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Report 2

The individual and operational (system level) factors associated with program participation and program completion among referred offenders to the EQUIPS programs in custody and in the community (Report 2)

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Acknowledgements

We would like to thank the members of our Aboriginal Reference Group for this project, Dr Michael Doyle, Ms Louise Lynch and A/Prof Peter Malouf for their valuable conversations and advice prior to starting this project which influenced the thinking behind this first report. Thanks also to Corrective Services NSW for commissioning this research and Dr Mark Howard for his invaluable feedback, edits and input.

Cite as: Bower, M., Stapinski, L, Newton, N. & Barrett, E. (2020) The individual and operational (system level) factors associated with program participation and program completion among referred offenders to the EQUIPS programs in custody and in the community. The Matilda Centre for Research in Mental Health and Substance Use.

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Scope and Summary

This report is the second in a series of reports produced by the Matilda Centre for Research in Mental Health and Substance Use (University of Sydney) to examine implementation processes associated with the Explore, Question, Understand, Investigate, Practice, Succeed (EQUIPS) programs run by Corrective Services NSW (CSNSW). This report specifically examines the individual and operational factors that are associated with participation in and completion of the EQUIPS programs among referred offenders in custody and the community between 2015-2018 (inclusive). The findings of this report are subject to finalisation and remain unpublished to date. The report is intended for internal review at this stage.

Overall, just over one-third (39.2%) of those referred to EQUIPS programs went on to participate and one quarter (or 25.0%) of offenders referred to EQUIPS programs completed these programs. The implications and relevance of these findings are discussed in this report.

Background

Since 2015, the EQUIPS suite of programs, described in detail in Report One, has been one of the main Corrective Services NSW (CSNSW) strategies to reduce reoffending amongst offenders who receive custodial or community sentences. The EQUIPS suite of programs was developed by CSNSW as a form of correctional intervention for offender rehabilitation in both custodial and community settings (Juarez & Howard, 2018). These programs were developed in reference to the Risk-Needs-Responsivity (RNR) model, primarily to aid offenders in practicing strategies for reducing antisocial behaviour and promote prosocial behaviour.[1] Within the RNR model, offender treatment programs try to address offenders' criminogenic 'needs' which are aspects of risk factors which are amenable to change and are identified as having contributed to an offender offending in the first place (Mann, Hanson, & Thornton, 2010). According to this model, offending behaviour will likely continue to occur if criminogenic risks/needs are not addressed and changed. Following this RNR framework, CSNSW determines which offenders require treatment and the type of treatment they require according to a needs assessment based on each offender's:

- current and future risk of reoffending (risk principle), where higher risk offenders are prioritised for interventions
- criminal and antisocial behavioural needs (needs principle), and
- responsiveness and capacity to engage in treatment (responsivity principle) (Andrews et al., 2011)

The EQUIPS suite is grounded in a CBT framework and is comprised of four programs:

- ***EQUIPS Foundation:*** This program is not offence-specific and it can be presented as a standalone intervention for general offending behaviour, or as a precursor for participation in other programs. It aims to introduce the offender to rehabilitative interventions, reduce generalised risk of reoffending and increase participation in prosocial opportunities.[2]

[1] See New South Wales Corrective Services Compendium pp. 16.
[2] Ibid.

- ***EQUIPS Addiction:*** This program offers support for participants to minimise addictive behaviours. This program is split between group processes and self-management tasks with a focus on aligning skill development to their personal experiences.[3]
- ***EQUIPS Domestic Abuse:*** This program encourages offenders to accept responsibility for their intimate partner violence and abuse offence-related behaviours. There is a focus on increasing their level of accountability to minimise future behaviours. This program is based on a psycho-behavioural framework with a strong therapy-based delivery.[4]
- ***EQUIPS Aggression:*** This program is focused on increasing participants' behavioural control and their ability to manage negative life experiences. This approach focuses on the direct and peripheral causes of aggressive behaviour in an attempt to minimise future aggression.

Each program has five modules with four sessions of two hours each (or 40 hours combined).[5] While each program can be delivered as a standalone intervention, offenders can be referred to multiple EQUIPS programs if they are deemed to have different needs to be addressed, and even repetitions of the same program, if it is determined that they require extended treatment dosage or maintenance of therapeutic benefit, in accordance with their identified criminogenic needs and case management pathway.

Between January 2015 and December 2018, there were 61,459 unique referrals to EQUIPS programs.

Between January 2015 and December 2018, there were 61,459 unique referrals to EQUIPS programs. Approximately half (52.8%; n=32,464) of these referrals occurred through the custodial staff members (the 'custodial referral pathway'), and the remaining were referred through Community Corrections staff (the 'community referral pathway'). Since this time, the EQUIPS programs have also been central to many CSNSW initiatives, including a range of recent initiatives implemented under the NSW Government Strategies to Reduce Reoffending (Department of Justice NSW, 2018). For example, delivery of EQUIPS programs is a significant part of the Expanded Programs and Improved Custodial Case Management reforms and the development of multiple High Intensity Program Units (HIPUs) at correctional centres across NSW. This report will contribute to informing best practice in the identification and throughput of target offenders for the EQUIPS programs in custody and the community. Despite the centrality of EQUIPS to CSNSW's offender treatment strategy, little research has gone into understanding what factors are associated with successful offender throughput, including program participation and completion.

There are other reasons why it is important to study factors associated with the likelihood of program participation and completion. On the one hand, program participation and completion are important indicators of whether a program meets RNR principles, particularly as to whether aspects of the program referral or delivery are responsive to an offender's needs (Wormith & Olver, 2002). Additionally, there is evidence that completion rates of offender programs are a particularly important marker of program throughput. Research has shown that not completing programs may have more severe negative outcomes than not commencing any treatment at all. For example, McMurran and Theodosi (2007) and McMurran and McCulloch (2007) found that failing to complete a therapeutic program is associated with an increased risk of recidivism when compared to those who have completed programs and when compared with offenders who have not received treatment. Unfortunately, research has found that failing to complete programs is associated with having higher criminogenic risk scores pre-treatment, compared to those that who complete, suggesting that some programs may be failing to retain those who are most in

[3] Ibid.
[4] Ibid.
[5] See CSNSW policy for EQUIPS delivery (for internal use only).

need of intervention (Olver, Stockdale, & Wormith, 2011; Olver & Wong, 2011). Therefore, as well as understanding what makes an offender more or less likely to participate in a program they are referred to, it is also critical that CSNSW understand what makes an offender more or less likely to complete programs.

