tags had been imposed** with **881 individuals** - 799 people had been tagged once, with **82 tagged more than once**.²⁴

Three-quarters of tags (n=726) were imposed on the individual's release from prison, the remainder (n=243) as part of a licence variation for those already in the community.

When tags were imposed at prison release, individuals were from Isis (19%, n=154), Feltham (13%, n=104), Brixton (12%, n=95), Thameside (10%, n=80), Wormwood Scrubs (8%, n=66) and Pentonville (8%, n=64).

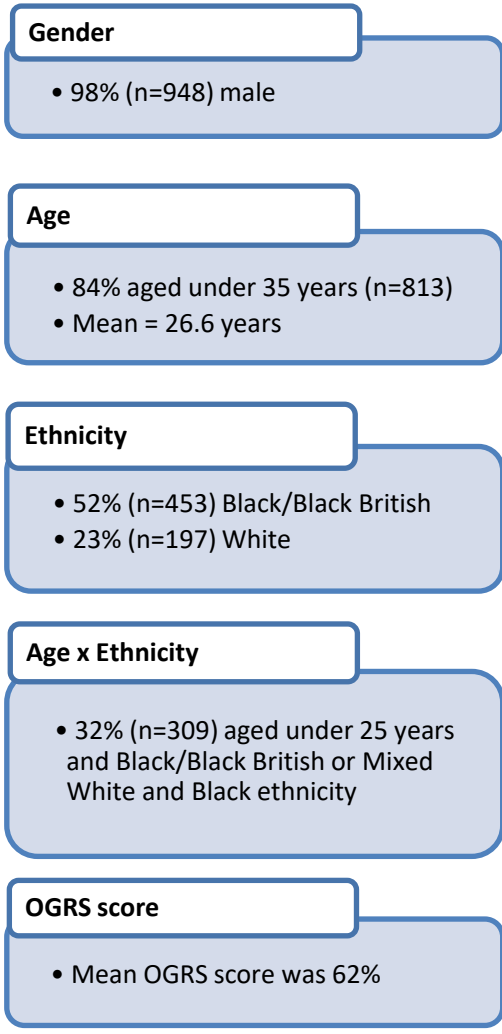
The number of tag wearers released from Feltham and Isis, which focus on young adult offenders, reflects the fact that over **55% of the tag wearers were aged under 25** (see 'who was tagged' for more information).

Where recorded, the mean planned tagging period was 138 days, with a minimum of 10 days and a maximum of 365.

Offences for which the tagged individual was serving a current sentence include violence and the use of weapons (22%, n=214 had possession of an article with a blade or point in a public place; 10%, n= 93 intend to do grievous bodily harm; 9% n=85 were convicted of wounding or inflicting grievous bodily harm).

All bar one of the tag wearers (n=970) were subject to **trail monitoring** and over half (54% n=525) were subject to at least **one exclusion zone**.

²⁴ **77** tagged twice, **3** tagged 3 times, **1** tagged 4 times and **1** individual tagged 5 times.



Who was tagged?

Almost all tag wearers were male (**98%**, n=948), with a mean age of **26.6 years**²⁵ and most (**52%**, n=453) are from a Black or Black British background²⁶. In fact, Black or Black British individuals aged under 25 years made up **30%** (n=258) of tag wearers, increasing to **32%**, (n=309) when including individuals from Mixed White and Black ethnic background.

White tag wearers (23%, n197) tended to be older compared to the overall cohort, with **30%** (n=59) of individuals from a White background being aged 35 years or over compared to **16%** (n=157) of tag wearers overall, and **12%** (n=55) of those from a Black or Black British background.

While the percentages of Black individuals in the GPS caseload are clearly disproportionate to proportions of Black Londoners in the general population, they do reflect the picture the criminal justice system more widely, in Metropolitan Police Service statistics, or the probation caseload (which clearly is an issue in itself). As a comparison, the proportion of people with Black or Black British ethnicity within the pilot was 8 percentage points higher

than the proportion of those of the same ethnicity in the closest comparison group used for benchmarking. The proportion of tag wearers whose ethnicity was recorded as Mixed was two percentage points lower in the pilot compared to the benchmark sample.

The mean OGRS score (2 year) of tag wearers was **62%**,²⁷ which places the group on average at medium risk of offending²⁸, but there was a wide range of scores across the cohort (a range from 4% to 97%). Older tag wearers tended to have a lower OGRS score, with the mean score of those aged 45+ years being **49%**. The OGRS score is also important because the crime mapping facility is only available for tag wearers with a score over 50.

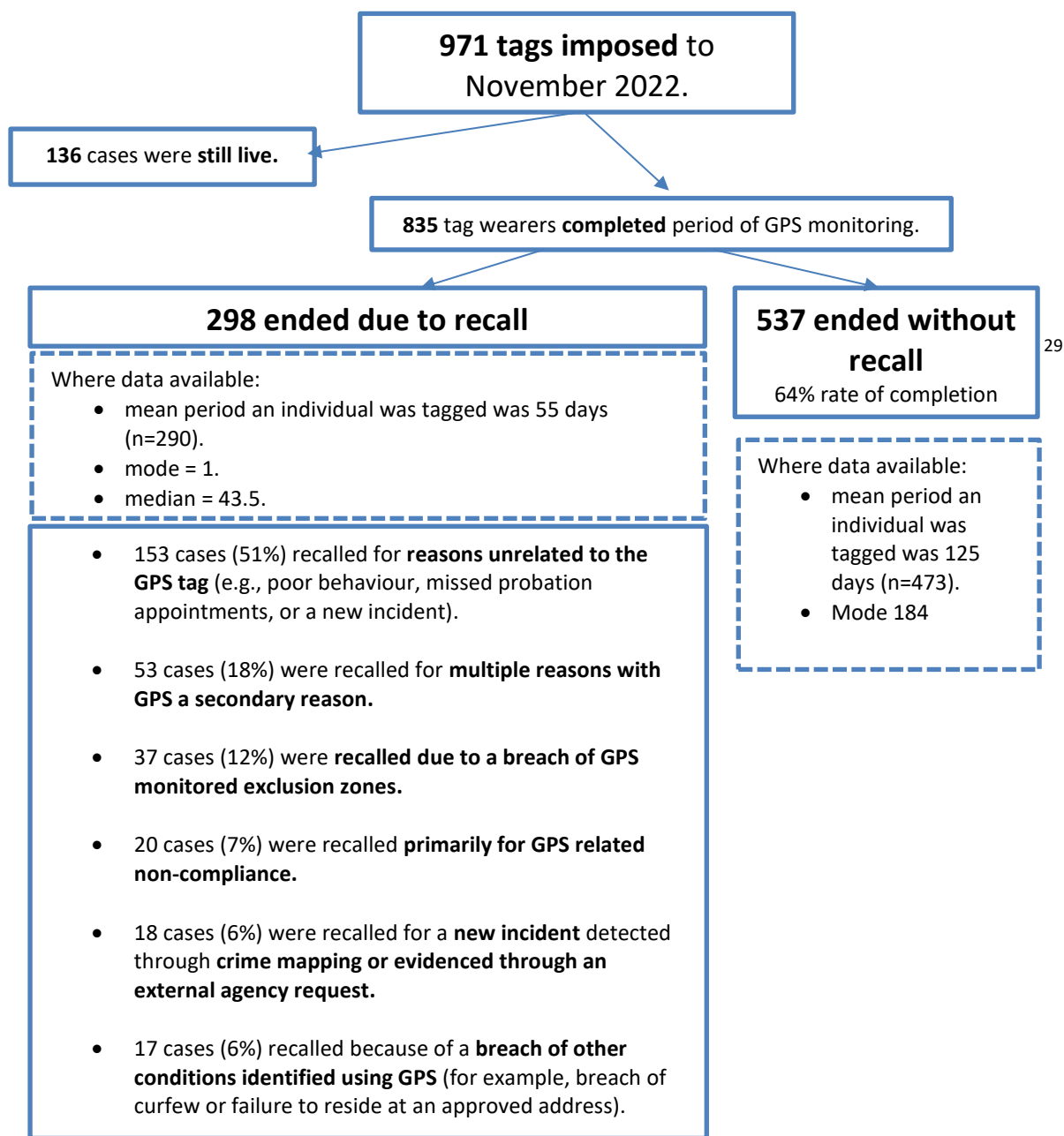
²⁵ Where the age of the tag wearer is recorded (n=970), most tag wears were aged under 35 years (84%, n=813), with 57% (n=552) aged 18-24 years, 27% (n=261) aged 25-34 years, 10% (n=94) aged 35-44 years, 5% (n=48) aged 45-54 years, and 2% (n=15) aged 55+ years.

²⁶ Where recorded (n=869), 23% (n=197) were from a White background, 13% (n=116) were from a Mixed ethnic background, 7% (n=61) were from an Asian or Asian British background and 5% (n=42) were from an 'Other' ethnic background.

²⁷ Mode = 78%, and median = 65%

²⁸ OGRS scores are banded into 'low' (49% or below), 'medium' (50-74), 'high' (75-89) or 'very high' (90-99).

Compliance with the GPS tag



Considering the reasons for recall, the effective compliance rate (the proportion of cases completed, without recall for failure to comply with the GPS tag as a licence condition) is **98%** (n=815).³⁰ This relatively high level of compliance can be seen as a positive – although is not a measure of ‘impact’. It needs to be understood as only considering individuals recalled *solely* for failure to comply with the GPS tag not those recalled for multiple reasons including failure to comply with the GPS tag.

²⁹ This compares against a compliance rate of 66% for licence and post-sentence supervision cases supervised nationally by the CRC (July-September 2019). Figures are not available for the NPS.

³⁰ As a compliance rate, this is higher than that found by MOPAC in the use of GPS tagging with an integrated offender management (IOM) cohort (56%) and alcohol abstinence monitoring requirement (AAMR) (94%). It should be noted however, that the characteristics, and offending behaviour of the individuals who receive these various interventions differ.

Results from Service Delivery: Process Insights

This section provides learning from across the service, including the process of implementation; adherence to the original service delivery model; and perceptions from those involved (qualitative research carried out with PPs and tag-wearers on their perceptions of the tag's operation; and police staff about the crime mapping aspect of the pilot).

Implementation improved as the pilot embedded.

All services encounter implementation delays and challenges as they take time to embed. Using GPS tags for monitoring knife offenders was no exception, with practitioners suggesting as the wider London rollout occurred, the operational delivery of the pilot improved.

Initially, when limited to a few boroughs, it was felt that some eligible cases were being missed due to complications with 'gang' affiliation and approved premises. For example, high-risk younger offenders, with peripheral or entrenched involvement with serious group offending were unable to be housed outside the pilot area but were also not allowed to return to a home area with their 'gang' affiliation. As the pilot rolled out, most approved premises (Aps) were covered, allowing individuals to be placed in safer areas and have a GPS tag to monitor whether they were going back to risky areas.

Other areas of improvement observed during the pilot's implementation, often following feedback from probation practitioners, were changes in the routine information provided to PPs by Buddi, particularly in relation to the most popular locations frequented by tag wearers, improved guidance to PPs about how to ensure that tag wearers were charging, and improved procedures to allow PPs to check whether tags were faulty.

There was a recognition on the part of the MPS staff that probation had been subject to staff resourcing concerns and had experienced high levels of staff turnover, as well as the impact of Covid and organisational restructuring during the period covered by this evaluation. Respondents suggested that this had sometimes had a knock-on effect in terms of probation's awareness of the scheme, their proactivity, and willingness actively use GPS data when managing those on tag.

There was debate as to whether the correct people were tagged & where the function should sit within the MPS.

When asked, most PPs appeared clear about the eligibility criteria for the pilot and why the tag-wearer had been recommended for inclusion, tending to refer to the individuals current and/or previous knife-related offending. However, views from MPS officers on the extent to which the 'right' people were on tag varied. Some suggested probation had not identified the correct individuals (anticipating more gang nominals),³¹ and that those on the tag ought to have higher OGRS scores. There were mixed views from interviewed MPS officers about whether the GPS knife crime pilot should be police rather than probation led.³² Justifications were that the police would be more proactive and had a better understanding of who should be on the tag (a reflection of the varied willingness from probation to include police

³¹ Although explanations for their non-inclusion were suggested (principally not meeting the age and offence criteria for the GPS tag).

³² The legal basis for MOPAC's GPS KC tagging pilot means probation, rather than the police, lead the nomination of cases and receive most of the data.

suggestions of who should be tagged). However, there was caution, as it was felt police access to the data would lead to 'fishing expeditions' and it was therefore better left with probation as a result. There was more consensus from those interviewed that IOM was the 'natural home' within the MPS for responding to the crime mapping work, although some boroughs decided it sat better with the gangs unit and a specialist knife crime SPOC.

There may be communication challenges for individuals to be tagged.

While the pilot's aim was that the service user would be informed that they would receive a tag prior to release, in a small number of cases it was suggested that this had not happened. While the majority (92%, n=607) of respondents to the tag-fitting survey agreed they understood why they had received the GPS tag, what they had to do to comply with the tag order (98%, n=645), how the GPS requirement worked (98%, n=644) and how the tag fitted with their other licence requirements (93%, n=612), there were a smaller number (45 individuals) who reported that they were unaware they were getting tagged, or that the fitting of the tag had not previously been discussed or explained to them.³³ Similar views were expressed in the interviews with tag wearers, with half of the ten participants reporting that they had not previously known about the tags; one saying he 'didn't even know there was a GPS tag', and two suggesting that they were 'told that it was voluntary, but it wasn't'. Likewise, three of those interviewed suggested that they had not understood why they were on tag, with one saying it was the only way of getting out of prison.³⁴

PPs stated that informing individuals that tags would be used as part of their supervision usually took place during pre-release interviews/visits in prison, also via video link, although these visits were impacted by Covid.³⁵ In cases where the PP had not been able to provide details in advance, the information had usually been provided by the tag-fitter. However, problems with communications about the installation of tags were not new, having been highlighted in E&I's previous interim report, and although attempts have been made to improve information provision via the production of booklets about the tag for tag users, there remain examples where tag wearers were not as prepared for the tag fitting as they should have been.

