



Ministry  
of Justice

# The correlation between prison misconduct and reoffending

Exploring the links between prison  
adjudications and proven reoffences  
within a 2-year follow-up period

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# Glossary

## **Coefficient(s)**

Coefficients in the context of this study refer to regression coefficients. A coefficient is quantifying the impact of a variable, in this case adjudications, on another variable, in this case reoffending. Coefficients measure not only the impact but also the direction of it, as such, they can be utilised to examine relationships between variables by inspecting their impact. A positive coefficient denotes an increase in the second variable as the first increases, while a negative coefficient denotes a decrease in the second variable as the first increases. Where variables are not numeric (e.g., Age) where the coefficient can express the increase per year of age, but categorical (e.g., Age Bands), a reference category is chosen to compare the remaining categories (e.g., comparing individuals aged 26-31, 32-50, and 50+ to individuals 18-25).

## **Correlation**

The degree of association between two or more variables; measuring the relationship between two or more things (for example prison misconduct and reoffending). A positive correlation denotes that an increase in one variable also increases another variable (more misconduct associates with more reoffending) whereas a negative correlation denotes that an increase in one variable decreases another variable (more misconduct associates with less reoffending). In the context of this study, correlation is used for the simplification of interpretation of regression coefficients, with their interpretations largely similar.

## **Interaction Term(s)**

Interaction terms refer to the statistical phenomenon where the effect of a characteristic of interest may depend on a second characteristic of interest in being associated with an outcome. Together, the two characteristics influence the outcome of the value we are trying to establish a relationship to. For interaction terms, statistical significance is established where the rate of increase for each characteristic is not uniform, therefore an interaction term is established. Interactions always require a category to refer to, for example males aged 26-32

could be compared with females aged 26-32. To expand on this example, assume that reoffending for females aged 26-32 may increase at a steady rate compared with males aged 26-32, this would not be an interaction term. However, if the rate of reoffending in females aged 26-32 increased sharply, then an interaction term exists. It is important to note that this is independent from their original likelihood to reoffend. For example, consider that males aged 26-32 have a likelihood of 2.5 times and females aged 26-32 have a likelihood of 1.6 times to reoffend. If the males aged 26-32 receive 10% increased odds to reoffend, and females aged 26-32 also receive 10% increased odds to reoffend, then this does not equate an interaction term despite the clear base gap (2.5 and 1.6 times respectively) of reoffending odds between the two.

**Odds ratio**

A statistic which measures the association between a factor of interest such as the number of adjudications and an outcome such as reoffending. If the odds ratio has a magnitude greater than 1 then the number of adjudications increase the odds the outcome will occur (i.e., reoffending); an odds ratio below 1 would indicate that that the number of adjudications would be reducing the odds that the outcome will occur; whilst an odds ratio close to 1 indicates an offender is not at higher odds of offending based on the number of adjudications.

**Index offence**

Denotes the offence for which the offender entered the prison cohort.

**Statistical Significance / P-value**

Statistical significance refers to the likelihood that a change in sample of population is not coincidental. The higher sample, the more likely a statistically significant finding can occur, but also incites the risk of error of suggesting non-coincidental change where it is a coincidence due to the sheer sample size.

The p-value allows to measure whether a result is said to be statistically significant.

**Statistical Modelling**

Statistical models are best understood as scales to measure and quantify relationships and associations amidst one or more factors and an outcome, as well as being used to predict unknown outcomes based on the knowledge of previous outcomes. This study will utilise regression models for measuring and quantifying relationships and associations in the presence of several factors, rather than predicting the future.

An additional use for statistical modelling is that of 'survival analysis'; often used in medical contexts, a statistical model measuring survival looks at the time it takes from the start of the follow up to reoffend. In statistical modelling, we can add further factors to assess their impact on the time to reoffence.

**Offender Group Reconviction Scale Version 3 (OGRS3)**

The Offender Group Reconviction Scale (OGRS) is the name of a series of actuarial risk assessment instruments for use with convicted criminal offenders. Each version of OGRS has been developed for and used by the adult correctional services of England and Wales, directed since 2004 by the National Offender Management Service, which in 2017 became Her Majesty's Prison and Probation Service (HMPPS).

**Offender Assessment System (OASys)**

The Offender Assessment System is used in England and Wales by His Majesty's Prison Service and the National Probation Service to measure the risks and needs of criminal offenders under their supervision. Initially developed in 2001, it was built upon the existing 'What Works' evidence base.

# Summary

## About the study

Reoffending impact evaluations for rehabilitation interventions require long timeframes. For example, a two-year reoffending evaluation requires that an individual was released from prison for at least two years to be included in the analysis. Where such evaluations are several years away, the use of alternative outcomes can provide valuable short-term insights into intervention effects for policy development.

Two recently published impact evaluations by Elliott et al (2023) and Brinn et al (2023) examined prison misconduct (defined as 'proven adjudications') and proven reoffending outcomes separately for the Thinking Skills Programme (TSP) – an accredited cognitive-behavioural programme delivered in His Majesty's Prison and Probation Service (HMPPS) until Q4 2025. The extensive samples from these studies offered an opportunity to evaluate the relationship between prison misconduct and reoffending, and to assess whether prison misconduct could be further established as a suitable short-term outcome for future programme evaluations. It is important to note that the study does not aim to provide or assess the predictive validity of prison misconduct and reoffending, only its possible usage for timely evaluation of accredited programmes and other interventions pending reoffending studies.

## Study Design

This exploratory study examined the relationship between prison misconduct and reoffending using binary (yes/no) and frequency (number per person) outcomes for both prison adjudications and proven reoffending. The relationship was studied from four perspectives:

- i) Differences in odds of reoffending between those with any proven adjudications and those without.

- ii) Differences in frequency of reoffending for each proven adjudication.
- iii) Time taken to reoffend for those with any proven adjudications compared with those without.
- iv) Similarity of outcomes across prison establishments.

Additionally, four relevant sub-groups were analysed to assess differences at a more granular level. The sub-groups were defined by:

- a) Reoffending Risk (OGRS-3 (Offender Group Reconviction Scale third version) Risk Scores)
- b) Gender
- c) Age
- d) Presence of Learning Disability and Challenges (LDC)

## **Key results of the study**

### **Overall**

- Both frequency and binary measures of prison misconduct were consistently associated with increased reoffending odds and incidence volume.
- Differences between general and violent adjudications were negligible.
- Individuals involved in any prison misconduct reoffended significantly quicker than their counterparts without prison misconduct.
- Those with violent adjudications reoffended even quicker than those with general adjudications.
- There was little to no variation attributed between establishments.

### **Sub-analyses**

- Gender-related differences were minimal and mostly not statistically significant, indicating that prison misconduct outcomes were consistent across both genders for the cohort.
- Differences in odds of reoffending (i.e., OGRS-3 scores) were also minimal and mostly not practically significant, showing that odds did not confound the relationship between prison misconduct and reoffending in this cohort.

- Age-related differences were mostly statistically significant, increasing with age, with those over 50 indicating the highest associations between prison misconduct and proven reoffending for this cohort.
- LDC-related differences were small but statistically significant, indicating a consistent trend of prison misconduct having a smaller association on reoffending for those with identified learning needs.

### **Conclusions from this study**

The findings suggest that prison misconduct can be used as a short-term outcome measure to determine early programme effectiveness. The findings, however, are not generalisable beyond the cohort used and further studies are needed to determine if this approach is applicable to different offender typologies and other programme groups. It is important to note that due to the different samples resulting from further data linking and manipulation, this study is not directly comparable to either of the original impact evaluations of TSP by Elliott et al (2023), or Brinn et al (2023).