There are a number of factors that may impact the likelihood that an offender will participate in or complete an EQUIPS program that they are referred to. These consist of both individual and operational (system-level) factors and include, but are not limited to:

- Identification and referral of appropriate target samples of offenders;
- Retention of offenders throughout the referral and participation pathway; and
- Adaptability to facilitate engagement and retention of priority populations such as Aboriginal and/or Torres Strait Islander offenders.[6]

A preliminary review of operational data suggested that processes surrounding retention of target offenders is a significant challenge and additional study is required to inform best practice (CSNSW, 2017). Wormith and Olver (2002) identified several scenarios through which an offender program noncompletion can occur, including:

- Being expelled from the group as the result of poor behaviour;
- Being discontinued from a group as a result of being moved from their current location due to administrative issues (for a reason other than participation in the current program); and
- When an offender chooses to exit a program of their own volition.

Factors that may influence EQUIPS program participation and completion

Previous research has identified characteristics and factors which may impact whether a person chooses to engage in and complete an offender therapeutic treatment program. Some of these factors are internal motivators to a person, whereas others are external to the person. Researchers in Australian and New Zealand have developed the theoretical 'Multifactor Offender Readiness Model' (MORM; Ward, Day, Howells, & Birgden, 2004), which attributes an offender's 'treatment readiness' to the presence of internal and external factors within their life and environment, which interact to influence level of engagement in programs. ***Individual or internal determinants*** include cognitive, emotional, goals, behavioural and identity-based aspects. Other research has confirmed the role of internal factors in program completion. For example, offenders in Canada who did not complete prison-based group programs tended to have lower educational attainment, less employment history, history of Aboriginal ancestry and a higher risk of re-offending than those who completed (Wormith & Olver, 2002).

*Both **individual factors** (including cognitive, emotional, goals, behavioural or identity-based aspects) and **external or non-individual factors** (including broader operational or 'system-level' factors) can contribute to program participation and completion*

[6] In recognition of the overrepresentation of Aboriginal and/or Torres Strait Islander peoples under CSNSW supervision and the unique needs of this group, the demographic and operational characteristics associated with program participation and completion will be covered in its own, upcoming report.

Research has also explored whether ***external (or non-individual) factors*** impact the capacity of an offender to participate in or complete a program, above and beyond an offender's personal responsivity to treatment. While an offender may be deemed 'treatment ready' at the start of the program, broader operational (system-level) factors, such as facilitator or fellow group member characteristics, the referral process and/or the way a program is delivered can negatively impact an offender's capacity to engage well in treatment (Holdsworth, Bowen, Brown, & Howat, 2019). By applying the MORM framework, it is possible to identify environmental and contextual factors that may impact program engagement such as sentencing status, location (either in the community or in prison), opportunity to access programs, availability of resources (quality staff, culture), associated interpersonal support (in prison or community) and the program characteristics (Ward et al., 2004).

There are two types of responsivity:

General responsivity *refers to aspects of context, programs and treatment methodology that facilitate the best possible treatment engagement and outcomes for all offenders.*

Specific responsivity *relates to aspects of treatment programs that make a program appropriate and successful for some types of offenders, but not for others.*

These individual and external/operational factors can also be understood through the RNR concept of 'responsivity', including general responsivity and specific responsivity. General responsivity refers to aspects of context, programs and treatment methodology that facilitate the best possible treatment engagement and outcomes for all offenders. For example, research has found that programs using structured programs and/or focused on cognitive change were more likely to lead to benefits in terms of recidivism than programs that were unstructured or not focused on cognitive change (Ross & Fabiano, 1985). The general responsivity factor therefore suggests that programs should be based on cognitive-behavioural treatment paradigms (Wormith & Zidenberg, 2018). Specific responsivity relates to aspects of treatment programs that make a program appropriate and successful for some types of offenders, but not for others. An example of improving the specific responsivity of programs can be found in culturally responsive treatment programs, which tend to be more successful than generic programs for Indigenous offenders internationally (Gutierrez, Chadwick, & Wanamaker, 2018).[7] As such, program facilitators will benefit from understanding the personal characteristics of each individual within a treatment program that may inhibit their capacity to engage with the program.

Development of effective treatment strategies has been hindered by a focus on exploring and identifying factors related to general responsivity, with limited focus on factors related to specific responsivity (Wormith & Zidenberg, 2018). For example, the influence of individual characteristics, such as a person's ethnicity, race, gender identity, faith and sexual orientation, have not been explored in correctional treatment settings, despite robust evidence from the general therapeutic literature that these individual factors affect treatment engagement, completion and outcomes (Leguizamo et al., 2018). In order to meet best practice standards, it is argued that offender treatment programs should foster an intersectional understanding of treatment delivery and each offender's responsivity to treatment. However, there has also been some concern that looking at the characteristics of those who do not complete programs may predispose institutions towards a deficit-based understanding of noncompletion, highlight the

[7] As Aboriginal and/or Torres Strait Islander individuals are overrepresented within offender populations, factors associated with program participation and completion among this group will be explored in a subsequent report. For this reason Aboriginal and/or Torres Strait Islander identity will not be explored within this report.

importance of adopting a 'strengths-based' lens that explores how programs can be adapted to improve responsivity and strengthen chances of engagement (McMurran & Ward, 2010).

An improved understanding of the factors associated with participation and completion will provide CSNSW with critical knowledge about how to maximise appropriate offender program throughput into the future. In line with the MORM and RNR concept of specific responsivity, a comprehensive understanding of determinants of EQUIPS program participation and completion encompasses both individual-level and operational/systems-level factors.