Nevertheless, despite a potential lack of warning that they were to be tagged, when asked how confident they were about successfully completing time on it, 97% (n=640) of respondents to the tag-fitting survey were 'very' (66%) or 'quite' (31%) confident. The majority (77% n= 358) also still believed the imposition of the tag had been 'very' or 'quite fair', compared to 8% for 'very' or 'quite unfair'.

Tag fitting did not always occur at prison.

While it was always anticipated that the main route for people being tagged would be at prison release, there were certain cases where this could not apply. For those tagged via

³³ The 2nd most popular negative response in the survey's free text field, only behind the 65 responses where people were generally unhappy about being tagged.

³⁴ In contrast, 5 interviewed tag wearers suggested they fully understood what they had to do to comply with the tag's conditions (charge battery, not go into certain areas), and 4 said they understood the police would be able to monitor their movements (2 said they did not).

³⁵ Although in one case the individual had been in segregation, so the PP had been unable to see them and there were several cases where the current supervising OM had 'inherited' the tag wearer, so was unaware what the pre-release arrangements had been.

licence variation (n=243) prison fitting was clearly not an option. Similarly, for those being released from prisons furthest away from London (Onley and Highpoint) it was agreed with Buddi that fittings would take place instead at the probation first appointment). As a result, of the 964 cases where the location of fitting was recorded, under half (**49%**, n=476) were at prison, with the remainder at probation (**47%**, n=454), or another approved premises (**4%**, n=34). From the PPs interviewed, similar numbers of tags were fitted in prison compared to the probation office, hostel, or other approved premises (13 compared to 11). When asked, six of the ten wearers had the tag fitted in prison; one was fitted in a hostel the day after release; and three at probation (one 'a few weeks' after release).

Reasons for the change from the original planned process tended to be pragmatic - the unexpected release of the tag recipient; breakdown in communications between Buddi, MOPAC and the prison; a 'mix up' with the prison fitting, resulting in a same-day fitting at the approved premises. Although in one case it was reported to be a pre-planned decision due to risk e.g., fitting occurred in a probation office out of area, because the PP's office was inside the tag-wearer's exclusion zone and deemed too risky. Perhaps unsurprisingly, there were fewer issues associated with tag removal, although one wearer cut off his tag when it had not been removed at the appointed time.

There was varying use of Exclusion Zones.

Exclusion zones existed for 525 (54%) of the 971 tags, and of these 118 had precise location details recorded; they covered a wide range of locations. Some exclusion zones were extremely large - one was for an area that comprised South West London, North Surrey, North Hants and East Berkshire, 2 were for counties outside London and 9 covered cities and towns outside London (including Gateshead, Nottingham and Peterborough as well as towns in the Southeast). Six exclusion zones were for the Notting Hill Carnival, and a couple for the Wireless Festival.

Most exclusion zones (41) referred to specific London boroughs – 32 of these being for a single borough, while 8 applied to 2 boroughs, and one to three. 15 exclusion zones related to areas that were part of a London borough (in one of these cases, 12 locations in a West London borough). Twenty-two exclusion zones covered London postcodes³⁶ (a further exclusion zone covered a Brighton postcode). Four exclusion zones were for estates, and 3 for town centres.

In comparison, 12 exclusion zones referred to a street or streets, and only 8 were for specific addresses (including one outside London). Three exclusion zones related to stations or (14 named) tube stations, and 2 to supermarkets. Other exclusion zones referred to a specific gang territory, 5 pubs in a specific London postcode, a hospital and civic centre, local bookmakers, educational establishments, and an athletic stadium.

The responses from the PPs interviewed reflected the findings above, in terms of proportions of tags with EZs and the variety of levels used (although the proportion of tag wearers with exclusion zones had increased noticeably for those PPs interviewed most recently). One PP indicated that while she had set up an exclusion zone, she had let the tag-wearer pick an area

³⁶ Postcode here refers to the first part of the postcode reference ie E11. Of the 22, 16 referred to a single postcode, 3 to two postcodes, 2 to 3 and one had 5 excluded postcodes identified.

of his own to emphasise the benefits of an area for his own safety. PPs who had not established exclusion zones stressed that this was because they did not feel it was appropriate (because the tag was ‘purely for monitoring’, and because of the ‘mobile nature’ of the offence). PPs identified the need for a degree of negotiation or flexibility in the enforcement of exclusion zones. One tag-wearer, who had been moved outside London but had to travel into London, always came into a terminus station within his exclusion zone; ‘having it on record to say there was a breach and that there is no other way it forced me to use my own initiative to contact the police and say that we need to have a sort of negotiation here because I am not prepared to prosecute someone for passing through a train station that is unavoidable’.

There are some practical challenges to wearing the tag.

In common with other electronic monitoring evaluations,³⁷ respondents’ perceptions of the comfort of the tag differed. While a large majority of respondents from the ‘removal’ survey agreed that the tag was comfortable to wear (76%, n=161), 6 of the ten interviewed tag wearers felt it was uncomfortable or too bulky, and some PPs reported individuals on their case load had remarked on the uncomfortableness and size of the tag. The most frequent ‘negative’ free text response in the tag removal survey was in relation to difficulties in charging (mentioned by 27 respondents). PPs reported mixed reflections from those they were supervising, with some tag wearers having no problems with charging throughout, others initially struggling, but subsequently able to successfully charge after reminders from the PP or via Buddi. However, both tag wearers and PPs reported there were situations where tag wearers received notifications from Buddi stating they were not charging the tag when they were. PPs expressed concerns initially that it was difficult to establish whether the fault lay with the equipment or with the tag wearer, which had led to Buddi producing improved guidance for PPs during the pilot. Anecdotally, PPs suggested the reality was probably a combination of tag wearers tampering/abusing the equipment, and some faulty equipment.³⁸

“[Charging] wasn’t a problem for me, you had the home thing and the charger at home. I ensured that every day an hour before I got home from work, I would tell my sister to put it on charge, by the time I got home, I had a routine, that was the best way.”

“Buddi replaced the battery twice, after the second time I said that anything else that happens to the battery would mean a warning letter, because from the first time I gave him a second chance and by the second I knew that he was doing something to [the battery], I gave him a chance so that he couldn’t say that I was giving him warnings for no reason, but that was the only issue that we had”.

Probation Practitioner

³⁷ For example, Pepper and Dawson (2016).

³⁸ As an illustration, between the 1st of January and the 31st of March 2023, Buddi undertook 15 follow-up appointments with tag wearers, 4 of which led to equipment being swapped out. Extrapolating these figures over the course of 12 months would mean Buddi swapping out 2% of equipment installed on offenders. This compares to the company’s overall percentage (August 2023 - derived from worldwide figures) of less than 1% of active devices returned and replaced (Communication from Buddi).

Probation practitioners' perceptions of Buddi.

When asked specifically about having direct access to the Buddi system most PPs felt this was/would be an improvement, leading to less 'to-ing and fro-ing' between the PP and Buddi and particularly useful for difficult cases or after hours. It was also suggested that direct access to the system would be useful during supervision, to clarify tag-wearers' movements quickly in the event of an exclusion zone alert, and as an 'extra safety net'. Those PPs who did not feel live access was necessary suggested that there was enough information from the existing reports and notifications already. In fact, access to the Buddi portal was available to PPs at any time, something that was explained in training and via other communications, so the gaps between some PPs wanting this option but not getting it was more a reflection of them not being aware of or understanding the option, rather than any restrictions that were in place. PPs' level of understanding of the data available from Buddi, its meaning and what could be requested, varied, and a couple of PPs referred specifically to the need for improved/continued training about the system and its capabilities. Three PPs mentioned the 'burden' of notifications from Buddi, referring to multiple/duplicated emails that could be confusing and time-consuming. The introduction of password protection on the reports was also described as a source of frustration. Problems experienced with the set up and administration of the tag (details of a curfew address being recorded incorrectly, difficulties in fitting/removing tags, blank reports being sent to the PP) necessitated contact between the PP and Buddi which could also be time consuming.

Overall, the PPs interviewed were complimentary about their contact with Buddi. Interviewees frequently mentioned the 'helpful and responsive' nature of the staff (whether via email or telephone),³⁹ and the tag fitters were particularly singled out for praise in explaining the requirements of being on tag, being described as 'very professional'. One stated: *'They were very helpful, the minute he breached an exclusion zone I would get an automatic email, if they were contacting him to locate him, I would get an email, if they were sending alerts to his phone they would let me know, then at the time that I wanted further information, they would find it'*.

³⁹ Although one PP was critical about the level of knowledge about PPs' roles on the part of Buddi's customer service staff.

Exploring the benefits of the GPS tag

This section focuses on understanding if the pilot achieved its intended benefits. Primarily the aim was to test the GPS tags' ability to reduce the **likelihood of reoffending**, specifically **weapon-related**, although any impact on the **frequency, severity or time taken to reoffend** is to be considered. Other outcomes were stated to be improved **management of risk**; improved **enforcement of licence** conditions; challenging an offenders' **thinking and lifestyle**; **improve rehabilitation**; and enable the MPS to effectively **map crimes** to support detection.

Staff outlined the benefits of GPS tagging including for other offences.

PPs overwhelmingly expressed positive views about the GPS tag. It was suggested they:

- Provided '**structure and discipline**' for the wearer.
- **Enhanced** case management.
- Gave **more information** - extending monitoring beyond the functionality of a home detention curfew (HDC) tag.
- Aided **supervision** - particularly to check **individual movements; general monitoring** of where they had been; and oversight of exclusion zones.
- **Facilitated discussions** during supervision, **enabling conversations** about movements and safety.
- Had a **deterrent effect**.
- Provided the '**perfect alternative to recall**'.
- Gave the PP a **greater ability to protect the victim(s)**.

Whilst a few PPs (and a few interviewed wearers) did not think the tags made any difference to the nature of their **supervision**, their reasons were often linked to an early recall of a wearer, meaning the use of GPS data in supervision meetings was not possible. For the majority of PPs, it was felt tags had changed their supervision, for a variety of reasons.

Checking the **movements of tag-wearers** was commonplace and data was even used to inform decision making regarding recall. Of the ten interviewed tag-wearers, four stated there were conversations / challenges about their movements in supervision meetings, particularly into or near to exclusion zones. One PP said they 'would not be able to manage the same way without the tag'⁴⁰. A knock-on benefit of checking movements was the ability to check **tag-wearer's contacts with associates**, in relation to suspected engagement in County Lines, or to monitor the tag-wearer's return to areas where what were termed 'risky' groups/peers resided.

"what the tag enabled me to do, and what he knew the tag enabled me to do, was monitor exactly his route that he took in ... that was really, really helpful because also it builds trust, as well as be there to catch any return to a lifestyle"
Probation Practitioner

⁴⁰ Two OMs indicated that they were now supportive of the GPS tag despite having initial concerns. Indeed, one of these individuals suggested that one of the dangers with the use of the tag was that OMs would become over-reliant on it.

A few PPs suggested location data had been used to **challenge or discuss the tag-wearer's behaviour**, suggesting the data had 'opened up' that conversation. Others PPs did not feel it had been appropriate to use the data in this way, because they could clearly see where the tag wearer had been, or it was not feasible (in cases where the tag-wearer had been non-compliant or recalled). However, many stated the tags set the tone of **better/clear communication**.

Certainly, the tags had facilitated increased contact between the PP's and the wearer and provided data in which additional questions could be made and progress could be measured. One tag-wearer suggested that the presence of the tag had led him to contact the PP in advance because he knew he would be going into an exclusion zone to see a family member.

"There was a lot of times when the tag wasn't picking up the charge and so there were warning things, so I was in regular contact with him to let him know that the thing wasn't charging, but the contact was on both sides and I would contact him so that I didn't breach"
Tag Wearer

Whether the opinion that increased communication assisted in **building trust** varied across the PPs, as some felt the imposition of the tag initially soured the relationship, which took some time to overcome. However, one interviewed wearer suggested, because he had previously absconded, the tag played a role in rebuilding trust between him and his PP as his movements could be better monitored.

PPs also stated that they used the tag to **manage risk**, either to or from the wearer. This included setting limits; dissuading risky decision making; or extending the tagging time to continue monitoring. In interviews MPS SPOCs suggested the tag had a **deterrent effect** on offending – one respondent described wearers as being as 'good as gold'. PP's suggested they were particularly effective at restricting movement into exclusion zones aimed at keeping the tag wearer away from an ex-partner, one remarked that when this failed, the tag-wearer was worried because they knew they were being monitored.

There was limited reported use of **heat maps** to check whether the tag-wearer had been in areas where **crime had been committed** (only one PP mentioned this). Where negatives were expressed by PPs, these related to frustrations about charging and equipment issues, or the 'time consuming' nature of monitoring the tag.

Some queried why the use of GPS tagging had initially been limited to knife-crime offenders, with a general feeling they could be **expanded to cover other offence types**, the most popular offence types being domestic abuse and sexual offences (PPs stressing this was primarily

"His offending was gang-related, there was weapons offences, possession of knives, firearms previously. It was my thinking of let me have a bit of a measure on his movements and then if I could see a lot of erratic movements around the place, then that might suggest that he may be up to something – acquisitive offending, whether that be dealing or at worst going to seek out altercations with rivals. I couldn't see a lot of other protective elements that I had to work with this guy. I felt that this was the only possible way that I would have tabs on what he was getting up to, I found it almost a bit of a godsend in that way because I wouldn't have had anything else"
Probation Practitioner

for the management of risk to the victim)⁴¹; county lines and/or drugs supply; serious group/gang-related offending; burglary; and harassment/stalking. Other offences/uses mentioned were for serious organised crime; firearms; and other weapons offences and for those on post sentence supervision (PSS).