# 1. Introduction and Aims

Proven reoffending impact evaluations for prison-based interventions require long post-release follow-up periods to gather sufficient sample sizes for statistically robust analysis. Specifically, time is required for an individual to complete their prison sentence, be released into the community and have the opportunity to remain offence free. If the individual reoffends, additional time is required for the case to proceed to court and for the sentencing outcomes to be recorded.

It is therefore acknowledged that evaluating the impact of interventions aimed at reducing reoffending requires extensive timeframes. In turn, this translates to fewer opportunities to assess their impact and monitor and improve key metrics.

Alternatives to reoffending have recently been used by the Ministry of Justice. Elliott et al. (2023), for example recently used prison adjudications<sup>1</sup> as a metric for behavioural misconduct to evaluate an accredited offending behaviour programme, called the Thinking Skills Programme (TSP). The association between prison misconduct and reoffending, however, remained unexplored in that evaluation.

In the UK and internationally, the number of studies investigating the association between prison misconduct and reoffending is very limited. Indeed, the only evaluation we could find<sup>2</sup> was Rordriguez-Menes, Ruiz-Vallejo, and Gomez, (2022). This study conducted in Spain, using an extensive sample, provided an indication that prison-related behaviour can be used as a proxy for behaviour after release (Rodriguez-Menes, Ruitz-Vallejo, and Gomez, 2022).

The current study is exploratory, and the first of its kind to be completed in England and Wales by the MoJ. The aim was to assess whether there is an association between prison misconduct and reoffending in two existing datasets. Establishing such an association provides an initial basis for considering the extent to which behaviour in prison may act as an early indicator of potential longer-term impacts on subsequent reoffending.

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<sup>1</sup> Adjudications are part of the prison disciplinary system across England and Wales. Any rule breaking activity or accusation of rule breaking that occurs within the prison system can be tried and punished through the internal prison disciplinary system. The hearings in which evidence is presented, and decisions are made are called adjudications

<sup>2</sup> Based on a limited review of the international evidence published in the five years preceding this report.

## 2. Methods

The aim of this exploratory study is to assess whether there is an association between prison misconduct and proven reoffending, subsequently offering earlier insights on intervention effectiveness where possible. To do this, the current study investigated:

- a) the impact of proven prison misconduct on proven reoffending in the absence of additional factors; and
- b) the impact of prison misconduct together with isolated factors of interest (e.g., age group, reoffending odds).

To achieve the above, the research team used existing linked datasets initially produced for two published impact evaluations of the HMPPS Thinking Skills Programme (TSP), an accredited offending behaviour programme that was delivered in prisons and the community until Q4 2025 (for further details see Elliott et al., 2023; Brinn et al., 2023). TSP comprised 19 sessions (15 group sessions and 4 individual sessions), providing 38-hours of contact time divided across three modules (Self-Control, Problem Solving, and Positive Relationships). The programme was designed to help adult participants (male and female) develop skills in pro-social problem solving, perspective taking, developing, and managing relationships, and self-management. TSP aimed to support participants to develop skills which can help stop them from reoffending and encourage a successful, pro-social life.

The analysis for the current study is based on a large sample (38,669 individual records) merged from the two TSP evaluation datasets used by Elliott et al. and Brinn et al. and covered the period of 2011 to 2019.

## 2.1 Data Processing

### Data Linkage

Extensive data linkage documentation can be found in Elliott et al (2023) in relation to the approach and sentence selection criteria for the cohort. The data was linked across several databases:

- Data extracted from the Police National Computer (PNC) describing offender criminal history;
- Offender Assessment System (OASys) risks and criminogenic needs;
- Adjudications data describing the number of adjudications;
- Prison population data for describing recorded ethnicity;
- Prison violence statistics; and
- Survey data from the Measure of Quality of Prison Life (MQPL) data.

This linkage was used to inform the sentence selection criteria, and the extensive propensity score matching methods for the impact evaluations.

### Data Joining

The prison misconduct evaluation dataset (Elliott et al., 2023) did not include reoffending information, equally, the reoffending evaluation dataset (Brinn et al., 2023) did not include prison misconduct information. To supplement the information required for this study, the prison misconduct evaluation dataset was used as a base where information of participants shared between the two published evaluations was linked, providing reoffending outcomes. A breakdown of the resulting sample through descriptive statistics is available in Table 2.1.

### Subgroup Analyses

A range of sub-analyses were undertaken by Brinn et al., (2023), and Elliott et al., (2023). This study considered selected sub-analyses, namely those by gender, ethnicity, age bands, LDC (Learning Disability and Challenges) characteristics, and OGRS-3 (Offender Group Reconviction Scale Predictor, version 3) risk scores.

Only statistically significant analyses ( $p < .05$ ) with sufficient individuals in the respective subgroups are presented in the results in Section 3.

Table 2.1 offers further information on the demographics of the sample beyond what was used for the key analyses.

**Table 2.1.** Descriptive statistics for the overall sample cohort.

<b>Variable</b>	<b>Female sample: 1,088 (3%)</b>	<b>Male sample: 37,581 (97%)</b>	<b>Total sample: 38,669 (100%)</b>
<b>Age group</b>			
Aged between 18-25	255	12,687	12,942
Aged between 26-30	225	7,142	7,367
Aged between 31-49	530	14,829	15,359
Aged over 50	78	2,923	3,001
<b>Ethnic group</b>			
Asian and Asian British ethnicity	18	2,175	2,193
Black, Black British, Caribbean, and African ethnicity	81	3,613	3,694
Mixed and multiple ethnic groups	48	1,454	1,502
Arab and other ethnic groups	3	168	171
White	929	29,801	30,730
Unknown/not stated	9	370	379
<b>OASys learning difficulties and challenges (LDC)</b>			
Less likely to present LDC	966	31,466	32,432
More likely to present LDC	98	5,116	5,214
Unknown	24	999	1,023
<b>Index offence sentence length</b>			
Less than or equal to 6 months	8	333	341
Between 6 and 12 months	7	463	479
12 months to less than 4 years	689	21,191	21,880
4 to 10 years	359	13,693	14,052
More than 10 years	8	1,058	1,066
Indeterminate sentence	122	555	567
Life sentence	5	288	293
<b>Index offence group</b>			
Violence against the person	314	8,022	8,336
Sexual offences	24	4,088	4,112
Robbery	200	4,946	5,146
Theft offences	196	8,880	9,076
Possession of weapons	71	1,509	1,532
Drug offences	174	5,919	6,093
Summary offences excluding motoring	10	338	348
Fraud offences	33	420	453
Public order offences	13	1,147	1,160
Criminal damage and arson	71	731	802
Miscellaneous crimes against society	28	1,526	1,554
Summary motoring offences (Excluded)	1	51	52
Unknown (Excluded)	1	4	5

<b>Offender Group Reconviction Scale Predictor (OGRS3) risk score</b>			
With OGRS3 risk score 25-49 (low risk)	271	7,889	8,160
With OGRS3 risk score 50-74 (medium risk)	314	13,061	13,375
With OGRS3 risk score 75+ (high risk)	318	11,323	11,641
<b>Offender Violent Predictor (OVP) score</b>			
With OVP score 25-49 (low)	365	14,229	14,594
With OVP score 50-74 (medium)	161	8,607	8,768
With OVP score 75+ (high)	25	2,194	2,219
<b>Offenders with Prison Misconduct (PM)</b>			
Number of offenders with PM	386	11,924	12,310
<b>Offenders who reoffended</b>			
Number of offenders with a reoffence	365	17,122	17,487

### Primary Outcome / Predictors

We consider both, whether any reoffending occurred as a binary yes/no response and the frequency (i.e., number) of reoffences as our outcome measures.