Aim

The current study examines the individual and operational (system level) factors associated with program participation and program completion among referred offenders to the EQUIPS programs in custody and the community.

Method

Participants

A cross-sectional study of administrative data obtained from the Offenders Integrated Management System (OIMS), collected routinely by CSNSW, was conducted to determine the individual and operational factors associated with participation in and completion of EQUIPS programs in custody and in the community. Data was obtained for all adult offenders managed by CSNSW who had been referred to an EQUIPS program in custody or in the community between 2 January 2015 (the implementation of EQUIPS) and 31 December 2018. This resulted in a total of 61,459 referrals to EQUIPS programs attributed to 18,963 unique offenders. The target sample was defined by their referral to any of the EQUIPS programs in custody or in the community. Relevant search functions applied to the CSNSW Offender Information Management System (OIMS) were used to identify the sample of offenders. In order to ensure that all included participants had adequate time to move through process of program referral, participation and completion, offender entries were removed from the dataset if the index CSNSW episode associated with a program referral had not been marked as complete as of the 31st December 2018 (the end of the study period). [8] This meant avoiding incorrectly coding individuals as not participating or not completing programs in an index CSNSW episode that they may have later gone on to achieve. Ethical approval to conduct this research was obtained from CSNSW, The University of Sydney HREC (2019/730) and the Aboriginal Health and Medical Research Council (AH&MRC) HREC (1560/19).

[8] A 'CSNSW Episode' refers to the full timeframe in which an offender is under continuous supervision of Corrective Services NSW. This includes time spent in custody and also in the community.

The cohort of offenders included within each analysis model depended on the question the model was designed to answer. In models with program participation as an outcome variable, the offender sample included those who had been referred to an EQUIPS program between 2015-2018 and had completed their index 'CSNSW episode', meaning the period in which they were under continuous supervision by CSNSW associated with a particular offence and EQUIPS referral. In models with program completion as an outcome variable, the offender sample included those who had actually attended at least one session of a program that they had been referred to between 2015-2018.

Measures

The administrative data were obtained from the CSNSW Offenders Integrated Management System (OIMS). This includes the Level of Service Inventory – Revised (LSI-R; Andrews & Bonta, 2001), an actuarial risk assessment tool designed to classify an offender's risk of re-offending and identify criminogenic needs. The LSI-R has 54 items grouped into 10 subscales: Criminal History, Education/Employment, Finances, Family/Marital, Accommodations, Leisure/Recreation, Companions, Alcohol/Drug, Emotional/Personal, and Attitude/Orientation. LSI-R total scores are generally used to predict recidivism (risk) whereas subscale scores are used to identify criminogenic needs. It should be kept in mind that those who have LSI-R assessment data available may not be representative of the broader offender population. There could be a bias towards those who have more extensive histories and/or those who have re-offended. The outcome variables and the individual and systems-level predictor variables included in the models are listed in Table 1.

To examine program participation, only those offenders who had been referred to an EQUIPS program within the 2015-2018 timeframe and had completed their index CSNSW episode were included. For program completion, only those participants who had actually attended a program that they had been referred to at least once, were included. Referrals were excluded when they are missing variables particular to that analyses. Total number of referrals were 16,308 in the custody program participation dataset, 6,085 for custody program completion dataset, 8,612 community program completion; and 16,266 for the community program participation dataset.

Table 1 Outcome variables and individual- and systems-level (operational) predictor variables in the current report.

Variable	Meaning
Outcome variables	
Program participation	Offenders who were recorded by CSNSW programs staff as having attended at least one session of an EQUIPS program that they had been referred to [source: OIMS].
Program completion	Program completion was rated by CSNSW program staff within the OIMS system. Generally, offenders were considered to have 'completed' an EQUIPS programs after attending 40 hours of sessions (or 20 sessions of 2 hours each). In EQUIPS policy, completing a program is defined as completing at least 17 of the 20 program sessions, provided that any missed sessions (maximum of 3) are not consecutive or part of the same module. Irrespective of attendance, offenders may also be withdrawn from EQUIPS programs based on therapeutic reasons; for example, in cases when their engagement or

	behaviour in the program indicates an absence of new learning or application of skills with specific conditions around this. In these cases of obligatory withdrawal, the participant was still considered to have "completed" the program. As such, the number of EQUIPS sessions that were associated with 'completion' ranged from 1 session to 48 sessions over the study period. [source: OIMS]
Predictor Variables	
1. Individual Factors	
Demographics	
Age at referral	Offender's age at the time that they were referred to a particular EQUIPS program [source: OIMS]
Gender	Gender of participant at time of referral, either male, female or unknown/undetermined. [Source: OIMS]
Culturally And Linguistically Diverse (CALD)	Corrective Services collects data around Cultural diversity (Country of birth) and Linguistic Diversity (English as a second language). In the dataset CALD variable, there were four categories YY, YN, NY, NN. Y's were interpreted as 'yes' and N as 'no' to either Culturally Diverse or Linguistically Diverse. In the current study CALD status is defined as those who are *both* Culturally and Linguistically Diverse, or those identified in the dataset as 'YY'. [Source: OIMS]
In a relationship	Relationship status is conceptualised as those who reported being in a married or de facto relationship on entry to custody. Those who were in the following categories were understood as not being in married or in a de facto relationship: never married, divorced, widowed or separated. [Source: OIMS]
Socioeconomic status – geographic location of origin	
SEIFA Relative Advantage and Disadvantage score	*Relative socio-economic advantage and disadvantage (IRSAD)* - A low IRSAD score indicates an area that has relatively greater disadvantage in terms of income, occupation, education and even internet connection.
ABS Remoteness Index	Australian Statistical Geography Standard-Remoteness Area is a geographical classification which defines locations in terms of remoteness, i.e., the physical distance of a location from the nearest urban centre and therefore, relative access to major services. Remoteness is categorised in terms of: Major cities of Australia, Inner regional Australia, Outer regional Australia, Remote Australia and Very remote Australia. [Source: OIMS]
Criminogenic Risk-Needs (LSI-R Risk category and subcategories)	
LSI-R Risk Category[1]	CSNSW uses the Level of Service Inventory-Revised (LSI-R) actuarial risk assessment tool to measure offender's criminogenic risk/needs. Total risk scores are calculated by adding risk factor scores. Offenders who score from 0-13 on the LSI-R are considered low risk offenders, 14-23 low-medium risk offenders, 24-33 medium risk offenders, 34-40 recognized as medium-high risk, and 41-54 are considered high risk offenders. Referrals to EQUIPS are recommended amongst those who are deemed to be of medium-high to high risk of re-offending using the LSI-R.