Probation practitioners believe the tag positively affects offending behaviour, but are unsure about long-term behaviour change.

Overall PPs felt that the tag had had an impact on the tag-wearer's behaviour whilst they were on it - citing as examples that the individual had not been into exclusion zones or had breached less frequently than previously. In circumstances where the PP did not feel the tag had had an impact on short term behaviour this tended to be attributed to the personal characteristics of the tag-wearer; [he's] *'not that sort of person, not bothered'*.

PPs were more ambivalent when asked if they thought the tag would have an impact on the tag-wearer's longer-term behaviour, particularly in light of the tag's relatively short duration. Some PPs felt that there was potential for continued improvement, suggesting the tag had provided *'positive reinforcement'* and reflection on the tag wearer's part, others felt either it was impossible to say or not the case - *'definitely not the thinking thing'*, pointing to the tag-wearer's subsequent conviction for the same offence once off-tag, or improvements while on the tag which had ceased once it had been removed.

"Hard to say because he was on it for only five or six weeks. I don't think it impacted on long-term positive change but I think that what it did do is give him a five- to six-week period where he didn't have to even consider going back to a risky area, where he could actually take time to focus on doing what he wanted to do ... it gave him a period of time to recognize that he's on licence, he went to prison for a reason, he can't do back to an area where his peers might pressure him, so he might as well do something positive, which was really good for him. Since he's come off the tag, his motivation has nosedived. He hasn't really done much at all. He's been rearrested. He's almost regressed. But I acknowledge it was a really short case, really short period of time."

Probation Practitioner

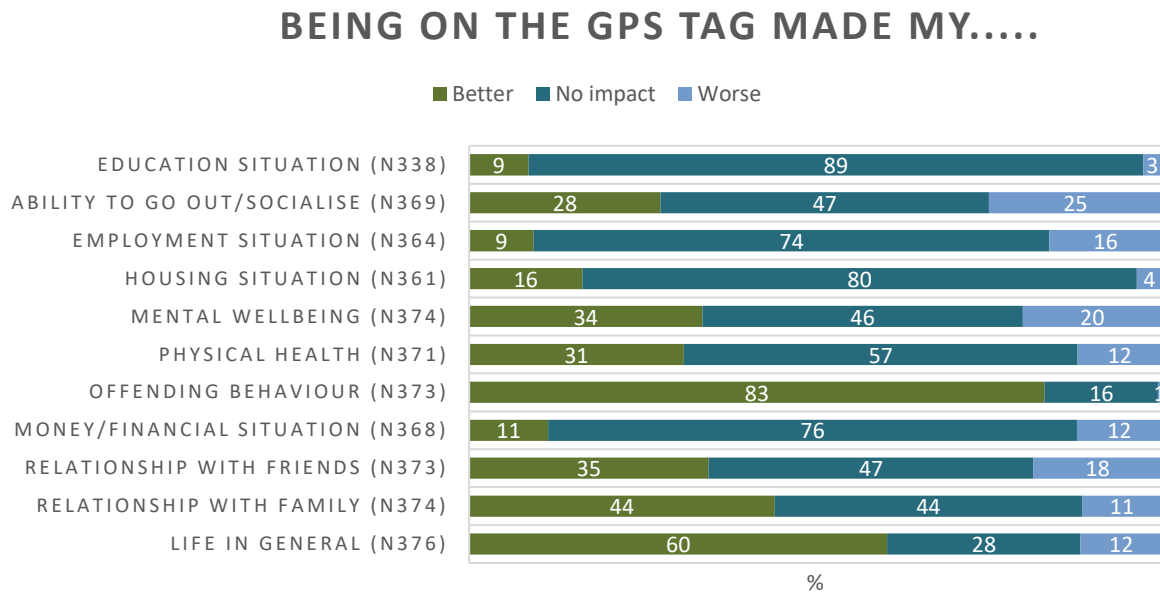
Tag wearers reported beneficial effects on their offending behaviour.

When asked to reflect on the impact that wearing the tag had had on general aspects of their life at the point the tag was removed, **tag wearers felt that the tag had had a particularly beneficial impact on their offending behaviour** (83%, n=310) feeling it had had a positive impact), 'life in general' (60% positive, n=226) and relationships with family (44%, n= 165). However, respondents were not persuaded about the benefit of wearing the tag on their relationships with family and friends, financial situation, employment, housing circumstances, education, physical health and mental well-being, most indicating that the tag had had no impact. In only two of the questions ('financial situation' and 'employment situation') did the

⁴¹ Something that has subsequently occurred, with the introduction of the domestic abuse DA GPS tag.

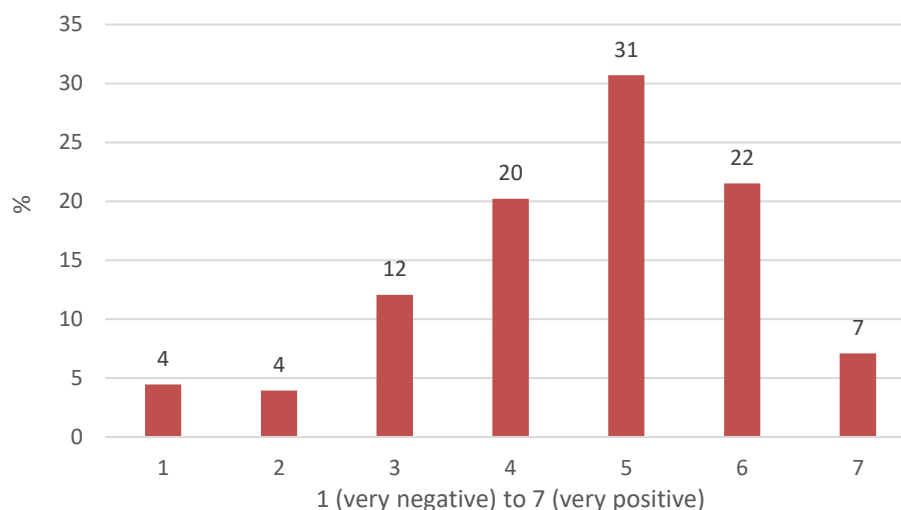
number of 'worse' responses exceed the number of 'better responses' (details in chart 1 below).⁴²

Chart 1 Wearers opinions of being on tag



Tag-wearers were also asked to describe their experience of being on the GPS tag overall (from 1 ('Very negative') to 7 ('Very positive')) at the time the tag was removed. Chart 2 shows the responses, with 60% of responses being on the positive side of the scale (scores of 5, 6 and 7, the mean being 4.6 and the mode 5).

Chart 2 Tag wearers overall experience of being on tag (n=381)



⁴² Tag wearers had been asked the same set of questions when the tag was initially fitted, and the pattern of responses was very similar – no impact being the largest category for all questions, apart from impact on offending behaviour, which 88% of respondents thought would improve, life in general (66% improve) and relationship with family (46% improve) with the tag on.

A question was added to both the tag fitting and removal surveys in April 2021 which asked respondents to agree/disagree with the statement 'wearing the tag made me less likely to offend'. Of the 243 respondents who answered this question in the tag removal survey, 80% (n=195) agreed or strongly agreed with the statement, while only 4% disagreed or strongly disagreed.⁴³

In terms of the perceived benefits of the tag recorded either during interview or via the tag removal survey, the most popular was it provided the wearer with the opportunity/justification to keep away from trouble and/or certain people, ('no one wants to be with someone on GPS, you don't know who is monitoring it'). Other positives mentioned were the tag being more comfortable than expected, preferable to a curfew/EMS tag, better than going to prison, had made the tag wearer think about their movements/location, provided a reminder/made them think about their behaviour, enabled them to keep/get accommodation, and provided an alibi by establishing that the tag-wearer was not in a certain area at a certain time.⁴⁴

GPS Tags positively affect offending behaviour when compared to a counterfactual.

Understanding the impact of any initiative is complex, and this is no different for the GPS tag. As a result, a variety of approaches were adopted, and analysis undertaken, to try and measure impact. These included predicted versus actual offending comparisons using OGRS; comparisons of offending from the GPS tagged group across time points; and extending these comparisons to a Control group, constructed through Propensity Score Matching, as described in the Methodology section. The difficulties in establishing a suitable control group for the tagged cohort has already been described in the Methodology section of this report, particularly the inability to generate a suitable control group from the same time period as the treatment group, and the resulting reliance on a control group taken from an earlier time period (1/7/2017 to 31/12/2018 for the control group, and 1/1/2019 to 31/3/2020 for the treatment group).

The fact that the control and treatment groups' periods where reoffending was being measured were at different points chronologically was always a caveat, but this was compounded by the COVID pandemic occurring within the time when the data was collected. The concern was that the two groups were going to be differentially impacted by COVID, and the level of reduction observed in the treatment group had arisen because of the impact of COVID, rather than the GPS tag.⁴⁵ Essentially, this concern is that offending by the treatment

⁴³ Those who had agreed or strongly disagreed were subsequently asked to agree or disagree with statements as to why the tag had a deterrent effect; 48% agreed it was because the tag reminded them that they were being monitored, 43% because the tag served as a reminder of the consequences of offending, 37% with the statement that the tag meant they had been less likely to mix with people they might get into trouble with, but only 20% agreed it was because they had been worried they would be caught if they reoffended.

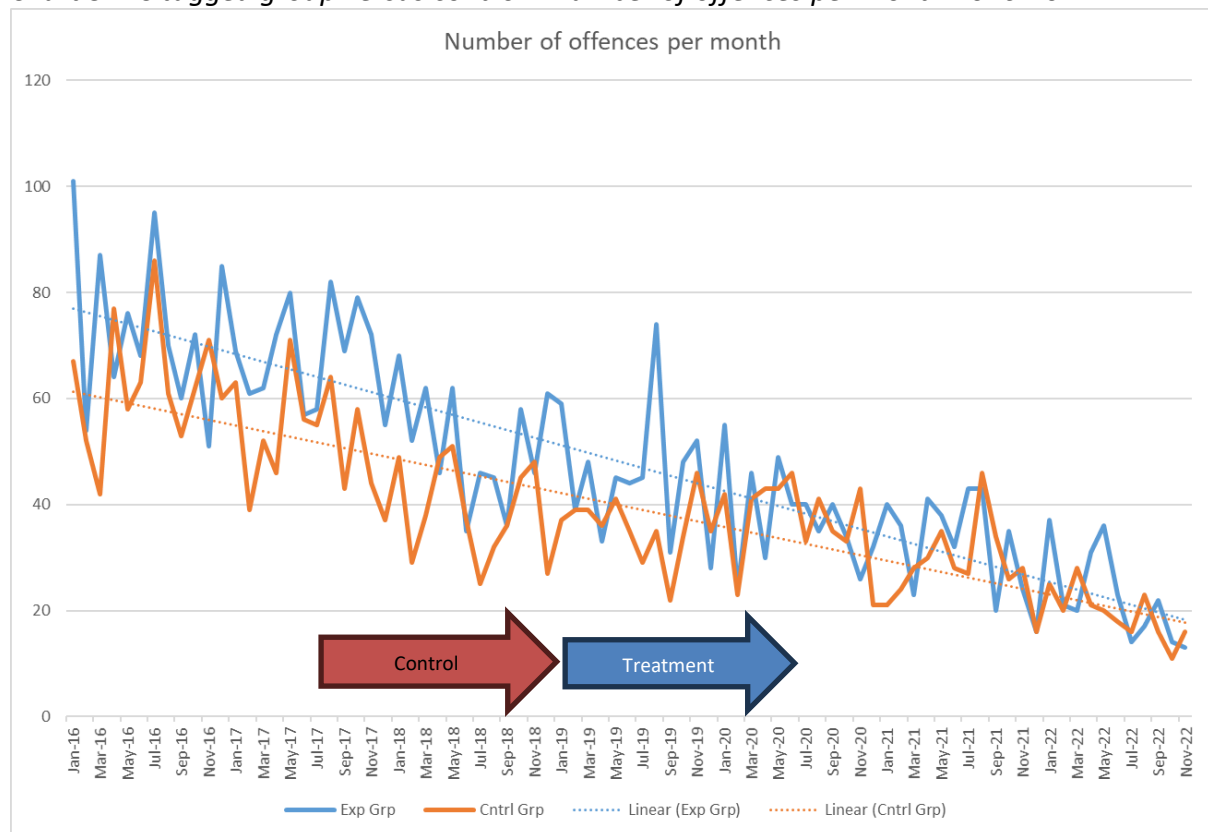
⁴⁴ Conversely, negatives expressed, again either in interview or via the on-line surveys, were the discomfort, the perception that the tag was an invasion of privacy or a breach of human rights, and a means of allowing the police to target young black males.

⁴⁵ The Crime Survey for England and Wales (CSEW) estimates for the year ending June 2021 compared with the pre-COVID year ending June 2019 showed a 14% decrease in total crime excluding fraud and computer misuse, largely driven by an 18% decrease in theft offences. While there was little change in the total number of incidents of violence 'there was a 27%

group had been suppressed by COVID, something that would not have occurred with the control because their ‘window’ for re-offending occurred before the advent of the pandemic.

To determine if a ‘COVID effect’ could be found national reoffending data was examined in the pre/during and post COVID periods (between 2016 and 2021) using published data from the MoJ, comparing this to the reoffending patterns for the GPS KC control and treatment groups over the same period – the results are shown in appendix B. What was found was not a sudden abrupt decline at the point that COVID occurred, either for the treatment or control groups (or nationally) but a steady decline for all the groups that predated COVID and continued throughout it, largely unchanged. This reduction also sits against the rising knife crimes observed in Police Data since 2016. However, while the impact of COVID was not as marked as expected, it cannot be excluded as a possible alternative explanation for the decreases observed in the treatment group. Chart 3 below shows monthly offending by control and treatment groups between 2016 and 2022, and the time periods when the two were selected.