Reoffending for the purposes of this study refers to proven reoffending.

Proven Reoffences refer to cautions to court convictions that are inputted to the PNC (Police National Computer). Therefore, a limitation of the measure is that it does not account for crimes that were not reported to and recorded by the police and/or where the case did not progress to court. Proven reoffending does not include out of court disposals. For this study (aligned with the published impact evaluations - Brinn et al., 2023 and Elliot et al., 2023), proven reoffences are measured over a two-year follow-up period from an individual's release from prison.

Prison misconduct is measured in the form of proven adjudications and is therefore used interchangeably in this study.

Proven adjudications are a disciplinary procedure in response to rule-breaking in prisons. When a rule-breaking offence occurs, this will be recorded as an incident and can be taken to an adjudication trial. The trial is usually held in the prison and judged by the prison governor but, for more serious offences, this may be referred to an independent adjudicator. If the prisoner is found guilty of the offence(s) in the adjudication, sanctions (punishments) may be enforced such as cellular confinement or additional days added to their sentence. The most serious offences, such as murder, are referred to the police for prosecution through the criminal courts; these are not considered by this study.

A given adjudication may involve multiple incidents of misconduct. Whether an adjudication took place, and the number of adjudications were both measured within a 6-month follow up period. This is aligned with the approach used by Elliott et al (2023). It implies that further adjudications could have occurred throughout a sentence, which would be not captured. Equally, on the occasion where a prisoner had only one adjudication through their sentence, this may not have been captured by the defined follow-up period and would therefore be counted as a false negative (i.e., being labelled as no adjudications when an adjudication may have taken place).

In this study, general and violent adjudications (i.e. misconduct) are treated as the two primary but separate predictor measures. Each predictor has a binary yes/no measure as well as a frequency measure examined where the sample size allowed.

For further details of the variables used within this study please refer to Annex B.

## 2.2 Analytical Approach

There are four components to the analytical plan of this exploratory analysis, and these are set out below.

1. Exploration of the binary and frequency outcomes for reoffending.
2. Investigation of outcomes of reoffending for different groups.
3. An examination of time taken to reoffend based on whether an individual had any adjudications.
4. An exploratory multilevel approach, assessing variation of outcomes across prison sites.

The analyses in the Results (Section 3) are presented in the order set out above.

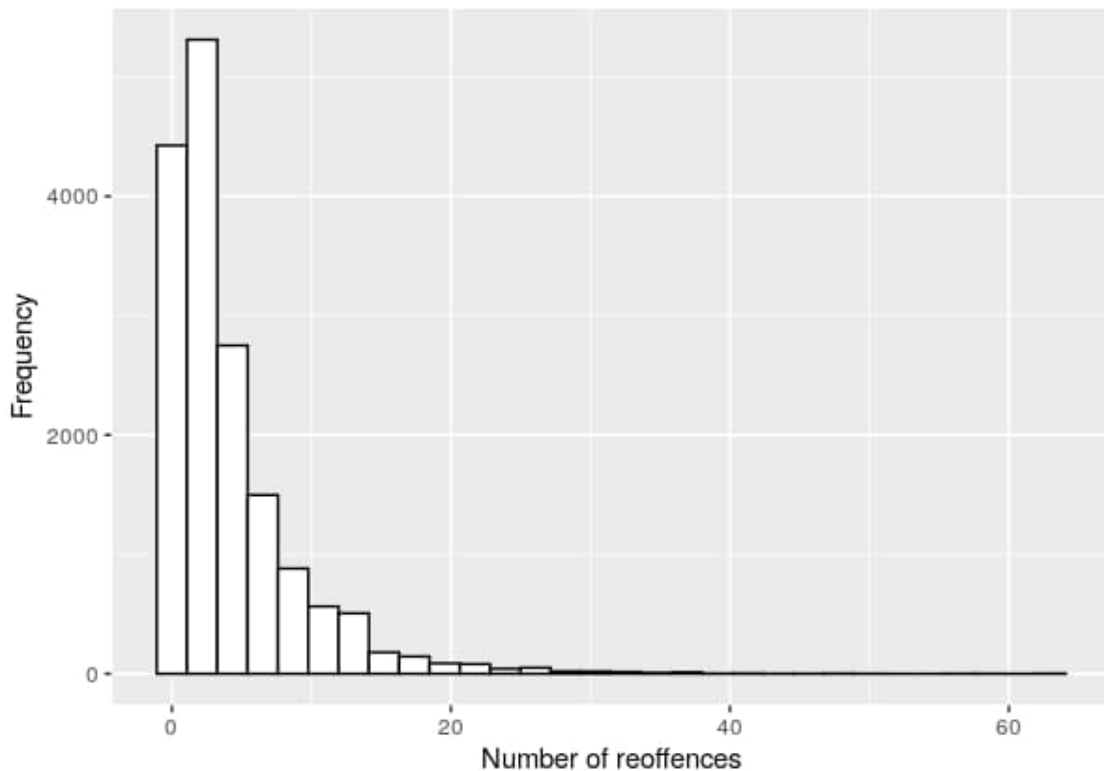
Logistic and negative binomial models (see Graph 3.1 for justification of modelling approach) were fitted to address odds and incidence of reoffending respectively, these only included adjudications, or relevant interactions as predictors. Extensive technical discussions on the regression typologies can be found in Orme and Orme (2009), as well as for Negative Binomial models specifically in Hilbe (2023).

General adjudications and violent adjudications were modelled separately. Models with interaction terms of interest between adjudications and relevant characteristics were constructed. These were:

- Age banding (with individuals at ages 18-25 as the reference group<sup>3</sup>);
- Whether an individual had any learning disabilities and challenges (LDC) (with individuals without LDC as the reference group);
- Gender (with females as the reference group); and
- OGRS score (with scores of 25-49 (low risk) as the reference group).

Reference groups refer only to interaction terms, not sub-group analyses. The estimates of the interactions are presented in Annex C. Subgroup analyses complimented the interaction terms to isolate their effects for exploratory and practical interpretation purposes. The findings relating to the sub-group analyses of statistically significant interactions are presented throughout Section 3.

**Graph 2.1.** Distribution of Reoffences



<sup>3</sup> To interpret any estimates for a statistical regression where several categories of individuals are present, a 'reference group' is required. The reference group can be thought of as the group that every other estimate is relative to. For example, in the context of 'Age Group' where '18-25' is the reference group, the estimates of odds of reoffending for the age groups of '26 and 31', '32-50', and '50+' are relative to the odds of 18-25 age groups (i.e., individual aged 26 to 31 is 20% higher odds to reoffend compared with individuals aged 18-25.)

The nature of the data is defined as over 'right skewed' with most individuals falling between 0 and 3 reoffences. Typically, a Log-linear / Poisson modelling approach would suffice to address skewedness, but a negative binomial approach was deemed best-suited on this occasion, based on severe overdispersion<sup>4</sup>.

Lastly, a survival analysis known as a 'Cox Regression' was used to address the element of time in reoffending. The survival analysis explored the days taken to reoffend as well as the final likelihood of remaining without offences for those with and without general/violent adjudications<sup>5</sup>. The findings are presented in Section 3.5.

## 2.3 Limitations and Interpreting Results

There are several methodological limitations that need to be considered when interpreting results and these are set out below.