	This variable includes an offender's recent risk category recorded against their most recent LSI-R assessment. [Source: OIMS]
Criminogenic needs (domains)	The LSI-R also charts an offenders' profile of criminogenic needs. This involves aggregating the scores from each of the following domain types in a continuous scores (D.A. Andrews & Bonta, 2001). Higher scores on each of these subdomains indicate higher criminogenic needs. [Source: OIMS]
1. Criminal History domain	This domain reflects an offender's history of criminal experiences and antisocial behaviour – a measure of the magnitude of a person's 'criminal lifestyle'.
2. Education/ Employment domain	This domain reflects livelihood satisfaction, including rewards, commitment and skill development and livelihood stability and structure (either stable/sporadic, full time/part time/not at all and future plan).
3. Financial domain	This domain focuses on offender's ability to manage their finances and the link between financial stressors and criminal patterns and behaviours.
4. Family/ Marital domain	This domain relates to current family/marital interactions and their influence on an offender (both positive and negative).
5. Accommodation domain	This domain reflects on the stability and comfort of current accommodation. Higher needs ratings in this domain may indicate homelessness, transitions between accommodation sites and/or poor community ties that increase risk for pro-criminal attitudes.
6. Leisure/ Recreation domain	This domain looks at patterns of involvement or lack of involvement in pro-social leisure and recreational activities and measures of who a person spends their spare time with. Higher needs ratings in this domain indicate pro-social activities are important to reduce the person's risk of reoffending.
7. Companions domain	This domain assesses social networks and peer influence with a particular focus on the extent of social isolation and a lack of pro-social companions.
8. Alcohol and Drug domain	This domain explores offender's past and current Alcohol and Drug use and whether it has contributed to offending and recidivism.
9. Emotional/ Personal domain	This domain assesses the role of mental health over a person's history and its relationship to offending behaviour.
10. Attitude/ Orientation domain	This domain reflects how a person thinks about him or herself and others in society. Their attitudes, beliefs, values, thinking and activities and whether these are conventional or criminal.
Historical and Current Most Serious Offences needs	
Higher Conviction Count (over lifetime)	Number of convictions over lifetime, both in custody and community-based sentences. [Source: OIMS]
More time in prison over lifetime	Cumulative time that each offender had spent incarcerated over their lifetimes [Source: OIMS]
Most serious offence associated with index sentence (custody and community)	Australian and New Zealand Standard Offence Classification (ANZSOC) Most Serious Offence (MSO) summarised into categories based on those used in Wan, Poynton, van Doorn, and Weatherburn (2014). Categories included serious violent offence, non-serious violent

	offence, property offence, breach of court order and driving offence. The remaining types of offences were aggregated into an 'other' group.
2. Operational (system-level) Factors	
Employed at time of referral	Indicating offenders were employed in their correctional centre at the time of referral to EQUIPS. Binary responses (yes/no). [Source: OIMS]
Receiving education at time of referral	Indicating offenders were undergoing education in their correctional centre at the time of referral to EQUIPS. Binary responses (yes/no). [Source: OIMS]
Parole attached to sentence	Offenders who had a parole component attached to their community or custodial sentence. Binary responses (yes/no). [Source: OIMS]
Not needing to move centres to complete	An indicator that an offender started attending the program at the same correctional centre or community corrections office at which their referral took place. Binary responses (yes/no).
Months between EQUIPS program commencement and index referral	The number of months between the first EQUIPS referral on 2 Jan 2015 and an inmate's EQUIPS referral. An indicator of the amount of time that had elapsed since the EQUIPS suite of programs commenced. This was chosen as a covariate as it was deemed important to control for possible improvements in program referral and delivery, the longer that a program had been running.
Months between sentence start and first program attendance	The number of months between the start of an offender's sentence (either custodial or community, depending on referral pathway) and the first day they attended an EQUIPS program.
Months between sentence end and first program attendance	The number of months between the first day an offender attended an EQUIPS program and the end of their sentence (either custodial or community, depending on referral pathway).
No. times referred/ commenced EQUIPS program through same referral pathway	A count of the number of times that an offender had been referred to an EQUIPS program (in the participation analysis) or commenced an EQUIPS program (in the completion analysis) during the study period within the same referral pathway (either custodial or community).
Program Type	Programs within the EQUIPS suite including EQUIPS Foundation, EQUIPS Domestic Abuse, EQUIPS Addiction and EQUIPS Aggression [Source: OIMS]

Data analysis and model specification

Two level multilevel models were used to account for the several level two random effects that were thought to impact whether a referral to EQUIPS program would confer to program participation and completion. These were:

1. *Offender-level variance:* Many offenders were referred to multiple EQUIPS programs over the study period. Therefore, the clustering of multiple measurements from individual offenders needs to be accounted for in the analysis.
2. *Centre location of program participation:* Offenders participated in EQUIPS programs at a particular centre in custody or community. As such, there was a need to account for the between-centre effects on program completion outcomes.
3. *Program type:* Referrals occurred to four different programs – Foundation, Addiction, Aggression and Domestic Abuse. Between-program effects need to be accounted for in program participation outcomes.