Chart 3: KC tagged group versus control - Number of offences per month 2016-2022



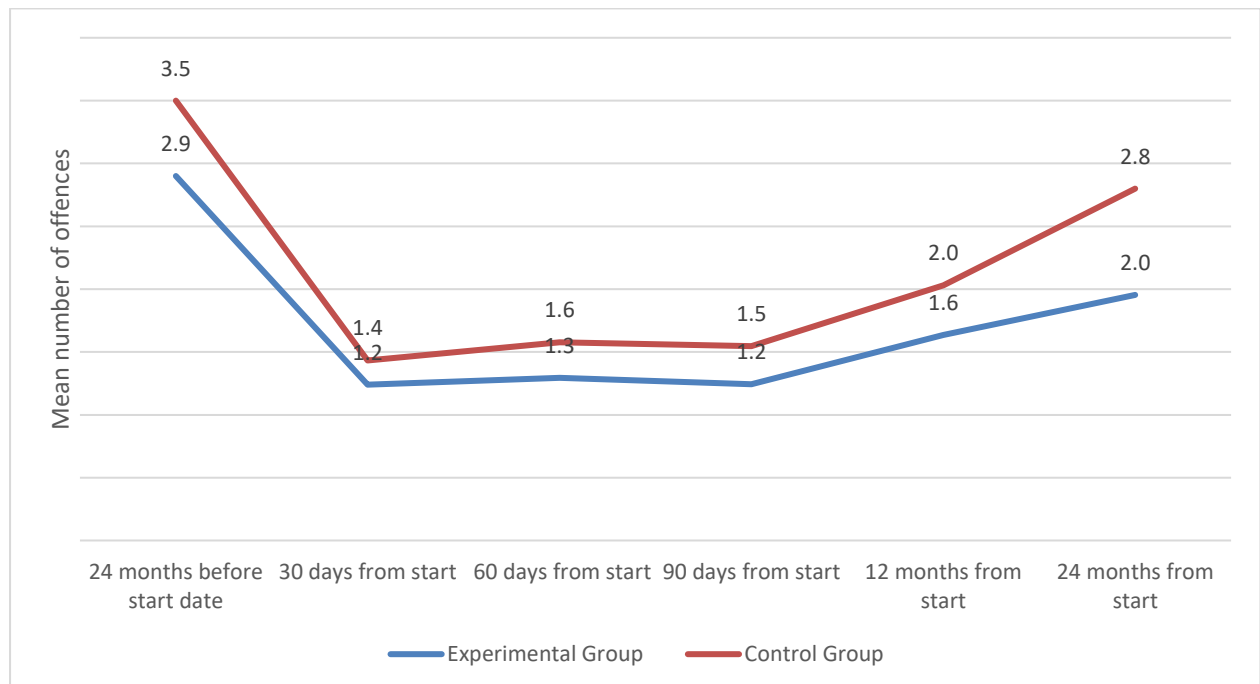
decrease in the number of victims of violent crime, largely driven by falls in violence where the offender was a stranger, in part reflecting the closure of the night-time economy for several months of the year’. Similarly, a study of the impact of the COVID-19 pandemic on the number of presentations of penetrating injuries to a UK major trauma centre (Kings College Hospital) compared the number of patients attending the emergency department with a penetrating injury (gunshot or stab wound) during the ‘pandemic year’ (1 March 2020–28 February 2021) with the equivalent time period in the previous year. The results showed that during lockdown 1 there was a 48.45% reduction in presentations in the ‘pandemic year’ compared to the previous year, lockdown 2 showed a 31.25% reduction; however, lockdown 3 showed an 8.89% increase in the number of presentations, suggesting a return to normal levels by this point (Hickland *et al*, 2022).

A range of analysis was undertaken across different time points, including before the licence; on the licence; after the licence start date; and after licence end date. As the Control group was not standardly subject to ‘something’ following prison release, **the most useful comparison is from ‘point zero’** (i.e., when the GPS individual was tagged, or their match was released from prison) to the **standardised number of days** – either before or after the date of release. The time points used included offending before the licence; on the licence (unique to the individual); then fixed periods after the licence start date; and after the licence end date of 30, 60, 90 days, 12 months, and 24 months.

Initially a **predicted versus actual offending analysis** was undertaken comparing the actual levels of offending to OGRS2 estimates. The average OGRS2 score for both groups was 63%. Results indicate both groups actual offending is lower than their OGRS would predict and there is a significant difference between the GPS group and the Control (GPS 54% vs. Control 59%).

The results show that the two groups mirror each other – with the mean number of offences dropping between 24 months prior - to 30 days after, then slowly increasing over the next 2 years, although 24 months after point zero neither group have returned to their 24 months prior levels of offending, see chart 4.

Chart 4: Offending by treatment & control group during period 2 years prior to 2 years after licence start date.

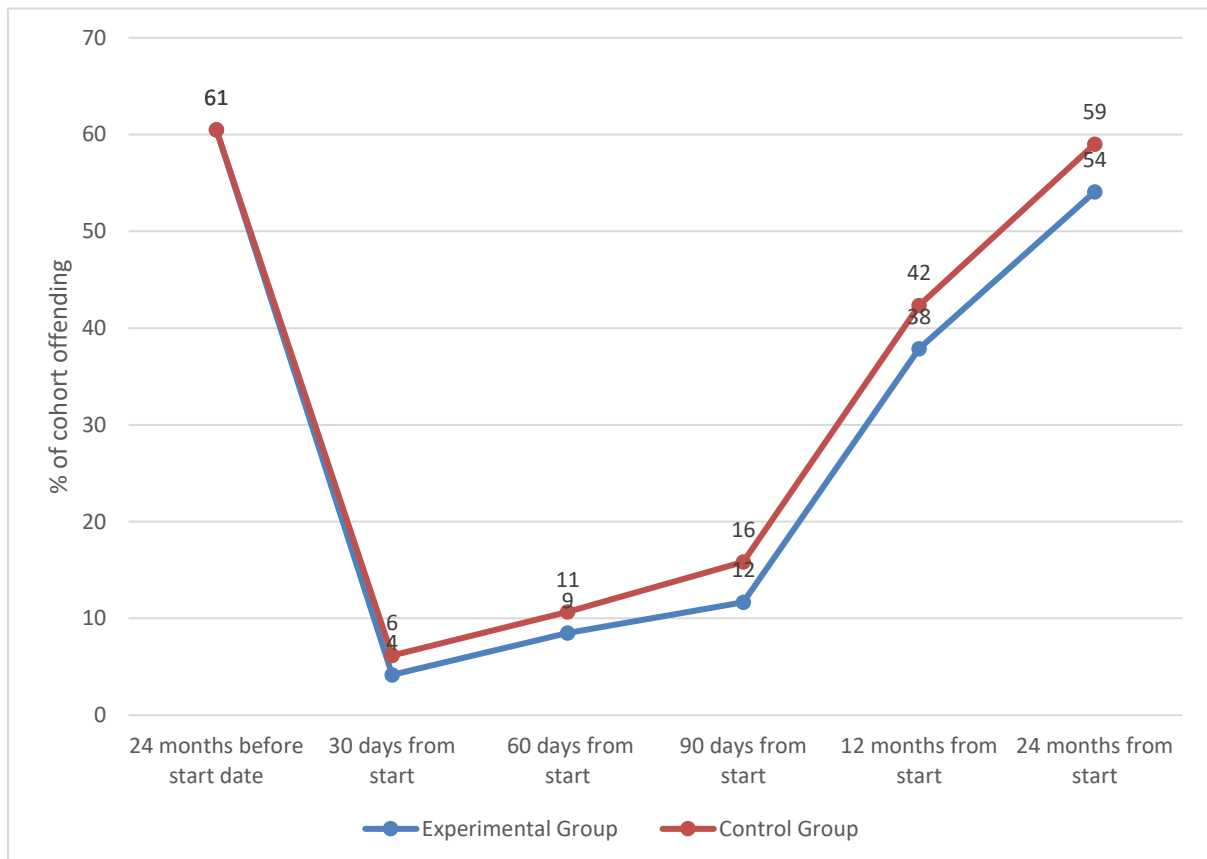


Although the GPS group was always lower than the control in terms of the proportion to offend; the number of offences; and the mean number of offences, these were not significantly different within 30, 60 and 90 days of the licence start date. However, significant differences were observed at the post 12- and 24-month stages.

Comparing the 12 months following the start of the licence for individuals with available data (n=470), there is a significant difference between the GPS group versus the control in terms

of the proportion to offend (38% versus 42%), with the GPS group conducting fewer overall offences by this time (291 vs 404) and with a lower mean number (1.6 vs 2.0). Likewise, at 24 months post the start of the licence, for individuals where the data is available (n=244), there is still a significant difference between the GPS group versus the control in terms of the proportion to offend (54% vs 59%); the number of offences (258 vs. 403) and mean number of offences (2.0 vs. 2.8). See chart 5.

Chart 5: Offending by treatment and control group during period 2 years prior and 2 years after licence start date.



Discussion

The GPS knife crime tag pilot forms an important part of the London Knife Crime strategy, developed in the face of increased levels of knife crime in London and heightened public concern about the problem. It takes place at a time when, according to HMIPs 2022 report *'there is significant political interest in the use of electronic monitoring to enhance the management of people on probation. Legislation over the last 20 years has enabled it to be used in increasingly inventive and intrusive ways'*. The report goes on to conclude that *'that electronic monitoring has significant potential to bring value to the Probation Service's work. However, more work is needed before these benefits are fully realised' and that there is 'an overall lack of evidence about the longer-term effectiveness of such interventions'*. In this environment, MOPAC's knife crime (and DA) tag pilots, and their evaluations, have an important part to play.

Between the beginning of the knife crime pilot in February 2019 to November 2022 (the date of analysis) a total of 971 GPS tags had been imposed, most at the point of prison release (75%, n=726), with a quarter (25%, n=243) being imposed as part of a licence variation. In terms of the enforceable licence conditions monitored by the GPS tag, all but one of the tag wearers were subject to trail monitoring, 54% (n=525) were subject to at least one exclusion zone, 27% (n=258) were subject to a requirement to attend a specified location, and 24% (n=231) were subject to a condition to report at an approved premise. The mean planned tagging period was 138 days (minimum 10 days, maximum 365 days).

Of the **835** cases which had completed their period of GPS monitoring up to November 2022, **298** ended due to recall and **537** ended without recall, giving an overall rate of completion without recall of **64%**. Of the 298 cases ended due to recall, **153** cases were recalled for reasons unrelated to the GPS tag (e.g., poor behaviour, missed probation appointments, a new incident), **53** cases were recalled for multiple reasons with GPS a secondary reason, **37** cases were recalled due to a breach of GPS monitored exclusion zones, **20** cases were recalled primarily for GPS related non-compliance, **18** cases were recalled for a new incident detected through crime mapping or evidenced through an external agency request, and **17** cases recalled because of a breach of other conditions identified using GPS (for example, breach of curfew or failure to reside at an approved address). Taking these reasons for recall into account, the effective compliance rate, that is the proportion of cases completed without recall for failure to comply with only the GPS tag as a licence condition, is **98%** (n=815).

Exploring impact.

One of the main aims of the evaluation was to add to the literature in terms of electronic monitoring and impact. As outlined in the report's introduction, this is an area that requires more work. Within the report, a variety of approaches were adopted, and analysis undertaken, to try and measure impact. These included predicted versus actual offending comparisons using OGRS; comparisons of offending from the GPS tagged group across time points; and extending these comparisons to a Control group, constructed through Propensity Score Matching. Even though the matching process adopted was successful in generating a strong model, the fact that a retrospective comparison group had to be employed remains an important caveat, especially given the potential influence of COVID during the time period of the analysis.

While the above precludes firm statements on impact, there are positive results as to the impact on offending of the tag, particularly at the 12 and 24-month post-tag periods, which should be seen as a positive foundation to build upon.

Probation practitioners were overwhelmingly positive about the GPS KC tag.

The qualitative research undertaken during this pilot indicates that PPs have a positive view of the GPS tag. There was widespread support for the GPS tag as a means of monitoring the movements of tag-wearers, providing information that could be used in supervision, and the improved ability to manage risk (both to victims and tag-wearers) precisely because of this increased certainty about tag-wearers' movements. Overall, PPs felt that availability of GPS data had an impact on the nature of supervision between them and the tag-wearer, and on tag-wearers' behaviour whilst on the tag. A different type of discussion with the tag-wearer was feasible, because of the type of data additionally available (i.e. it was difficult for the tag-wearer to challenge the location data). Given the value seen in the data generated by the GPS tags, there was qualified support from PPs for direct access to the IT system provided by the tag contractor (Buddi), although it was clear that PPs' understanding of the GPS data and its potential uses varied. PPs recognised this in asking for ongoing training and support to promote the value of the data and enhance knowledge and confidence around the ways and formats in which data can be requested/accessed.

There was also support from PPs for the extension of the use of the GPS tag for other offence types, particularly for domestic abuse, county-lines and gang-related offences, indeed awareness of this support provided part of the justification for MOPAC to extend the use of tags to DA offences in April 2021. However, this extension needs to be considered in the light of concerns around net-widening and the ethical integrity of utilising GPS tags, with the increased scrutiny (and likely detection) they provide, for some offences but not others – a point already made by one of the service users interviewed. It should also be recognised that the knife crime tag is being used disproportionately against young black males something which MOPAC have identified in their training for practitioners and have sought to address.⁴⁶ PPs suggested that wearing the tag may have a short-term deterrent effect although were not convinced the tag would bring about longer-term change in offending behaviour. The findings from the impact analysis undertaken for this evaluation did not support these views. In the opinion of PPs, any change for the tag-wearer was largely dependent upon the tag-wearer's motivation and their willingness to change – to take advantage of the 'window' that the tag provides.

Offenders were largely positive about the tag.