### **Measuring Misconduct**

One of the limitations of this study is the use of prison adjudications as a measure of prison misconduct. Since adjudications are dependent on the efficiency of prison staff who process them (for which there is likely natural variation across prison sites), there is a clear drawback when measuring across various locations. This is an insurmountable limitation where wide geographical representation is required but can induce institution-specific subjectivity to the measure.

Prisons are dynamic and complex environments with changes in regimes, staffing and governance. Furthermore, testing the association over time could be beneficial, as those dynamic factors can change even when examining a single establishment throughout. Additionally, prison misconduct was measured over a 6-month period irrespective of sentence length. While this ensured equality across

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<sup>4</sup> Overdispersion is common and refers to the phenomenon where the values of a variable of interest are spread wider than anticipated by a model, leading to erroneous estimates. To assess overdispersion, the variance of a variable is assessed in relation to its mean. In this case, the mean reoffending frequency was defined as 1.91, whereas the variance metric was defined as 7.3, signalling severe overdispersion that required a specialised model (i.e., Negative Binomial Regression).

<sup>5</sup> The assumptions of Proportional Hazards were tested and met for this test.

individuals, it may have led to different misconduct trends and missed incidents. For example, someone with a two-year sentence may demonstrate less or more behavioural misconduct during the six months follow-up, than someone with a six-month sentence. Lastly, those with sentences of less than six months were excluded from the original sample, further limiting the generalisability of the current cohort. Detailed data breakdowns of the lost proportions based on those filters are included in the technical sections of the original TSP impact evaluation reports (see Brinn et al, 2023; Elliott et al, 2023).

### **(Lack of) Additional Control Variables**

Extensive statistical modelling was out of scope in this exploratory study. Our aim was to assess the relationship between prison misconduct and reoffending to provide a proxy for short-term operational use in evaluating prison interventions. It is important, however, to acknowledge that theory-informed control variables such as sociodemographic characteristics and offending history may mediate the correlation between prison misconduct and reoffending. This study, therefore, should be treated as a first step in disentangling a complicated relationship, rather than a simplification of it. Advanced statistical modelling, given the quantity of participants, would be a suitable next step; this would include multiple and/or multilevel models. Additional innovative methods such as the multilevel analysis of individual heterogeneity and discriminatory accuracy (MAIHDA; Evans et al, 2024) could further improve estimates and insights accordingly.

### **Purpose & Generalisability**

The study is intended as an exploration of prison-behaviour and its association with actions after release. It is designed to enable timely evaluations of interventions whilst samples accumulate for reoffending impact evaluations. It is not intended as a causal exploration of prison misconduct and reoffending and should not be used as such. Furthermore, the data used for this analysis was drawn from the published impact evaluations of TSP (Brinn et al., 2023; Elliott et al., 2023). TSP was an HMPPS accredited offending behaviour programme targeting those assessed as medium or above risk of reoffending. Due to this, the cohort examined consisted of the sum of the programme and comparison groups

of these studies and is therefore non-representative of other prisoner cohorts. Offence-typology is likely to impact the strength of the association between prison misconduct and reoffending. Varying levels of crime detection based on offending profiles of the specific cohort examined may also directly impact the strength of the association.

Further studies on offence-specific samples would be required to draw out robust conclusions on the relationships identified in this study. Additional, advanced statistical modelling with cross-cutting characteristics would also aid in disentangling the complex relationship that prison misconduct and reoffending present. This is especially true for sub-groups with very small numbers of participants, which affect the stability of the findings presented even for the current cohort (see Annex C – Model Summaries).

### 3. Results

The results of the main and sub-analyses are set out below. The results are based on the Odds Ratios (OR) of the statistical models for the logistic regression section. Odd ratios represent the odds of something occurring (e.g. a reoffence) for a specific group (e.g., those who had an adjudication), compared with a reference category (e.g., those who did not). The ratios provided for the negative binomial regression sections represent incidence rates. These indicate differences in the rates of incidence (%) compared with a reference category.

In this study, the logistic statistical models denote the expected percentage increase in odds of reoffending, and the negative binomial models denote the expected percentage increase in incidence rates (i.e., number of reoffences). For example, **when examining the impact of prison misconduct on the odds of reoffending**, we express this as a percentage change in increased or reduced odds to reoffend for those who engaged in misconduct compared with those who did not. **When examining the impact of prison misconduct on the volume of reoffending**, we express this as percentage increase or decrease in the incidence rate of reoffences for those who engaged in misconduct compared with those who did not.

Full model estimates, exponentiated estimates, confidence Intervals, standard errors and p-values are presented in Annex C of the report alongside summaries of the interaction terms / methods of using estimates for further calculations.

## 3.1 Binary Adjudications Measure and Binary Reoffending

### General (all) Adjudications

#### Main analysis: overall odds of reoffending

Over a two-year period from release from prison, those with any adjudication(s) had 2.5 times higher odds (i.e., 150%) of reoffending than the reference group (those who did not receive an adjudication). Those with any violent adjudication(s) had 2.4 times higher odds of reoffending than the reference group (those who did not have any violent adjudications).

#### Sub analyses

Analyses were performed to assess how prison misconduct affected the odds of reoffending across key sub-groups of interest. These are summarised in Table 3.1.

**Table 3.1.** Odd Ratios of Reoffending across different groups with prison misconduct.

Category	Sub-group	Any Adjudication(s): Odds to Reoffend	Any Violent Adjudication(s): Odds Reoffend
<b>Age Group</b>	18–25	2.1	1.9
	26–30	2.2	2.2
	31–50	2.5	2.7
	50+	3.2	2.7
<b>Learning Disability and Challenges (LDC)</b>	Unlikely to present with LDC	2.5	2.5
	Some or Significant LDC	2.1	1.8
<b>OGRS-3 Risk Bands</b>	Low Risk	1.66	—
	Medium Risk	1.61	—
	High Risk	1.55	—

## 3.2 Volume of Adjudications and Binary Reoffending

### Main analysis: overall odds of reoffending

Over a two-year period from release, for every adjudication(s), individuals had 1.3 times higher odds to reoffend. For every violent adjudication(s), individuals had 1.7 times higher odds to reoffend.

### Sub analysis

Analyses were performed to assess how prison misconduct affected the odds of reoffending across key sub-groups of interest, see Table 3.2.

**Table 3.2.** Expected Reoffending Odds per Prison Misconduct Incident across key groups of interest.

Category	Sub-group	For Every Adjudication(s): Odds to Reoffend
<b>Gender</b>	Males	1.3
	Females	1.6
<b>OGRS-3 Risk Bands</b>	Low Risk	1.2
	Medium Risk	1.1
	High Risk	1.1
<b>Age Group</b>	18–25	1.2
	26–30	1.2
	31–50	1.3
	50+	1.4
<b>Learning Disability and Challenges (LDC)</b>	Unlikely to present with LDC	1.3
	Some or Significant LDC	1.2

### **Violent Adjudications Sub-Analyses**

The frequency cell counts for modelling the relationship between violent adjudications and reoffending were deemed too small to provide robust estimates for consideration in sub-analyses. These results were therefore omitted from this study as they did not reach quality standard.

## **3.3 Binary Adjudication Measure and Frequency of Reoffending**

### **Main analysis: Overall Frequency of Reoffending**

Over a two-year period from release, those who had any adjudication(s) were expected to have 87% more reoffences compared with those who did not. Those who had any violent adjudication(s) were expected to have 62% more reoffences compared with those who did not.