In view of the need to account for these level two effects, a cross-classified multilevel logistic regression model was used to examine the individual and systems-level predictors associated with

two binary outcomes - program participation (vs. non-participation) and program completion (vs. non-completion). Cross-classified modelling was used to account for the non-hierarchical clustering of observations within offenders and within program types or centre locations. Traditional multilevel models assume a hierarchical structure, where observations are hierarchically nested, such that referrals that are given to one offender occur within a single centre or that referrals provided to one offender are for a single EQUIPS program. In reality, offenders are referred to multiple different programs and move between centres, and for this reason cross-classified models were required to account for the non-hierarchical, clustered nature of the data.

Adjusted models were fitted, to separately assess the association between program participation/completion and 1) individual-level covariates, 2) systems-level covariates. Eight separate models were conducted to examine the association between these covariates and the different binary outcomes (program participation vs. program completion) and within each referral context (community referral pathway vs. custodial referral pathway). Table 2 provides a summary of the structure of each of these models.

Table 2 Summary of the models by predictor type (individual- vs. operational), sample (custodial- vs. community-referral pathway) and outcomes (program participation vs. program completion).

	Referral Pathway	Outcome 1: Participation	Outcome 2: Completion
Individual level predictors	Custodial	Analysis 1	Analysis 3
	Community	Analysis 2	Analysis 4
Operational predictors	Custodial	Analysis 5	Analysis 7
	Community	Analysis 6	Analysis 8

The random variance structure differed according to model type. In models predicting program participation, referrals nested within Offender-level variance and program type. In models predicting program completion, referrals were nested in Offender-level variance and centre location of program delivery. This structure can be seen below in Figure 1. Different variables were chosen as random effects in each model type based on theory-driven decisions about what variable was likely to impact on program participation (i.e. program type) compared to program completion (location of program delivery).

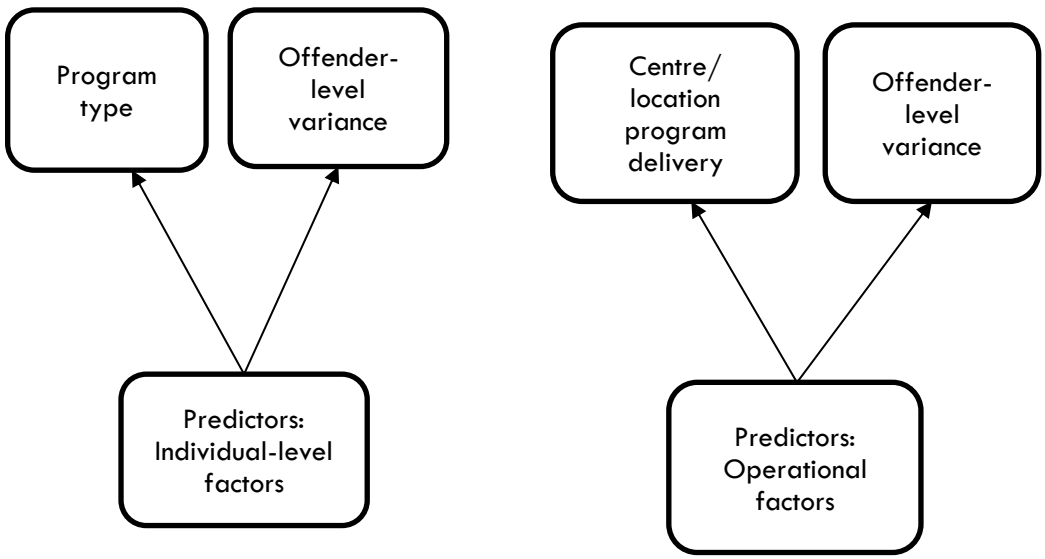

Figure 1 Framework for level two random effects structure in cross-classified models.

All analyses were conducted using the *xtmelogit* command in STATA software package 16 using a maximum likelihood estimation procedure. Odds ratios (ORs) and p-values are presented for fixed effects (level one predictors). Odds ratios and 95%CIs are presented for random effects. Statistical tests were performed with a 2-sided alpha level of .05. Model specification for all models began with estimation of an empty 'unconditional' model, without any predictors and including only crossed random-level predictors (model 0) which was used to assess the variance attributable at an individual-level and at a program or centre level (depending on the model). In the event that this first model suggested no significant variance at the program or centre level, these random effects were removed from subsequent models, and models instead estimated with referrals nested within a single variable, offender-level variance. Next, conditional models were estimated to examine the impact of relevant level one predictors, adjusted for this variance at the individual-level and the centre/program level. Model specification for the individual-level and operational-level models is outlined in the following sections.

Model specification for individual-level predictors

A large number of individual-level level one predictors of EQUIPS participation were hypothesised a priori based on extant research and theory. To avoid overfitting the estimation model, sequential regression models of predictors group in theory-driven categories were conducted for each of the following individual-factor outcomes i) participation through the community pathway, ii) participation through the custodial pathway iii) completion through the community pathway, iv) completion through the custodial pathway. The sequential regression model enters variables in blocks, which facilitates assessment and comparison of the variance that is uniquely explained by each category of variables, after accounting for variance in prior blocks.
In each model, the order of blocks was as follows:

1. A ***null model*** including only random effects and no level one predictors,
2. ***Demographic factors***, including age, gender, CALD status,
3. ***Socioeconomic factors***, including IRSAD score and Relative remoteness
4. ***Criminogenic factors*** including assessed Risk category and domain scores (as defined by the LSI-R),
5. ***History of contact with the criminal justice system,*** including history of incarceration and number of convictions and sentencing characteristics, including Most Serious Offence types.
6. ***Program engagement*** variables (as defined by the number of instances an offender had either been referred to or participated in an EQUIPS program in the custodial or community context over time).

A Likelihood Ratio (LR) test was used to assess the statistical significance of each block of variables, after accounting for variables entered in previous blocks.