The majority (60%, n=of 382) of tag wearers who completed the end-point survey were positive regarding their overall experience of the tag. The majority also reported they felt the tag had a positive impact on their offending behaviour (83%, n=529) and towards their life in general (60%, n=382). There does appear to be a recognition on the part of some tag-wearers of the benefits the tag provides in providing a means of avoiding risky situations/individuals, if they have the inclination to do so, echoing the perception of PPs about the importance of

⁴⁶ Figures for March 2022 show that 51% of the recipients of knife crime tags were Black, with 24% White, 13% Mixed, 7% Asian and 5% Other. This compares to 54% of tag wearers in February 2021 being Black. Young adults comprised 57% of the cohort in March 2022, compared to 49% in February 2021.

motivation among tag-wearer. The tag-wearers also demonstrated a wide range of understanding about the tag, and while the provision of information to them has got better during the pilot, there remains scope for improvement prior to and during the order, although the impact of Covid during the course of the pilot on the ability of PPs to contact (potential) tag wearers should be borne in mind.

Improvements during the pilot's implementation.

The evaluation also identified some issues around the administration of the tag, particularly in the early days of its operation, which have been addressed to a greater or lesser extent as the pilot has progressed. There were initial difficulties in arranging tags to be fitted in prison on the day of release. Concerns were expressed by PPs, particularly in the early stages of the pilot, about the utility of some of the outputs routinely provided to them (which has been amended in the light of these concerns) and which has led to PPs being given live access to the Buddi system. Clearly the extent to which PPs engage with, and use, the data from the tag wearers varies from individual to individual, depending on their level of competence, and the individual being supervised. Issues arising from the charging of the tag, and the ability of PPs to establish whether the tag was faulty/not charging in the face of claims from the tag-wearer have also been identified. The latter has led to improved guidance from Buddi/MOPAC but still appears to be a concern in some cases. The reliance of the PP on the tag in making decisions about breaches/recalls also points to the importance of the technical accuracy of the system, and the importance of PPs having clear guidance and access to specialist advice on the reliability of the data and the interpretation of this at key decision points. Nonetheless, the PPs and tag wearers were happy overall with the service received from Buddi.

The value of crime mapping.

The results from the police crime mapping process were less promising than anticipated. Between November 2019 and August 2023 232,353 crimes were processed, which generated 3,418 initial matches. However, following subsequent analysis by the MPS team, only 80 (2%) of these were referred on to BCUs for subsequent investigation, resulting in 2 prosecutions (one in October 2020 and one in December 2022).⁴⁷ These findings are consistent with those found in the previous interim evaluation report, and in E&I's 2018 Interim Report on the use of GPS tagging for an integrated offender management (IOM) cohort. Results from the interviews with MPS staff suggested that they valued the ability to obtain information about the movements of those on tags via EAR requests above the automated generation of hits.

There are several possible explanations for the low number of 'significant matches' generated by the crime mapping process. One possible explanation for the low number of significant matches is that offenders subject to GPS monitoring are committing fewer offences whilst on the tag, meaning that the lack of matches reflects the deterrent effect of the tag (consistent with PP feedback). The impact analysis undertaken for this evaluation provides limited support for this supposition – the difference between the offending on tag by the treatment group and that of the control group at a similar point post release was not significantly different⁴⁸ but both groups were offending at a lower rate than their 2 year OGRS would

⁴⁷ The percentage of initial matches against the number of crimes input has never been higher than 2.75% (February 2023), and at its lowest fell to 0.42%.

⁴⁸ It was lower for the treatment group, but not significantly so, and as discussed elsewhere in this report, this cannot be solely attributed to the impact of the tag.

suggest.⁴⁹ Other explanations for the less than expected numbers of significant matches and subsequent convictions could include that tag wearers are committing offences unlikely to be reported to the police or that issues with how crimes are recorded and logged (in terms of a specific time and location) may have impaired the matching process. Given that tag wearers, as well as police and probation practitioners, all report a perceived deterrent effect from the tag wearing, it is possible that this may have influenced tag wearers, where they did offend, to change their type of offending to be less likely to be reported to the police in a way that could be crime mapped.

Conclusion.

MOPAC's evaluation of GPS use has spanned a period of 6 years with 5 published reports, prior to this one. This report explores performance, process, and impact, seeking to bring the evaluation to a conclusion. Findings indicate the scheme has a high level of compliance; that delivery improved over the duration of the programme; and that both staff and tag users were generally positive about the technology, and whilst there were positive indications as to the impact on offending, methodological limitations preclude firm statements of success.

⁴⁹ A fuller account of the crime mapping process will be found in MOPAC's 2020 Interim Evaluation Report for the GPS knife crime tag available at https://www.london.gov.uk/sites/default/files/gps_tagging_knife_crime_on_licence_final_for_publication.pdf