### **Sub analyses**

Sub-analyses for both general and violent adjudications were performed to assess the differences in odds between groups.

**Table 3.3.** Expected Reoffending Incidence Rate (%) when general / violent adjudications are present.

<b>Category</b>	<b>Sub-group</b>	<b>Any Adjudication(s): % Increased Incidence (vs. No Adjudication)</b>	<b>Any Violent Adjudication(s): % Increased Incidence (vs. No Violent Adjudication)</b>
<b>Age Group</b>	18–25	72%	38%
	26–30	93%	78%
	31–49	82%	86%
	50+	186%	102%
<b>Learning Disability and Challenges (LDC)</b>	Unlikely to present with LDC	89%	67%

Category	Sub-group	Any Adjudication(s): % Increased Incidence (vs. No Adjudication)	Any Violent Adjudication(s): % Increased Incidence (vs. No Violent Adjudication)
	Some or Significant LDC	66%	39%

### 3.4 Volume of Adjudications and Frequency of Reoffending

#### Main analysis: Overall Frequency of Reoffending

When looking at the correlation between frequency of prison misconduct and frequency of reoffending (i.e., how the number of adjudications affects number of reoffences), over a two-year period from release, for every adjudication, individuals would be expected to have 17% more reoffences compared with those in the reference group.

#### Sub analysis

Sub-group analyses of LDC and Age Group are presented below in Table 3.4.

**Table 3.4.** Reoffending Incidence Rate (%) per Non-Violent Adjudication Incident for key groups of interest.

Category	Sub-group	For Every Adjudication(s): % Reoffence Incidences
<b>Age Group</b>	18–25	13%
	26–30	18%
	31–49	20%
	50+	50%
<b>Learning Disability and Challenges (LDC)</b>	Unlikely to present with LDC	18%
	Some or Significant LDC	11%

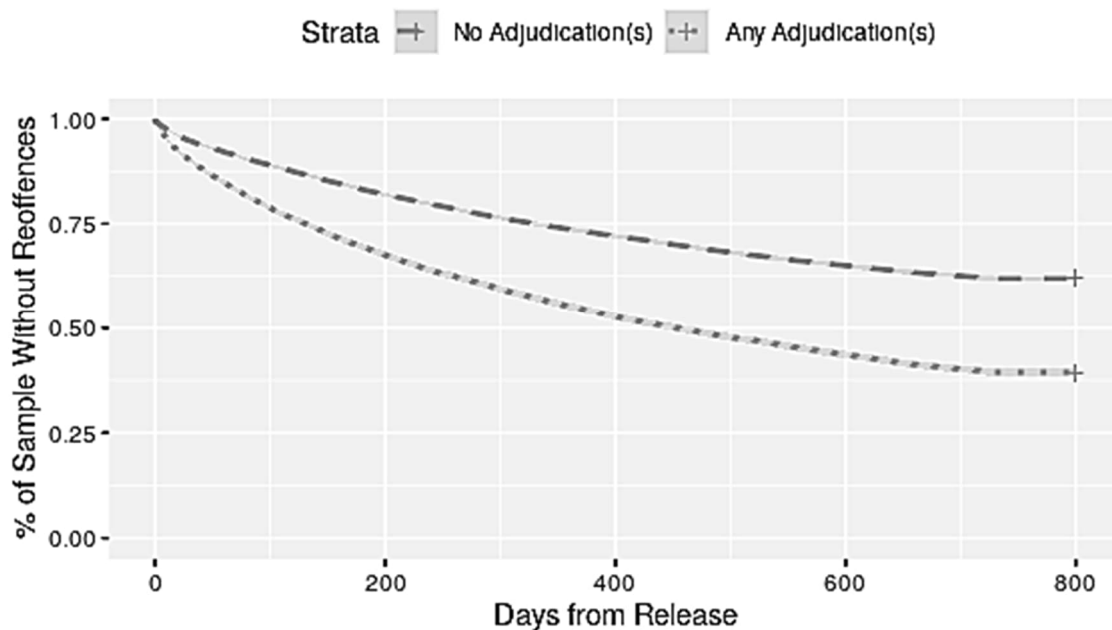
### **Violent Adjudications**

As with Section 3.2, very few individuals had more than one violent adjudication and, as a result, the analyses using this measure did not meet the standard to be presented. Earlier sections present findings for the binary measure of violent adjudications, providing more robust estimates.

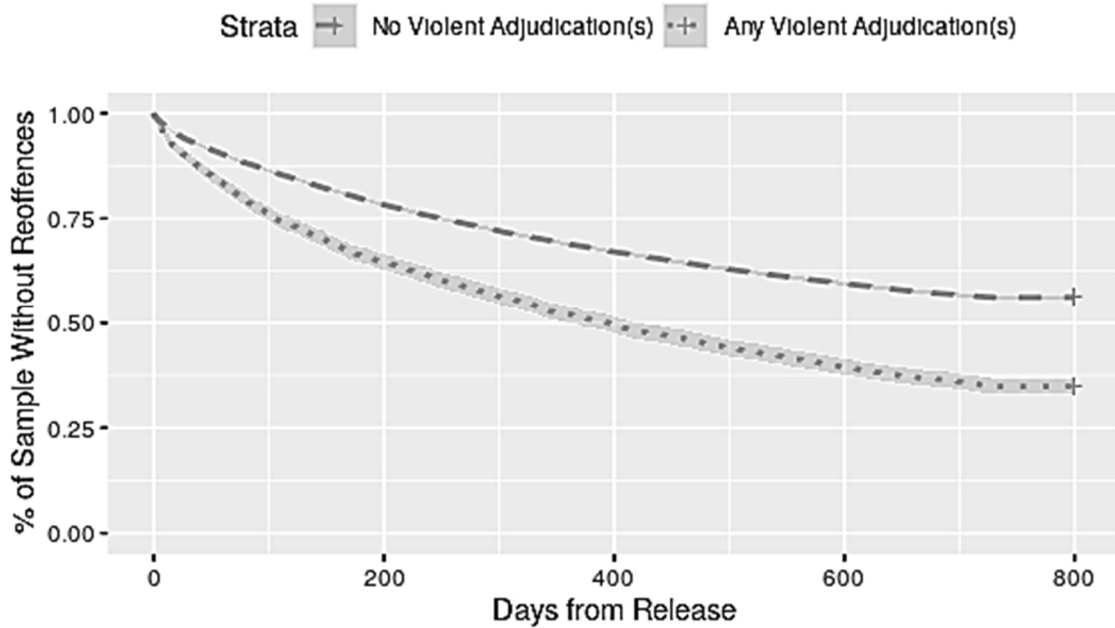
## **3.5 Survival analysis**

Additional examination explored the time taken to commit a reoffence. The visualised charts (Graph 3.1; 3.2) of the Cox Regression below indicate that those without any adjudications had (a) a higher probability of ending their two-year follow-up offence free, and (b) took longer to reoffend. Furthermore, those with violent adjudications reduced their time to reoffending even further.

**Graph 3.1. Survival Analysis Chart:** Indicates the proportion of offence-free sample (Y-Axis) over days passed from release (X-Axis).



**Graph 3.2. Survival Analysis Chart:** Indicates the proportion of offence-free sample (Y-Axis) over days passed from release (X-Axis).



### 3.6 Multilevel Exploration

To assess homogeneity of outcomes across prisons (Reoffending, Prison Misconduct), a simple element of multilevel analysis was introduced. The exploratory analysis explored base variation between prison sites and returned low Intra-Class-Correlation (ICC) estimates ( $<.1$ ), indicating that the outcomes were very similar from prison to prison.