Model specification for operational-level predictors

Program type (e.g. EQUIPS Addiction vs. Domestic Abuse) was included as a level one variable within models with operational (system-level) predictors, in order to explore differential participation and completion rates, adjusting for random variation at the individual and centre level. Other level one system level predictors entered in these models were:

- Whether parole was attached to index sentence;
- Needing to move centres to participate in a program;
- Months prior to sentence end when first started attending program; and
- Months since sentence started when first started attending program.

In models addressing custodial pathway models, two additional predictors were included: concurrent employment or education at the time of referral.

Findings

Proportion of offenders who participated in and completed the EQUIPS programs

Overall, the dataset included 61,459 referrals to EQUIPS programs from the inception of the EQUIPS programs in 2 January 2015, until 31 December 2018 (census date). Appendix Table 1 shows the proportion of EQUIPS program referrals that were associated with program participation, and of those who participated, what proportion went on to complete that program.

Participation

Overall, just over one-third (39.2%) of those referred to EQUIPS programs actually went on to participate in these programs. When dividing these into specific referral pathways, the proportions were 38.2% and 40.1% in custody and community pathways, respectively.[9] A chi-square test of independence showed that there was a significant association between referral pathway and program participation [X^2 (3, N=39727) = 1568.655, $p \leq .00001$]. The highest participation rates were found in Domestic Abuse (45.4%) and Foundation (42.9%), followed by Addiction (35.8%) and Aggression (30.9%).

A higher proportion of offenders referred to Foundation and Domestic Abuse through the community referral pathway participated in programs (45.1% and 48.4% respectively) compared to those referred to these programs through a custodial pathway (38.6% and 36.9% respectively). The opposite pattern was observed for the Addiction and Aggression programs, where there was a higher participation rate amongst custody-based referrals (38.9% and 34.6% respectively) than amongst community-based referrals (31.6% and 27.1%).

Just over one-third (39.2%) of those referred to EQUIPS programs went on to participate.

Only one quarter (25.0%) of offenders referred to programs went on to complete.

Completion

[9] These numbers only include offenders who had completed their CSNSW episode (n=39727).

Only one quarter (25.0%) of offenders referred to programs went on to complete these programs. A chi-square test of independence showed that there was a significant association between referral pathway and program completion [X^2 (3, N=39727) = 1327.30, $p \leq .00001$], with somewhat higher completion rates amongst offenders in custody (26.7%) than in the community (23.5%). The largest discrepancies between completion rates occurred for Addiction and Aggression programs, where approximately 28% of offenders went on to complete programs in custody, compared to 17% in the community. Completion rates were similar for Foundation amongst the custody vs. community pathways (26.4% and 25.7%, respectively). The only program in which completion rates were higher in community than in custody was Domestic Abuse, which at 32.1% completion rate was higher than the custodial completion rate (25.0%). Among offenders who participated in EQUIPS programs, 64.8% went on to complete programs. Two pie charts are shown below that present the reasons that program staff provided for offenders who prematurely exited an EQUIPS program that they attended through a custodial referral pathway (Figure 1) and through a community referral pathway (Figure 2). The most common reason for the premature exit for participants within the custodial pathway was 'system ended reason' (40% of instances). Discussion with CSNSW staff suggested that this term was the OIMS code referring to instances where offenders were transferred to another Centre during their participation in a program. This suggests that many program non-completions may be due to CSNSW operational factors (Inmate Transfers and Movements) rather than characteristics of offenders themselves. Premature exit from EQUIPS due to 'system-ended reason' were much less common amongst those on a community referral pathway, where offenders were much more likely to be withdrawn due to their engagement being deemed 'unsatisfactory'.

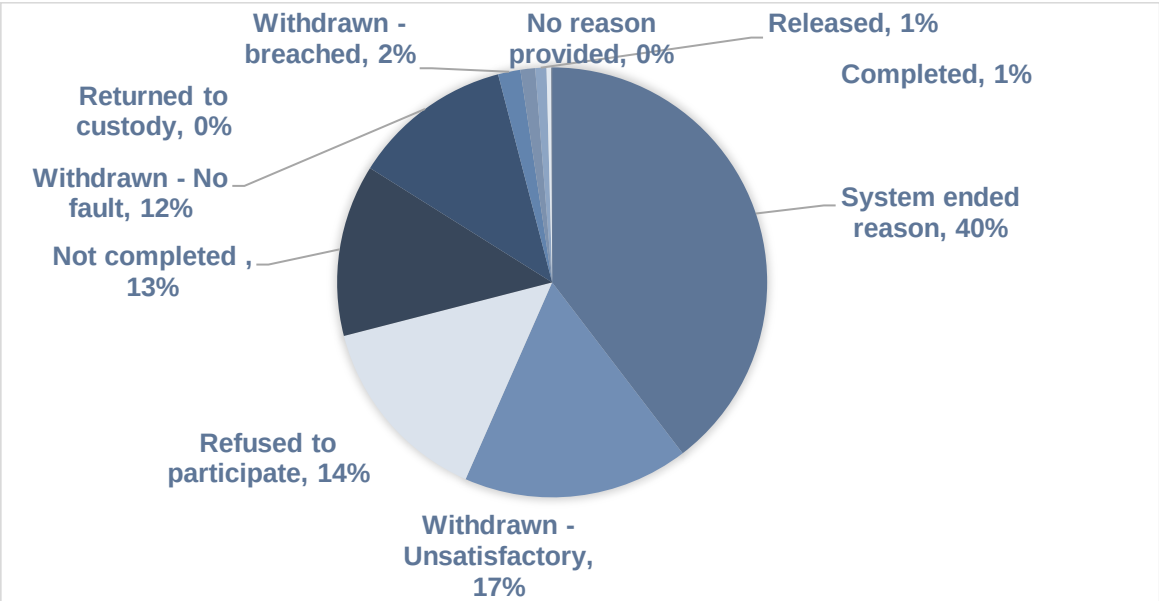

Figure 1 Reasons that program staff provided for offenders prematurely exiting an EQUIPS program that they had been referred through the custodial pathway (source: OIMS)