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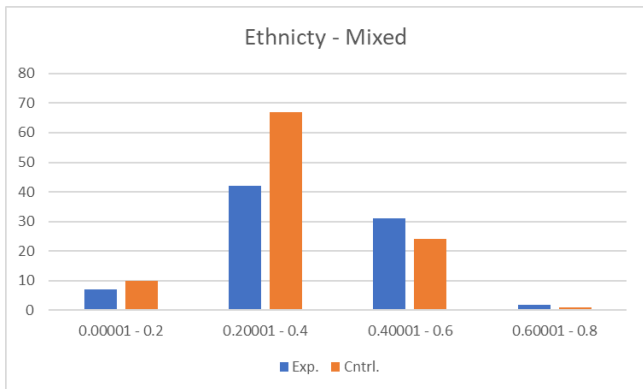
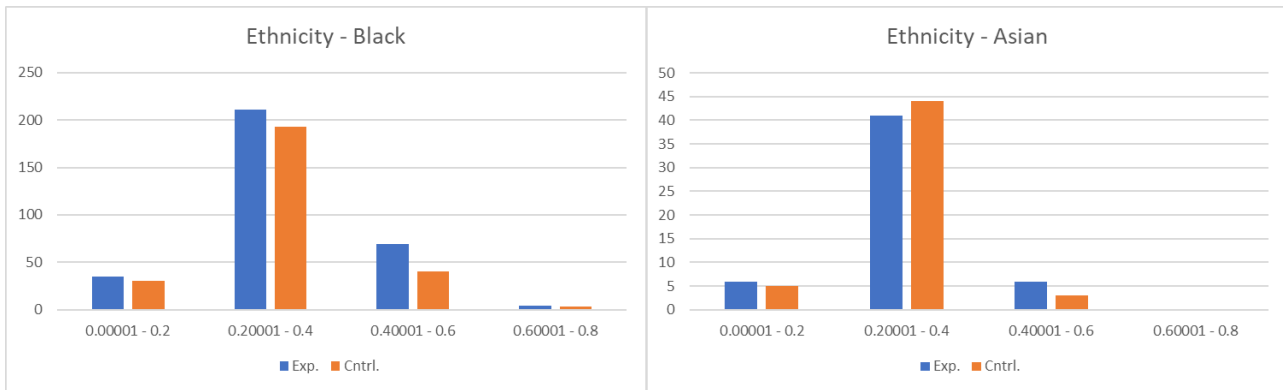
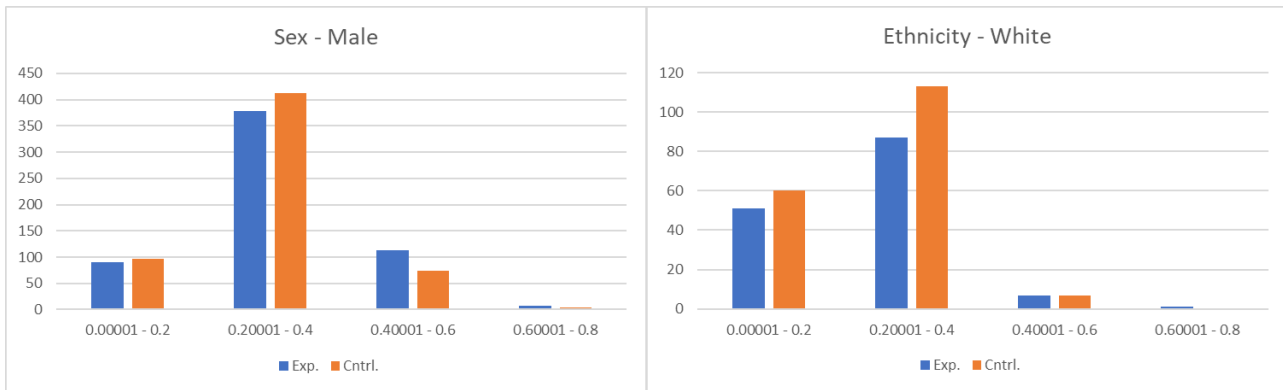
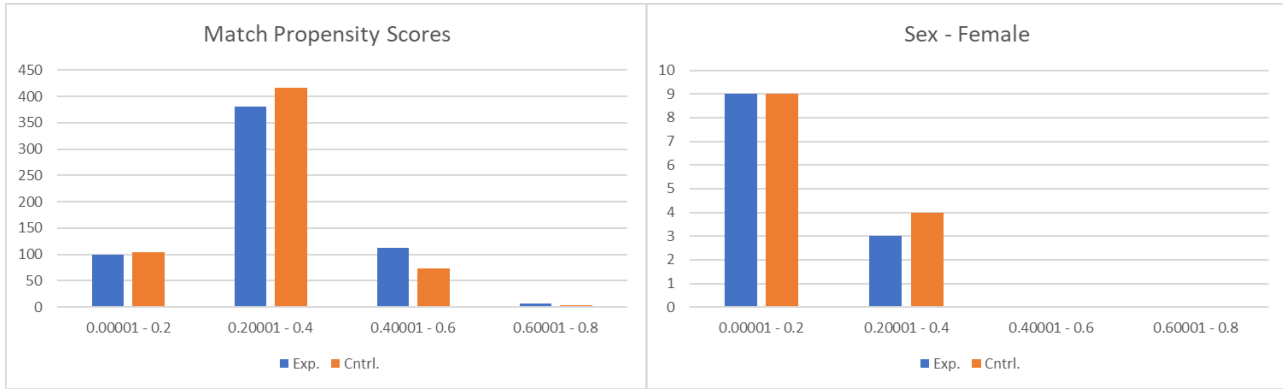
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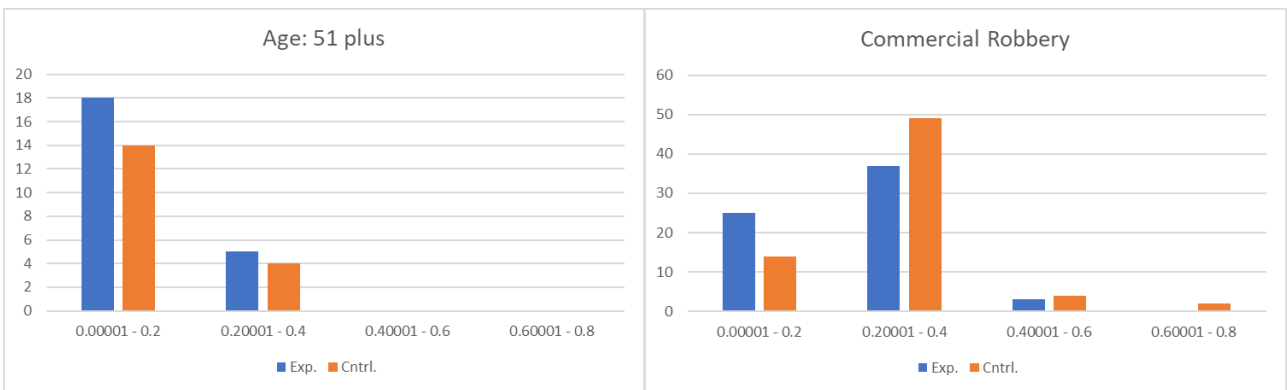
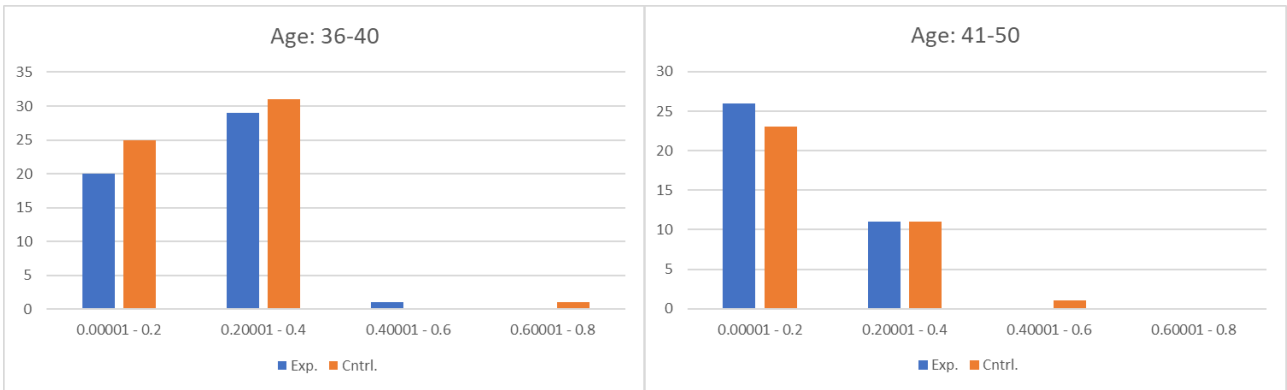
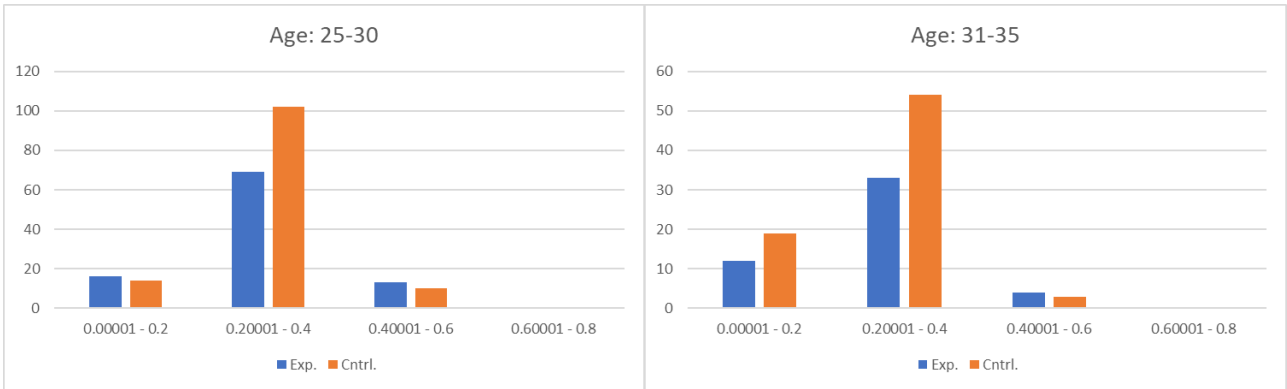
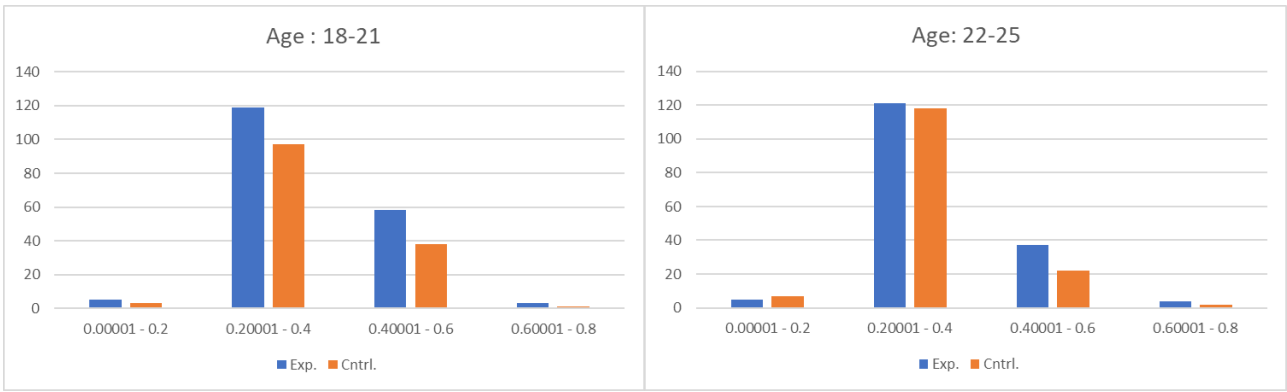
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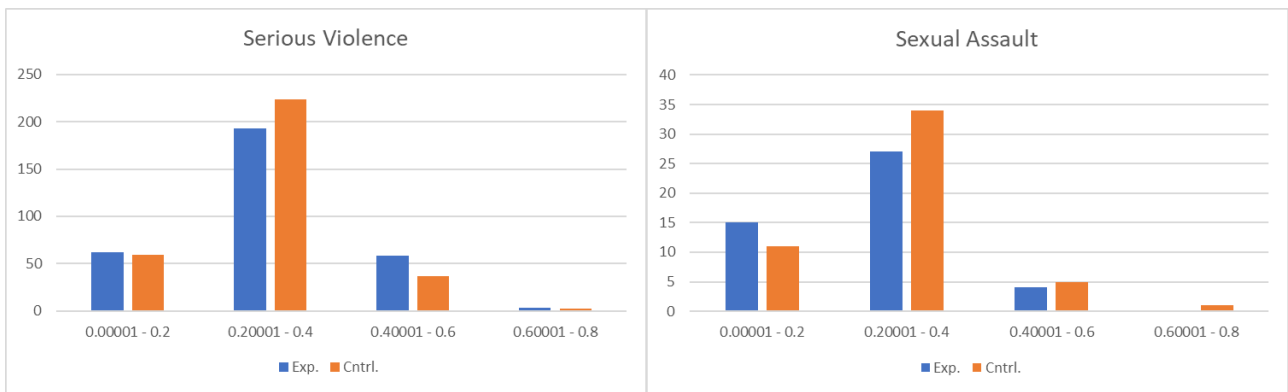
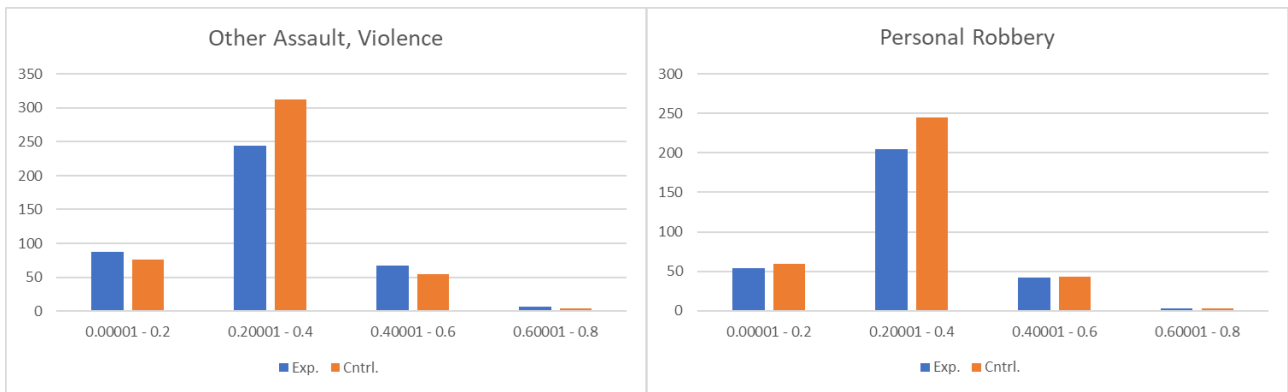
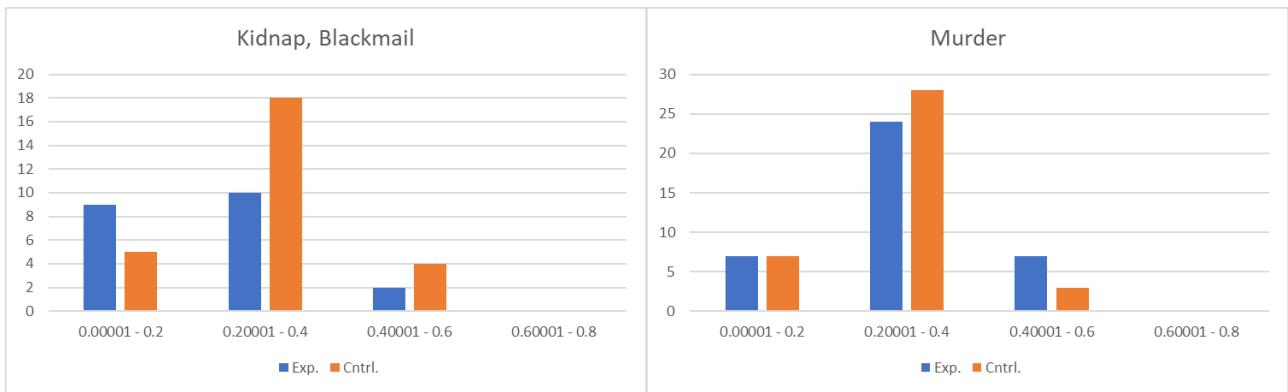
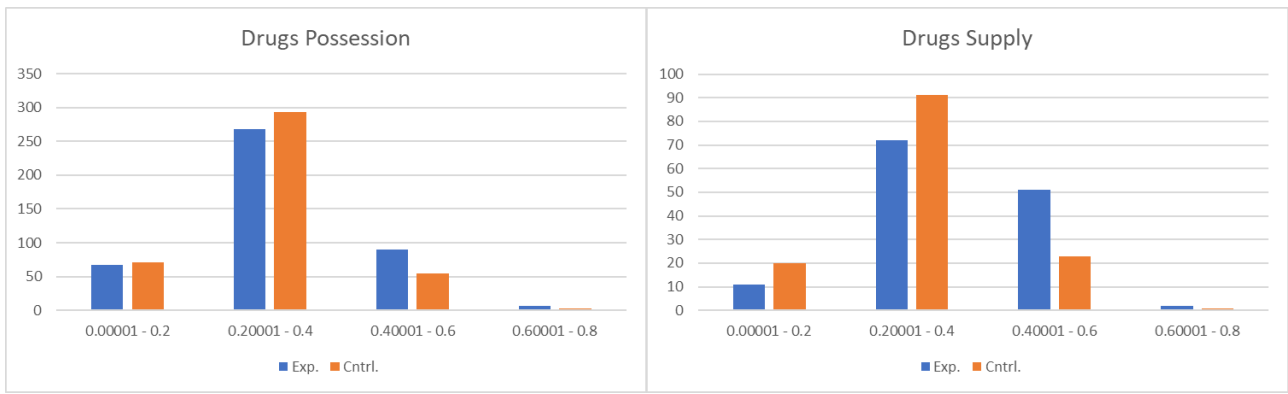
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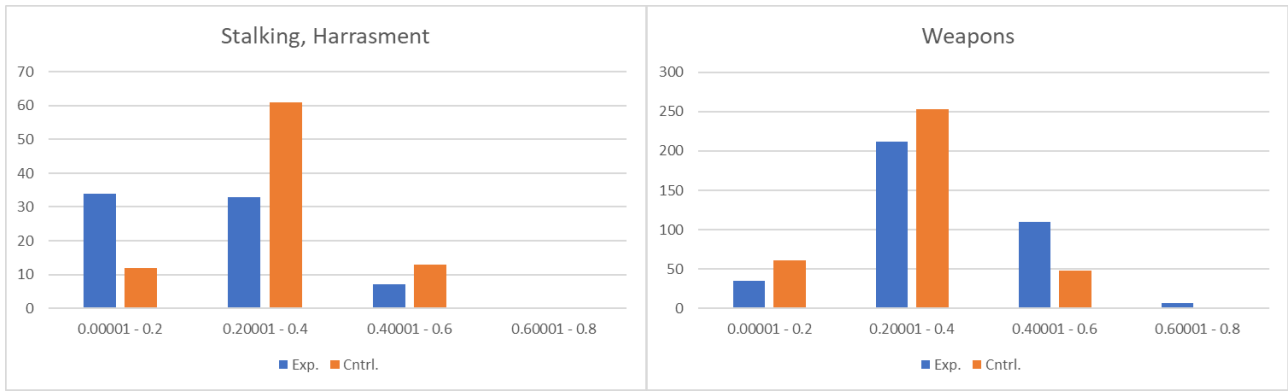
Appendices

Appendix A: PSM matching - comparison of distribution of variables for experimental and control