## 4. Conclusions

This exploratory study aimed to assess the association between prison misconduct (i.e. proven prison adjudications) and proven reoffending using existing accredited programme impact evaluation datasets (see Brinn et al., 2023 and Elliott et al., 2023). The aim was to determine whether an association between prison misconduct and reoffending exists, to support the use of prison misconduct as an interim indicator of the likely effect of an intervention on reoffending, pending long-term evaluations that assess for such impact.

The results showed that prison misconduct was robustly associated with reoffending and provide insight to the sparsely explored relationship between in-prison and post-release behaviour. Results must be considered in light of the limitations set out in this report, the primary limitation being that the study is definitively exploratory and was designed to observe correlation, not establish causation. Furthermore, even within the context of gaining interim insight into potential programme effects, the examined sample was drawn from two impact evaluations of the Thinking Skills Programme (TSP), and therefore results may not hold for other prisoner cohorts.

It can be said, however, that for the current cohort, in this case individuals that fit the profile of TSP participants (and those like them), prison misconduct is associated with subsequent reoffending.

### 4.1 Recommendations for future analysis

#### **Advanced Statistical Modelling**

As discussed in the 'Limitations' section, an important next step would be to assess whether the relationship between prison misconduct and reoffending holds in the presence of mediating variables. For example, the simple sub-group analyses conducted for this study could be part of larger, more complex regression models. Multiple regression models would enable the impact assessment of the demographic / subgroup factors of interest collectively on the

relationship between prison misconduct and reoffending; rather than assessing them individually. This would provide better informed estimates by controlling for several confounding elements which may influence the impact of the association of prison misconduct on reoffending.

### **Adjudication Typology**

An adjudication offence can be one of six main categories: disobedience/disrespect, escape/abscond, unauthorised transactions, violence, wilful damage, and other offences. The present study only explored cases divided by 'general' and 'violent' nature due to sample size limitations. One future possibility would be to consider a larger study where it is possible to investigate offence types for adjudications and their potential differential outcomes in reoffending.

### **Representative Sampling**

Further research should ensure that a representative sample is drawn, preferably randomly, from the prison population, and preferably stratified by offence typology. This would enable wider application of the findings in other programme cohorts in order to enable early indicative insights into behavioural changes that are associated with reoffending.

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# Annexes

## Annex A – Simplified Results

### What you can say about the results.

- There is a statistically significant, strong, positive association between prison misconduct and reoffending for the examined cohort.
- The relationship holds for binary (yes/no) and frequency (volume) measures for the examined cohort.
- The relationship also holds at similar levels for general, and violent adjudications for the examined cohort.
- The positive relationship is stronger for individuals without learning disability and challenges as well as in older prisoners for the examined cohort.
- There is a statistically significant, weak, positive relationship towards volume of adjudications across gender, with females who have higher volumes of prison misconduct being slightly at higher odds to reoffend than males.
- There is a weak positive relationship towards volume of adjudications across OGRS scores, with high-risk scoring individuals having slightly lower likelihood of reoffending than those with low and medium-risk scores.
- Individuals with any adjudications in this cohort reoffended quicker and were at higher odds of reoffending than those without in the two-year follow-up.
- Estimates in this study may be either over or underestimating the effects of adjudications due to the unaccounted effects of the prison establishments.
- Estimates in this study can be subject to errors by not accounting for additional factors that may mediate the impact of misconduct on the odds and frequency of reoffending.

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### What you cannot say about the results.

- Prison misconduct causes an increase in reoffences or their likelihood.
- The findings are generalisable to the wider offending population.
- Prison misconduct solely predicts reoffending or its likelihood.
- The estimates can be generalised across prison establishments.

## Annex B – Parameter summary

**Table B1.** Number, Type and Categories of Parameters

<b>Variable</b>	<b>Type</b>	<b>Categories</b>
Binary measure of proven adjudication during 6-month follow-up period of TSP	Categorical	0/1
Binary measure of proven violent adjudication during 6-month follow-up period of TSP	Categorical	0/1
Number of prison adjudications in 6-month follow-up period of TSP	Continuous	Mean = 0.77 SD = 1.78
Number of violent prison adjudications in 6-month follow-up period of TSP	Continuous	Mean = 0.08 SD = 0.38
Binary measure of proven reoffences during a 2-year follow-up period from release from prison	Categorical	0/1
Number of proven reoffences during a 2-year follow-up period from release from prison	Continuous	Mean = 1.91 SD = 3.83
Days taken to first reoffence during a 2-year follow up period from release from prison	Continuous	Mean = 550 SD = 306
Gender	Categorical	Female; Male
Offender Group Reconviction Scale OGRS3 score		0-9; 10-19; 20-29; 30-39; 40-49; 50-59; 60-69; 70-79; 80-89; 90-100; Unknown
Does the offender have learning difficulties?	Categorical	0/1
Establishment*	Categorical	Offender Prison Sites

\*Establishments changed dynamically over time; an extensive list of sites is available in the original reports.

## Annex C – Statistical Modelling Summaries

### 1. Contrasts

The contrast estimates are presented below. Worthy of note are the error estimates, which depending on the sub-group can vary greatly. For example, the Age Band for Over 50s had very few individuals compared with the rest of the sub-groups, resulting in large confidence intervals. Confidence Intervals (CIs) are set at 95%.

**Table C1.1.** Contrast/Subgroup estimate summaries across characteristics for logistic regressions with binary adjudication predictor as the input.

Logistic Regressions Summary - Binary Input / Output						
	General Overall	Violent Overall	General LDC	Violent LDC	General Non-LDC	Violent Non-LDC
Estimate	0.91	0.87	0.74	0.58	0.92	0.91
Std.Error	0.02	0.04	0.05	0.1	0.02	0.04
Exp(b)	2.5	2.39	2.1	1.79	2.52	2.48
P-Value	0.001	0.001	0.001	0.001	0.001	0.001
Upper CI	2.61	2.6	2.36	2.19	2.65	2.72
Lower CI	2.39	2.2	1.88	1.46	2.41	2.26

**Table C1.2.** Contrast/Subgroup estimate summaries across characteristics for logistic regressions with binary adjudication predictor as the input.

Logistic Regressions Summary - Binary Input / Output								
	General 18-25	General 26-30	General 31-50	General 50+	Violent 18-25	Violent 26-30	Violent 31-50	Violent 50+
Estimate	0.75	0.79	0.91	1.2	0.63	0.8	0.99	1.01
Std.Error	0.03	0.05	0.03	0.12	0.05	0.1	0.08	0.3
Exp(b)	2.13	2.21	2.48	3.32	1.89	2.24	2.69	2.74
P-Value	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Upper CI	2.28	2.44	2.67	4.24	2.11	2.75	3.21	5.37
Lower CI	1.98	2	2.3	2.59	1.69	1.83	2.26	1.37

**Table C1.3.** Contrast/Subgroup estimate summaries across characteristics for logistic regressions with frequency adjudication predictor as the input.

Logistic Regressions Summary - Frequency Input / Output						
	General Overall	Violent Overall	General LDC	General non-LDC	General Males	General Females
Estimate	0.25	0.56	0.18	0.26	0.26	0.14
Exp(b)	1.29	1.76	1.2	1.3	1.3	1.15
Std. Error	0.007	0.03	0.01	0.008	0.008	0.02
P-Value	0.001	0.001	0.001	0.001	0.001	0.001
Upper CI	1.31	1.87	1.24	1.33	1.32	1.23

Lower CI	1.27	1.65	1.16	1.28	1.28	1.09
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**Table C1.4.** Contrast/Subgroup estimate summaries across characteristics for logistic regressions with frequency adjudication predictor as the input.