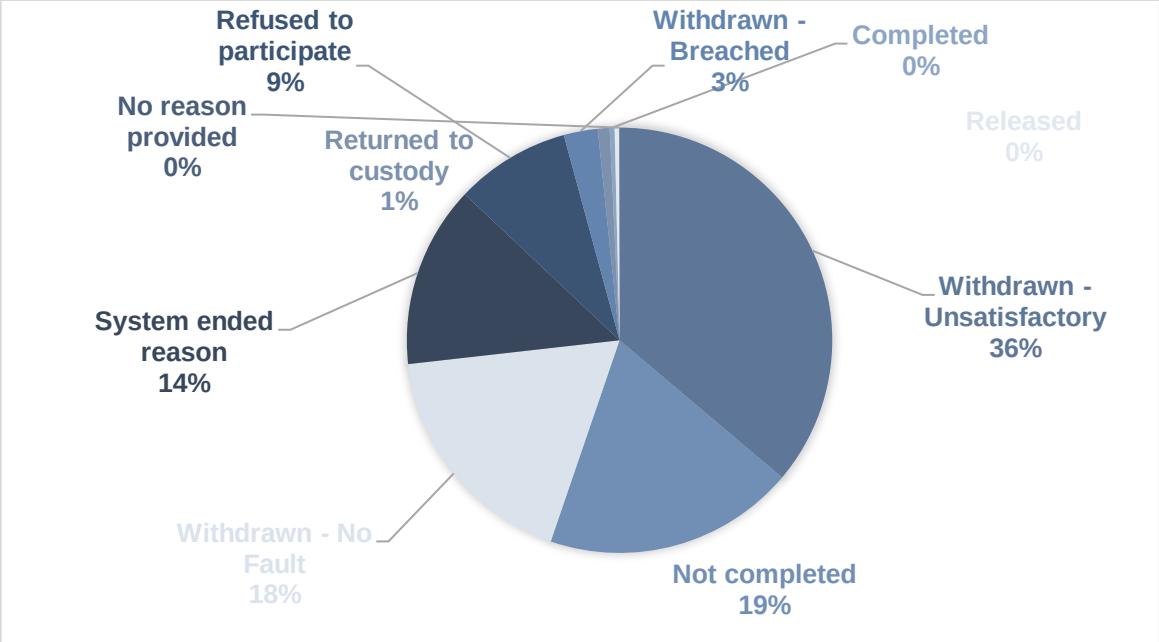

Figure 2 Reasons that program staff provided for offenders prematurely exiting an EQUIPS program that they had been referred through the community pathway (source: OIMS)

Individual and operational factors associated with EQUIPS program participation and completion

In the Appendix, Table 2 and Table 3 provide a summary of the results of each of the models in this report, indicating which factors had a statistically significant impact on program participation and completion and the direction of these changes. Across models, the random variance attributable to the individual level was relatively small compared to the random variance attributable to centre-level variance (where an offender was referred to and/or attended a program) and program type variance (the EQUIPS program they were referred to and/or attended). This means that, in general, the context of program delivery (e.g. location in which a person was referred to and attended a program and/or the type of program that they were referred to or attended e.g. Foundation compared to Domestic Abuse) had more influence on the likelihood of program participation and completion than individual-level differences between offenders. The significant variance attributable at the centre and program level may reflect differences in framework, operational culture and facilitators between the different program delivery locations and content or delivery styles of different EQUIPS programs.

Individual factors associated with EQUIPS program participation

Table 3 presents the individual-level factors significantly associated with EQUIPS program participation through the custodial referral pathway and the community referral pathway.

Table 3 . Individual-Level Factors significantly associated with EQUIPS program participation

Factors associated with increased participation		
	Custody	Community
Individual-level factors	• Increased participation amongst particular types of most serious offence (vs 'other' types): serious violent offence, drug offence. Decreased participation amongst driving offence or breach of a court order. • Criminogenic needs: higher drug and alcohol needs and lower accommodation needs • Lower Assessed Criminogenic Risk Category (LSI-R) • Younger age • Fewer referrals to EQUIPS programs in the past	• Living in a less remote region • Fewer referrals to EQUIPS programs in the past • Criminogenic needs: lower Attitude/Orientation needs, lower Emotional/Personal needs, lower Criminal History and higher Leisure/Recreation needs. • Most Serious Offence: Serious Violent Offence • History of contact with criminal justice system: less time in prison over lifetime, fewer convictions over lifetime. • Being Culturally and Linguistically Diverse (CALD) • Being male

Note. Included those significant at $p < 0.05$. Factors are listed in order of strength of association.

Custody Referral Pathway (Analysis 1)

Full results from cross-classified models can be found in Appendix: Table 4. In brief**, likelihood ratio tests testing sequential blocks of predictors identified that history of contact with the criminal justice system and sentencing characteristics made the strongest contribution to the likelihood of program participation**. All other categories (criminogenic factors, demographic factors and EQUIPS engagement) made a smaller, similar level of contribution to the likelihood of program participation, with the exception of socioeconomic factors which were not significantly associated with participation ($p \geq .025$).

In the custodial pathway, there was a significant relationship between an offender's criminogenic risk and their likelihood of program attendance, where each level increase (e.g. from med-hi to high) was associated with an 10% decrease in the likelihood of program attendance.

Among justice system and sentencing factors, the strongest unique predictors were related to the offenders' most serious offence type. Categories of common offence types were associated with participation compared to a generic 'other' offences category. Those with a serious violent offence were 15% more likely to attend programs than 'other' offences types and those who committed drug offences were 32% more likely to attend programs than those with other offence types. On the other hand, decreased rates of participation compared to 'other' offence types were evident for offenders whose most serious offence was driving offence (24% less likely) or a breach of a court order (44% less likely). Among demographic variables, only age was uniquely associated with program attendance: participation decreased 2% for every year older at referral. There was a significant relationship between an offender's criminogenic risk and their likelihood of program attendance, where each level increase (e.g. from med-hi to high)

was associated with an 10% decrease in the likelihood of program attendance. One criminogenic subdomain was associated with program participation: i) participation was reduced by 4% per standard deviation increase in accommodation needs. Prior EQUIPS engagements decreased likelihood of participation by 9% with each consecutive referral. Although sociodemographic factors were not significant during sequential model building, one factor, remoteness of geographic area-of-origin, reached statistical significance when offences and criminal history factors were added to the model, and was associated with a 5% reduction in the likelihood of program attendance.