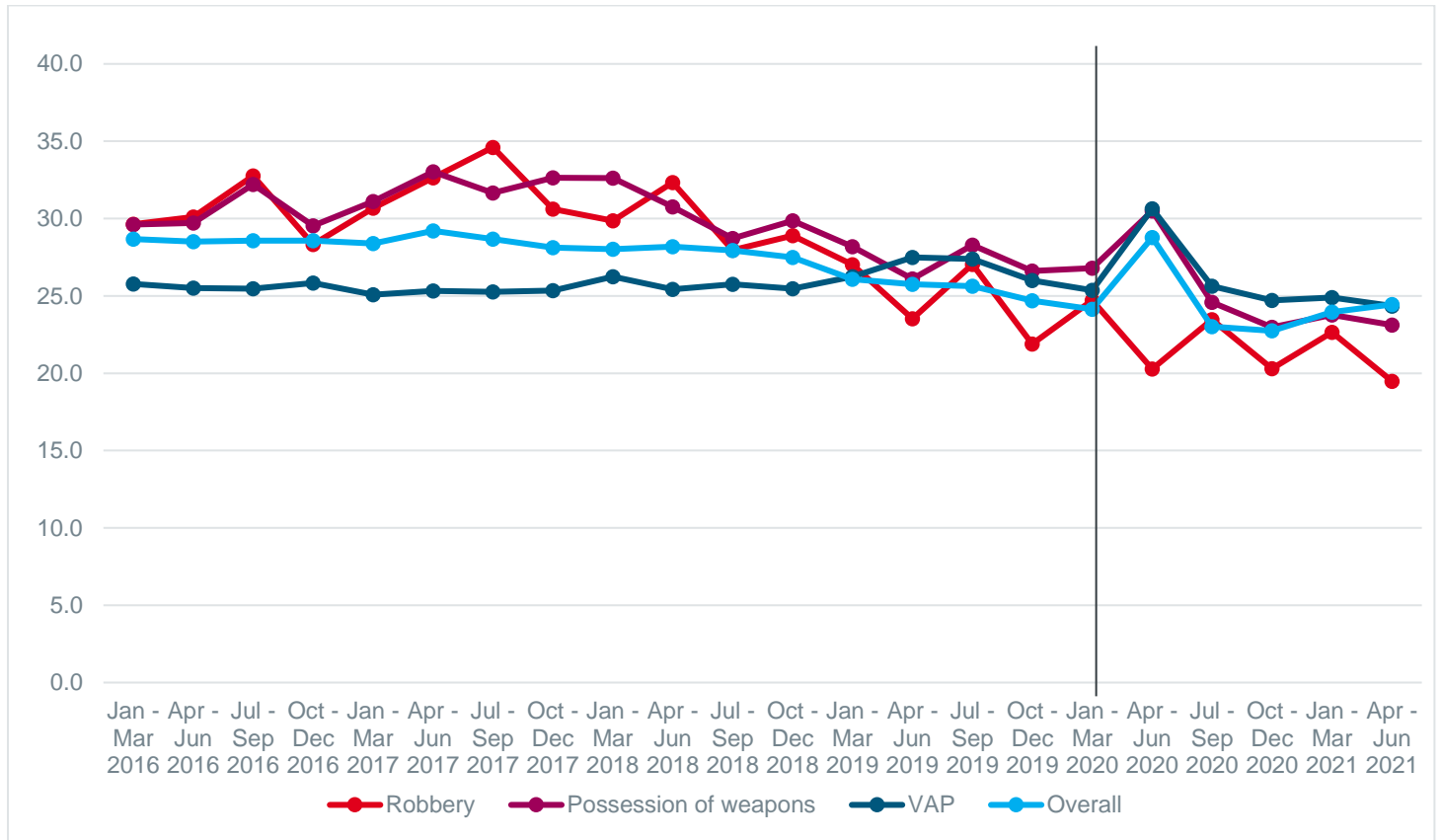




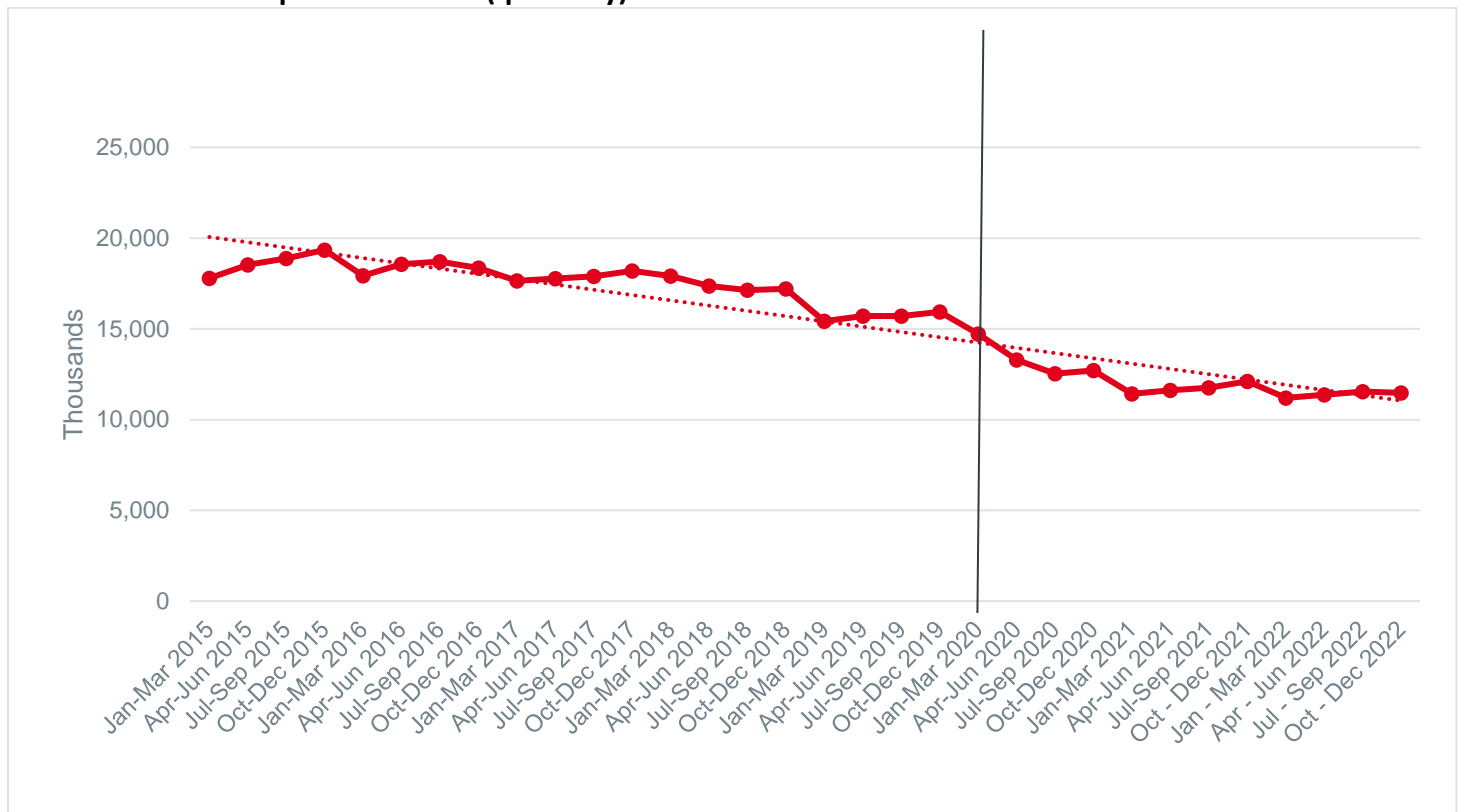


Appendix B – Re-offending patterns 2016 - 2021.

MoJ national data – proportion of offenders who reoffend for specific offences

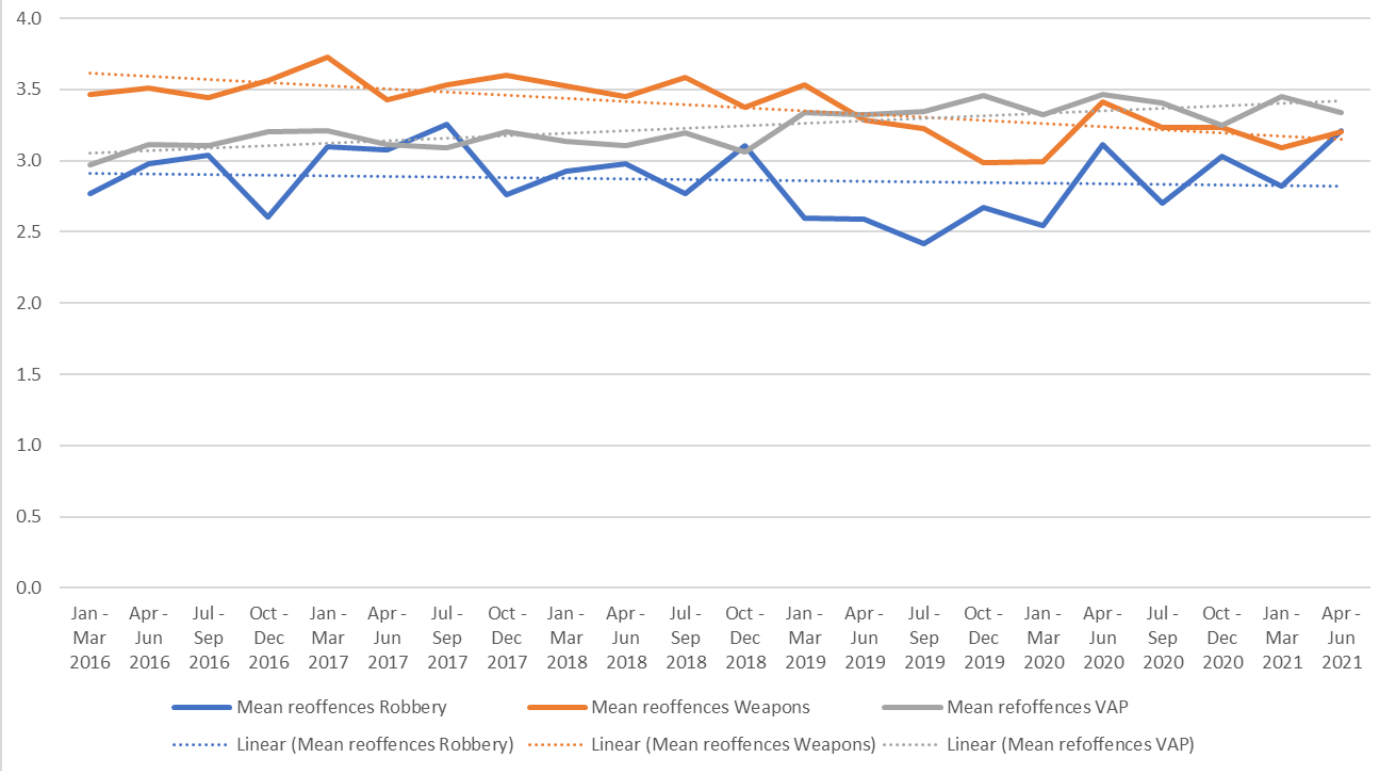


MoJ national data – prison releases (quarterly)