Logistic Regressions Summary - Frequency Input / Output							
	General Age 18-25	General Age 26-30	General Age 31-50	General Age 50+	General OGRS 25-50	General OGRS 50-75	General OGRS 75+
Estimate	0.18	0.24	0.29	0.36	0.18	0.13	0.1
Exp(b)	1.2	1.27	1.34	1.44	1.2	1.14	1.1
Std. Error	0.01	0.01	0.01	0.05	0.02	0.01	0.01
P-Value	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Upper CI	1.23	1.32	1.39	1.63	1.25	1.17	1.12
Lower CI	1.18	1.23	1.3	1.29	1.15	1.12	1.08

**Table C1.5.** Contrast/Subgroup estimate summaries across characteristics for negative binomial regressions with binary adjudication predictor as the input.

Negative Binomial Regressions Summary - Binary Input					
	Overall General	Overall Violent	General Non-LDC	Violent Non-LDC	General LDC
Estimate	0.62	0.48	0.63	0.51	0.48
Exp(b)	1.86	1.62	1.89	1.67	1.62
Std. Error	0.02	0.03	0.02	0.04	0.04
P-Value	0.001	0.001	0.001	0.001	0.001
Upper CI	1.94	1.75	1.98	1.82	1.77
Lower CI	1.79	1.5	1.8	1.53	1.48

**Table C1.6.** Contrast/Subgroup estimate summaries across characteristics for negative binomial regressions with binary adjudication predictor as the input.

Negative Binomial Regressions Summary - Binary Input / Output									
	Violent LDC	General 18-25	General 26-30	General 31-50	General 50+	Violent 18-25	Violent 26-30	Violent 31-50	Violent 50+
Estimate	0.28	0.54	0.65	0.59	1.05	0.32	0.57	0.62	0.7
Exp(b)	1.32	1.71	1.92	1.81	2.86	1.38	1.77	1.86	2
Std. Error	0.07	0.02	0.04	0.03	0.17	0.04	0.09	0.08	0.5
P-Value	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
Upper CI	1.55	1.82	2.1	1.95	4.12	1.51	2.13	2.19	6.62
Lower CI	1.14	1.61	1.76	1.69	2.04	1.26	1.48	1.58	0.82

**Table C1.7.** Contrast/Subgroup estimate summaries across characteristics for negative binomial regressions with binary adjudication predictor as the input.

Negative Binomial Regressions Summary - Binary Input / Output			
	OGRS 25-50	OGRS 50-75	OGRS 75+
Estimate	0.52	0.34	0.16
Exp(b)	1.69	1.41	1.17
Std. Error	0.06	0.03	0.02
P-Value	0.001	0.001	0.001
Upper CI	1.92	1.49	1.12
Lower CI	1.48	1.32	1.23

**Table C1.8.** Contrast/Subgroup estimate summaries across characteristics for negative binomial regressions with frequency adjudication predictor as the input.

Negative Binomial Regressions Summary - Frequency Input / Output				
	Overall	LDC	Non-LDC	Age 18-25
Estimate	0.15	0.09	0.16	0.11
Exp(b)	1.16	1.1	1.18	1.12
Std. Error	0.005	0.009	0.006	0.006
P-Value	0.001	0.001	0.001	0.001
Upper CI	1.18	1.12	1.62	1.14
Lower CI	1.15	1.08	1.98	1.1

**Table C1.9.** Contrast/Subgroup estimate summaries across characteristics for negative binomial regressions with frequency adjudication predictor as the input.

Negative Binomial Regressions Summary - Frequency Input / Output						
	Age 26-30	Age 31-50	Age 50+	OGRS 25-50	OGRS 50-75	OGRS 75+
Estimate	0.16	0.17	0.4	0.18	0.13	0.1
Exp(b)	1.18	1.19	1.5	1.2	1.14	1.1
Std. Error	0.01	0.01	0.05	0.02	0.01	0.01
P-Value	0.001	0.001	0.001	0.001	0.001	0.001
Upper CI	1.21	1.22	1.83	1.25	1.17	1.12
Lower CI	1.14	1.16	1.26	1.15	1.12	1.08

## 2. Main and Interaction Effects

As discussed in Section 3.2, further models with interaction effects were fitted. Contrary to the sub-group analyses presented in Sections 3.1-3.4, interaction effects focus on the comparison of differences of certain characteristics against a 'reference' characteristic. In this occasion, the characteristics chosen were based on the sub-groups of interest, specifically:

- For OGRS, the reference category was Low Risk (25-50),

- For Age Bands, the reference category was 18-25,
- For Gender the reference category was Female,
- For LDC the reference was individuals with LDC
- For the Binary Misconduct outcomes the reference category was no misconduct.

The interaction terms were computed to explore the association of adjudications (both frequency, and binary) and each characteristic of interest more holistically to compliment the contrasts in Section 3. The summary tables below outline the interaction results.

An interaction term can be calculated using the three principal components provided below, it requires (i) the intercept, (ii) the main effect(s), and (iii) the interaction(s) estimates.

For example, the equation to calculate a two-way interaction term for males with adjudications is this:

$\text{Intercept}(b) + \text{Gender}::\text{Male}(b) + \text{Adjudications}::\text{yes}(b) + \text{Adj} \times \text{Male} (b) = -0.4 + 0.53 + 0.91 + (-0.13) = 0.91$ , then the result (0.91) is exponentiated to 2.48 in line with standard practice; therefore males with an adjudication are 2.48 times higher odds to reoffend.

Alternatively, if we wanted to calculate the female estimates for those with adjudications, we would change the signs of certain values and remove previously needed components to accommodate for this change. The Intercept denotes the likelihood of reoffending when the participant is female with no adjudications, therefore we would omit it from this calculation. We would calculate the effect of females with adjudications as:  $\text{Gender}::\text{Female}(b) + \text{Adjudications}::\text{yes}(b) + \text{Adj} \times \text{Female}(b) = -0.53 + 0.91 + 0.13 = 0.25$ , then the result (0.51) is exponentiated to 1.66, meaning that females with adjudications are 1.66 times higher odds to reoffend. While this is lower than males, an interaction term tests for the rate of increase between variables. In this case then, the increase between males and females is not statistically significant as both genders increase their likelihood to reoffend proportionately.

The rules above can be followed to calculate estimates for every interaction and respective category from the tables below.

**Table C2.1.** Interaction terms for Logistic Regressions for the binary general adjudications predictor and reoffending outcome.

Logistic Regressions Summary – Binary Input / Output – Intercept(b) = -0.4			
General Adjudications (b) = 0.91			
Interactions	Estimate	Std.Error	P-Value
Adjudications (Ref: No)			
Age Band (Ref: 18-25)			
Adj x Age 26-31	-0.11	0.03	0.003

Adj x Age 31-50	0.15	0.05	<.0001
Adj x 50+	0.44	0.13	0.0006
LDC (Ref: No)			
Adj x LDC Yes	-0.18	0.06	0.004
Gender (Ref: Female)			
Adj x Male	-0.13	0.13	>.1
OGRS (Ref: Low 25-50)			
OGRS 50-75	-0.33	0.12	0.005
OGRS 75+	-0.37	0.12	0.002

**Table C2.2.** Main effects complementing information from Table C1 for further calculations outlining main effects estimates.