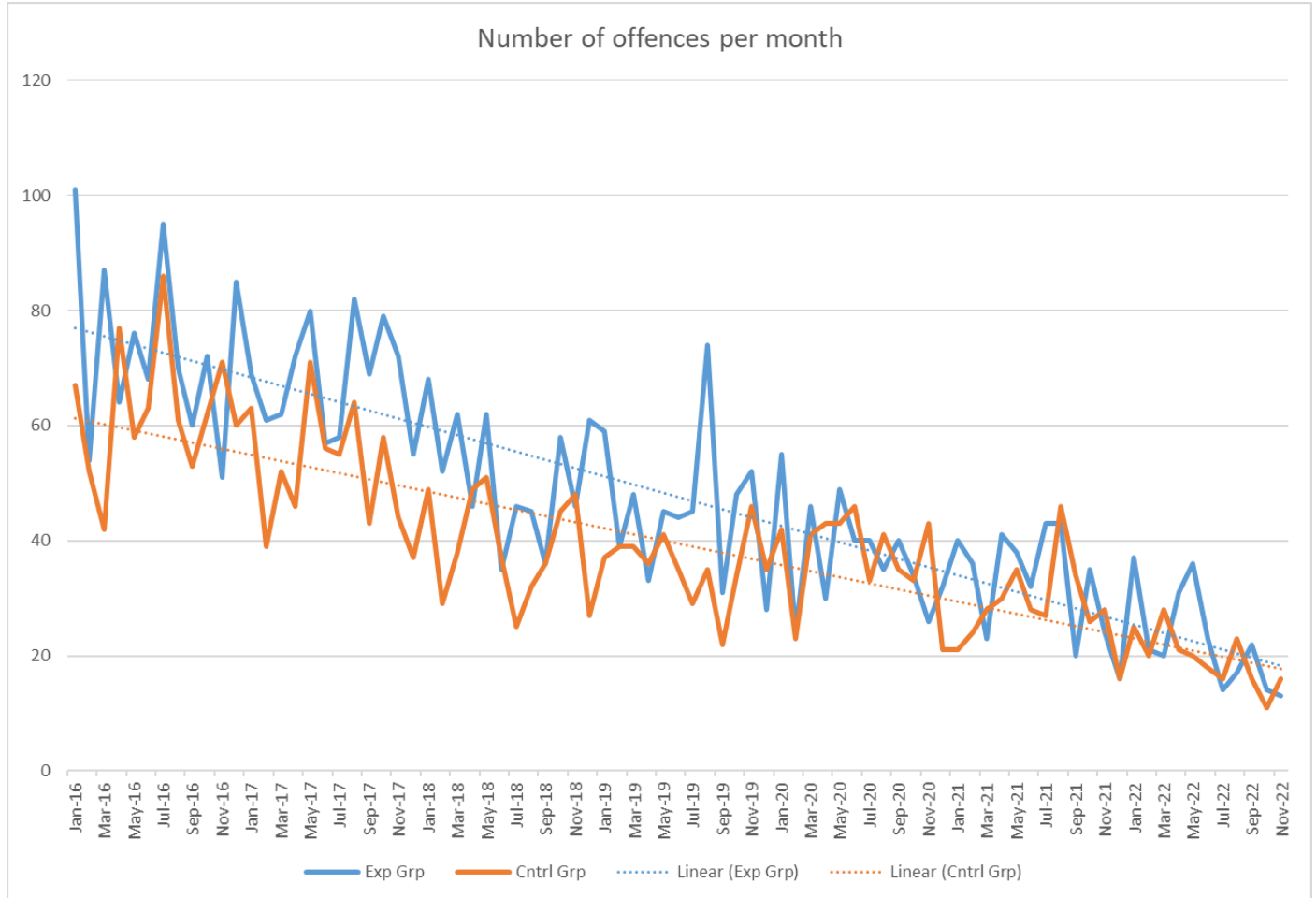


MoJ national data – Mean number of reoffences for specific offences

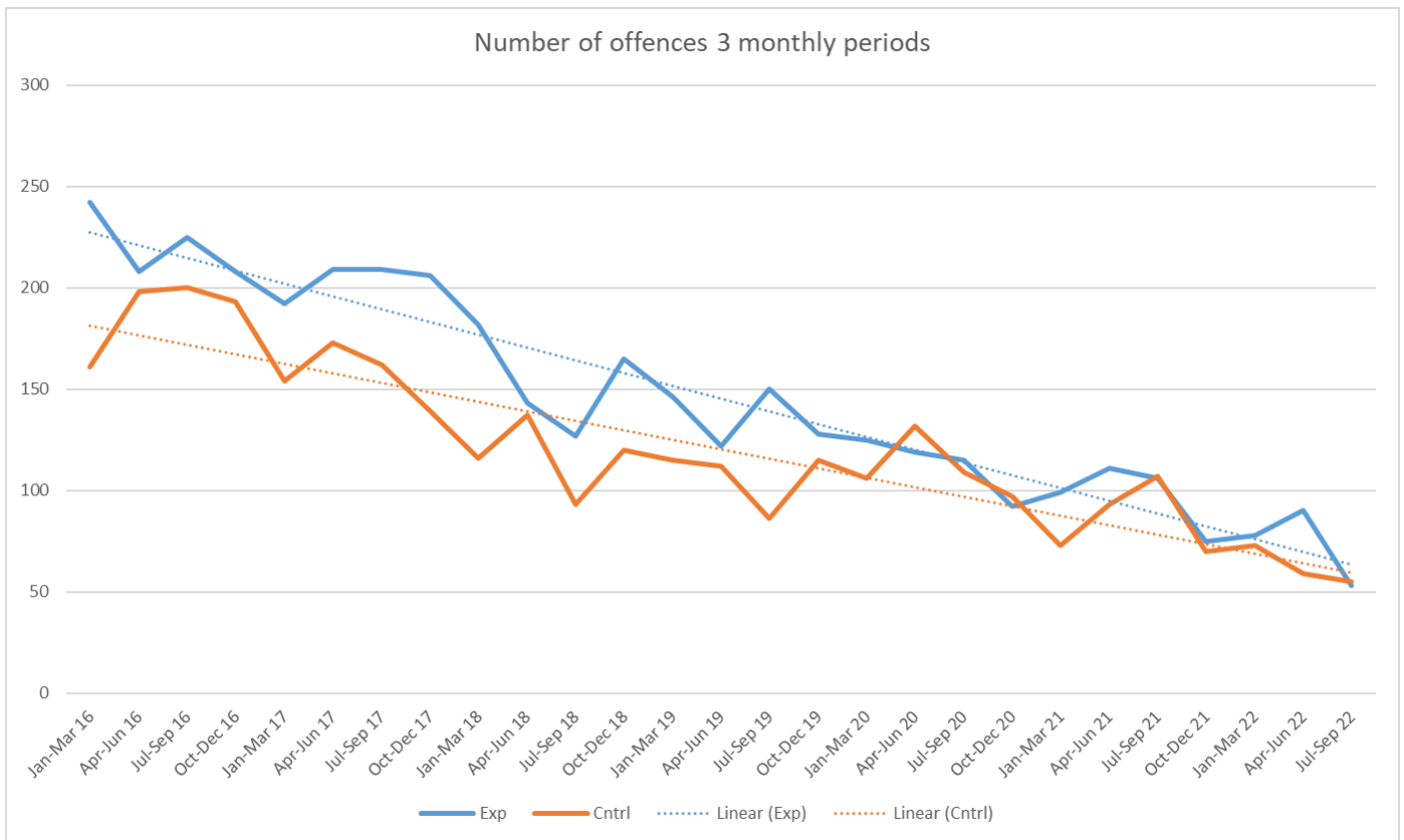
Mean number of reoffences for MoJ Robbery, Weapons and VAP



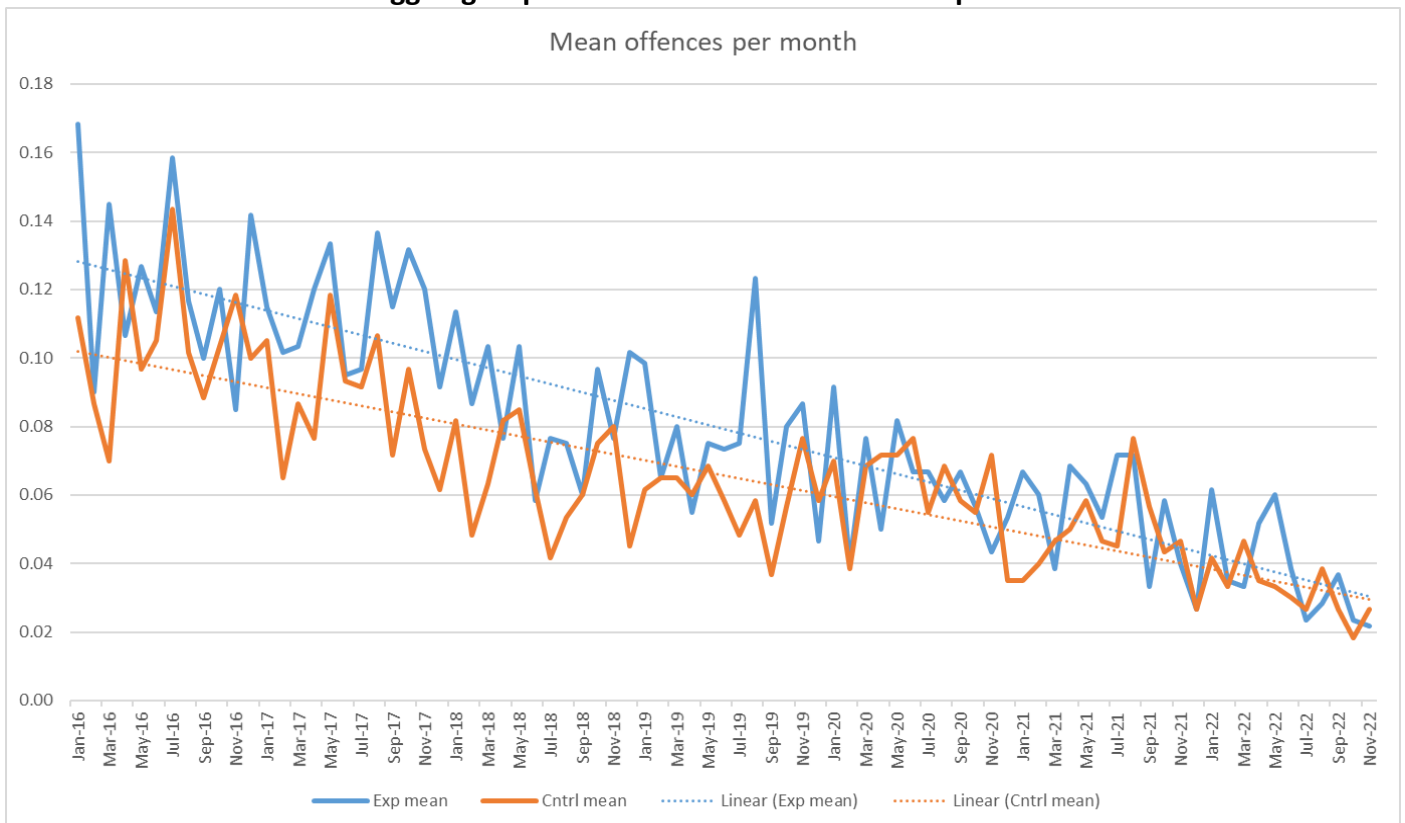
MOPAC data – KC tagged group versus control: Number of offences per month



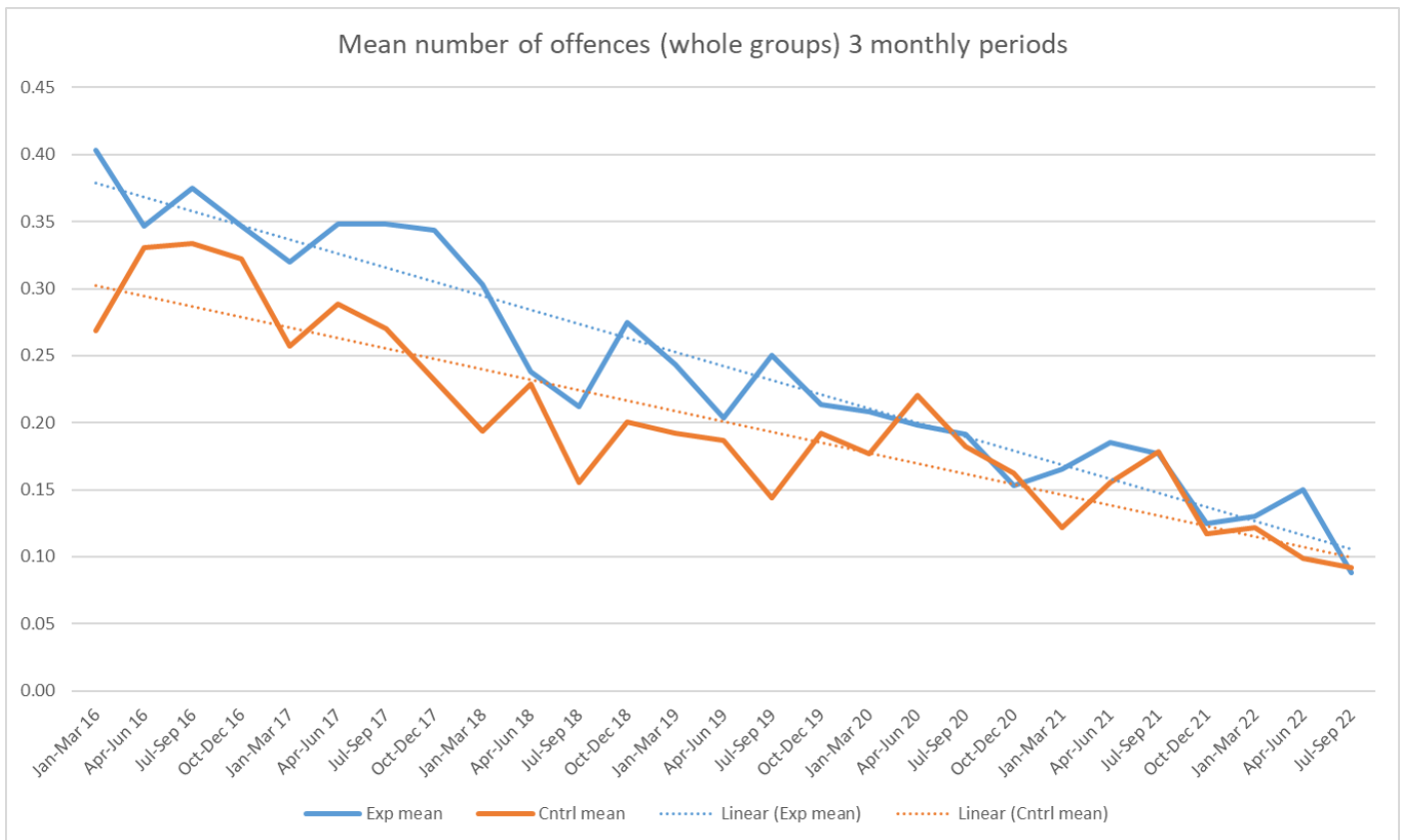
MOPAC data – Knife crime tagged versus control



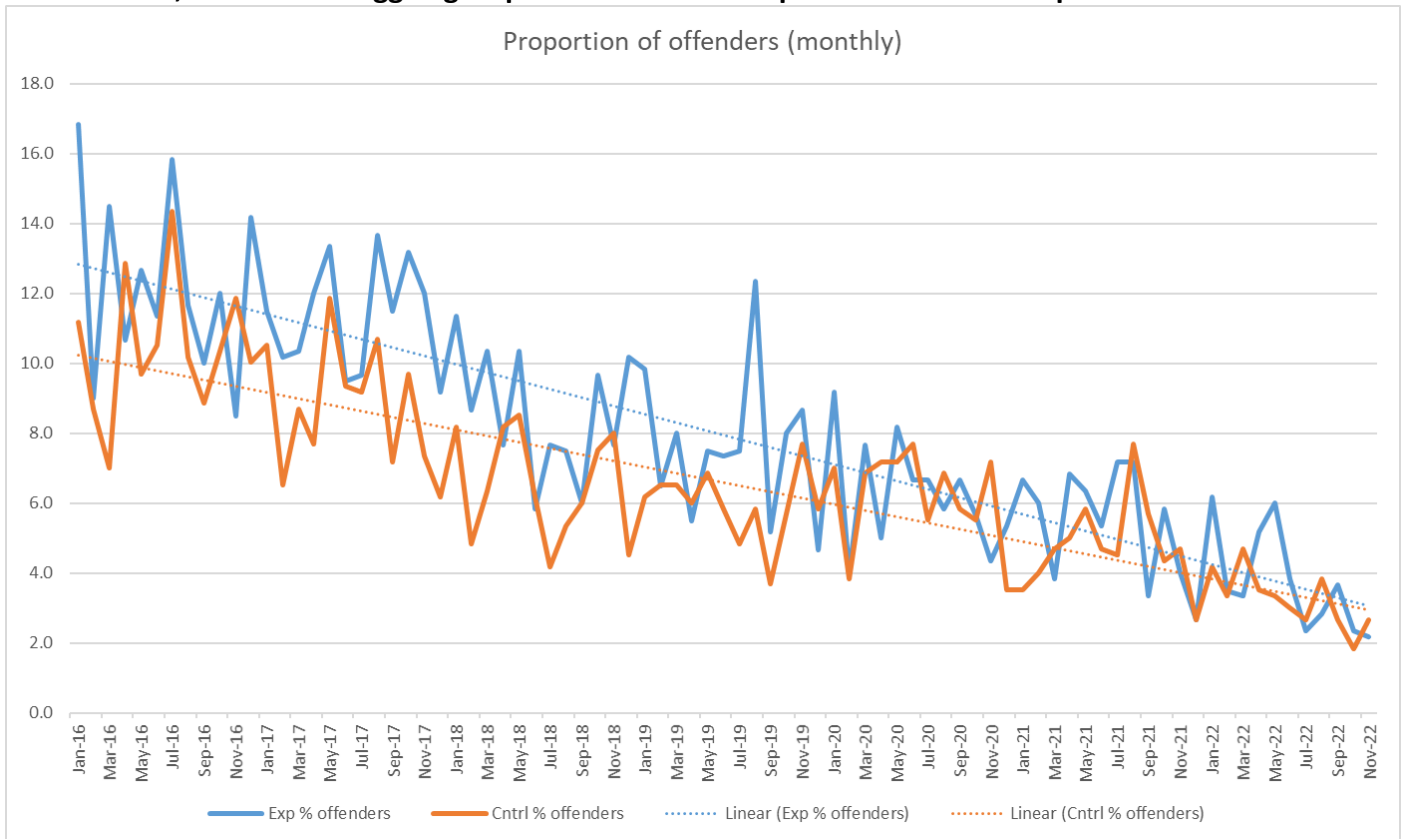
MOPAC data – Knife crime tagged group versus control. Mean offences per month



MOPAC data – Knife crime tagged group versus control – mean number of offences (3 months)



MOPAC data, knife crime tagged group versus control. Proportion of offenders per month.



MoJ and MOPAC data combined

Proportion of Treatment, Control and MoJ Robbery, Weapons and Violence Reoffenders (quarterly)