Logistic Regressions Summary - Binary Input / Output		
General Adjudications		
Main Effects	Estimate	Std. Error
Age Band (Ref:18-25)		
26-31	-0.09	0.03
32-50	0.04	0.02
50+	0.03	0.05
LDC(Ref: No)	0.2	0.03
Gender (Ref: Female)	0.53	0.07
OGRS (Ref: Low)		
OGRS 50-75	1.69	0.04
OGRS 75+	2.63	0.04

**Table C2.3.** Interaction terms for Logistic Regressions for the binary violent adjudications predictor and reoffending outcome.

Logistic Regressions Summary – Binary Input / Output – Intercept(b) = -0.24			
Violent Adjudications (b) = 0.87			
Interactions	Estimate	Std.Error	P-Value
Adjudications (Ref: No)			
Age Band (Ref: 18-25)			
Adj x Age 26-31	0.16	0.11	>.1

Adj x Age 31-50	0.35	0.1	0.0001
Adj x 50+	0.37	0.34	>.1
LDC (Ref: No)			
Adj x LDC Yes	-0.32	0.1	0.003
Gender (Ref: Female)			
Adj x Male	-0.34	0.22	>.1
OGRS (Ref: 25-50)			
OGRS 50-75	-0.41	0.26	>.1
OGRS 75+	-0.64	0.26	0.01

**Table C2.4.** Complementary information to Table C3 for further calculations outlining main effects estimates.

Logistic Regressions Summary - Binary Input / Output		
Violent Adjudications		
Main Effects	Estimate	Std. Error
Age Band (Ref:18-25)		
26-31	-0.1	0.03
32-50	0.01	0.02
50+	-0.01	0.05
LDC(Ref: No)	0.2	0.03
Gender (Ref: Female)	0.5	0.07
OGRS (Ref: Low)		
OGRS 50-75	1.7	0.04
OGRS 75+	2.7	0.04

**Table C2.5.** Interaction terms for Logistic Regressions for the frequency general adjudications predictor and reoffending outcome.

Logistic Regressions Summary - Frequency Input / Output – Intercept (b) = -0.37			
General Adjudications (b) = 0.25			
Interactions	Estimate	Std.Error	P-Value
Adjudications (Ref: No)			
Age Band (Ref: 18-25)			
Adj x Age 26-31	0.05	0.02	0.008

Adj x Age 31-50	0.11	0.01	0.001
Adj x 50+	0.17	0.06	0.003
LDC (Ref: No)			
Adj x LDC Yes	-0.21	0.01	0.001
Gender (Ref: Female)			
Adj x Male	0.11	0.03	0.0001
OGRS (Ref: Low)			
OGRS 50-75	-0.16	0.04	0.001
OGRS 75+	-0.2	0.04	0.001

**Table C2.6.** Complementary information to Table C5 for further calculations outlining main effect estimates.

Logistic Regressions Summary – Frequency Input / Output		
General Adjudications		
Main Effects	Estimate	Std. Error
Age Band (Ref:18-25)		
26-31	-0.09	0.03
32-50	0.03	0.02
50+	0.01	0.05
LDC(Ref: No)	0.19	0.03
Gender (Ref: Female)	0.55	0.07
OGRS (Ref: Low)		
OGRS 50-75	1.72	0.04
OGRS 75+	2.66	0.04

**Table C2.7.** Interaction terms for Logistic Regressions for the binary general adjudications predictor and frequency reoffending outcome.

Negative Binomial Regressions Summary - Binary Input / Output – Intercept(b) = 0.43
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General Adjudications (b) = 0.62			
Interactions	Estimate	Std.Error	P-Value
Adjudications (Ref: No)			
Age Band (Ref: 18-25)			
Adj x Age 26-31	0.11	0.05	0.04
Adj x Age 31-50	0.05	0.04	>.1
Adj x 50+	0.51	0.12	0.001
LDC (Ref: No)			
Adj x LDC Yes	-0.15	0.05	0.007
Gender (Ref: Female)			
Adj x Male	-0.37	0.12	0.002
OGRS (Ref: 25-50)			
OGRS 50-75	-0.57	0.09	0.001
OGRS 75+	-0.75	0.09	0.001

**Table C2.8.** Complementary information to Table C7 for additional calculations outlining main effects estimates.

Negative Binomial Regressions Summary - Binary Input / Output		
General Adjudications		
Main Effects	Estimate	Std. Error
Age Band (Ref:18-25)		
26-31	0.07	0.02
32-50	0.16	0.02
50+	0.16	0.04
LDC(Ref: No)	0.14	0.02
Gender (Ref: Female)	0.25	0.05
OGRS (Ref: Low)		
OGRS 50-75	1.6	0.03
OGRS 75+	2.4	0.03

**Table C2.9.** Interaction terms for Logistic Regressions for the binary violent adjudications predictor and frequency reoffending outcome.

Negative Binomial Regressions Summary – Binary Input / Output – Intercept(b) = 0.64
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Violent Adjudications (b) = 0.48			
Interactions	Estimate	Std.Error	P-Value
Adjudications (Ref: No)			
Age Band (Ref: 18-25)			
Adj x Age 26-31	0.24	0.1	0.01
Adj x Age 31-50	0.29	0.09	0.001
Adj x 50+	0.37	0.3	>.1
LDC (Ref: No)			
Adj x LDC Yes	-0.23	0.1	0.02
Gender (Ref: Female)			
Adj x Male	-0.53	0.2	0.009
OGRS (Ref: 25-50)			
OGRS 50-75	-0.47	0.2	0.03
OGRS 75+	-0.77	0.2	0.001

**Table C2.10.** Complementary information to Table C9 for further calculations outlining main effects estimates.

Negative Binomial Regressions Summary - Binary Input / Output		
Violent Adjudications		
Main Effects	Estimate	Std. Error
Age Band (Ref:18-25)		
26-31	0.06	0.02
32-50	0.1	0.02
50+	0.1	0.04
LDC(Ref: No)	0.15	0.02
Gender (Ref: Female)	0.23	
OGRS (Ref: Low)		
OGRS 50-75	1.65	0.03
OGRS 75+	2.47	0.03

**Table C2.11.** Interaction terms for Logistic Regressions for the frequency general adjudications predictor and frequency reoffending outcome.

Negative Binomial Regressions Summary – Frequency Input / Output – Intercept(b) = 0.52
General Adjudications (b) = 0.15

Interactions	Estimate	Std.Error	P-Value
Adjudications (Ref: No)			
Age Band (Ref: 18-25)			
Adj x Age 26-31	0.04	0.01	0.001
Adj x Age 31-50	0.05	0.01	0.001
Adj x 50+	0.26	0.03	0.001
LDC (Ref: No)			
Adj x LDC Yes	-0.06	0.12	0.001
Gender (Ref: Female)			
Adj x Male	0	0.02	>.1
OGRS (Ref: Low)			
OGRS 50-75	-0.27	0.03	0.001
OGRS 75+	-0.33	0.03	0.001

**Table C2.12.** Complimentary information to Table C11 for further calculations outlining main effects estimates.

Negative Binomial Regressions Summary -Frequency Input / Output		
General Adjudications		
Main Effects	Estimate	Std. Error
Age Band (Ref:18-25)		
26-31	0.07	0.02
32-50	0.15	0.02
50+	0.15	0.04
LDC(Ref: No)	0.13	0.02
Gender (Ref: Female)	0.26	0.05
OGRS (Ref: Low)		
OGRS 50-75	1.6	0.03
OGRS 75+	2.4	0.03