Community Referral Pathway (Analysis 2)

Full results from cross-classified models can be found in Appendix: Table 5. Likelihood ratio tests identified that **sociodemographic factors made the strongest contribution to the likelihood of program participation**. This was followed by the number of times an offender had engaged with EQUIPS programs in the past and criminogenic factors, which also accounted for substantial variance in likelihood of program participation. Demographic and offence characteristics made a smaller, similar level of contribution to the likelihood of program participation.

Among sociodemographic characteristics, for every level increase in relative remoteness of an offender's residence (e.g. from inner regional to outer regional) there was a concomitant 18% decrease in the likelihood that offender would participate in a referred EQUIPS program. Repeated referrals, regardless of program type, were also associated with decreased participation: for every extra community-based referral to any EQUIPS program, an offender was 16% less likely to participate in any program. Given that this analysis accounts for multiple measurements from the same offender and clustering of variance at the program-level, this result suggests that the likelihood of participating in an EQUIPS program, amongst those referred to that program, is reduced with every subsequent EQUIPS referral. Because the results are clustered at the program level, this result do not illustrate anything about the link between the number of referral and participating in specific EQUIPS programs.

Amongst criminogenic and justice variables, the strongest unique predictors related to four criminogenic subdomains. Participation decreased by i) 7% per standard deviation increase in attitude/orientation; ii) 5% per standard deviation increase in emotional/personal needs or criminal history needs. Participation increased 6% for every standard deviation increase in leisure/recreation needs. Having a serious violent offence as a Most Serious Offence increased program participation by 25% than other offences, respectively. There was also a significant effect of conviction history where for every standard deviation increase in the number of lifetime convictions the likelihood of program participation reduced by 5%. Every standard unit increase in the number of total lifetime days spent in prison was associated with a 4% reduced likelihood of program participation. Two demographic characteristics also significantly contributed to program participation: men were 24% more likely to attend programs they were referred to than females, and offenders who were CALD were 27% more likely to participate than participants who were not.

Individual factors associated with EQUIPS program completion

The following table presents the individual-level factors significantly associated with EQUIPS program completion through the custodial referral pathway and the community referral pathway.

Table 4 Individual-Level Factors significantly associated with EQUIPS program completion

Factors associated with increased completion		
	Custody	Community
Individual-level factors	• Most serious offence: drug offence • Criminogenic needs: lower family/marital needs • Older age • Attended EQUIPS programs in the past	• Higher Assessed Risk Category (LSI-R) • Criminogenic needs: lower criminal history, lower accommodation needs, lower education/employment needs, lower alcohol and drug needs, lower companion needs. • Being male • Older age • Most Serious Offence: not property offence • Having less time in prison over lifetime • Attended EQUIPS programs in the past

Note. Included those significant at $p < 0.05$. Factors are listed in terms of strength of association.

Custody Referral Pathway (Analysis 3)

The full results of a cross-classified model of the individual-level factors associated with EQUIPS program completion through the custodial referral pathway can be observed in Appendix: Table 6. In brief, **sentencing characteristics and history of contact with the criminal justice system provided the most explanatory power in program completion amongst offenders referred through a custodial pathway, followed by criminogenic needs category**. Demographic characteristics and EQUIPS program participation accounted for a similar, lower level of variance in program participation. Socioeconomic factors which were not significantly associated with completion.

Among justice system and sentencing factors, the strongest unique predictors were related to the offenders' most serious offence. Those with a drug offence were 94% more likely to complete programs than those in the 'other offence' category. Breach of court order offences were associated with a 28% reduced likelihood of program completion compared to other offence types. In terms of criminogenic needs, completion was reduced by 13% per standard deviation increase in family and marital relationship needs.

Among demographic variables, only age reached significance, where every year older an offender was at referral was associated with a 2% increase in likelihood of completion. There was a significant effect of previous program engagement, where for every subsequent attendance of an EQUIPS program through a custodial referral pathway was associated with a 22% increase in likelihood of completion.

Community Referral Pathway (Analysis 4)

Results for this section can be seen in Appendix: Table 7. In summary, a cross-classified random effect, accounting for both program type and offender-level variance, did not provide an appropriate fit to the data. This suggested that there was not evidence of a level 2 crossed random effects between offenders and program type in this model. Instead, a single random effect model with only Offender-level variance (and program type variance removed) was conducted instead. Likelihood ratio tests testing sequential blocks of predictors identified that **criminogenic needs made the strongest contribution to the likelihood of program completion, followed by demographics characteristics**. Socioeconomic characteristics and sentencing characteristics made smaller, but significant contributions to likelihood of program completion. Previous engagement with EQUIPS programs was not significantly associated with program completion via this referral pathway.

Having a higher general risk category (e.g. being medium-high risk rather than medium risk) was associated with a 19% increase in program completion. Five criminogenic subdomains were associated with program completion: i) completion was reduced by 18% per standard deviation increase in the criminal history domain; ii) completion was reduced by 14% for every standard deviation increase in accommodation needs; iii) completion was reduced by 8% for every standard deviation increase in companion needs; iv) completion reduced by 9% for every standard deviation increase in alcohol and drug needs; and, v) completion likelihood reduced by 7% for every standard deviation increase in education and employment needs.

In the community pathway, having a higher general risk category (e.g. being medium-high risk rather than medium risk) was associated with a 19% increase in program completion.

There was a significant association between an offender's most serious offence and program completion. Those with a property offence were 26% less likely to complete programs, than those with other offence types. There was also a significant effect of prison history, where every standard deviation increase time spent in prison was associated with an 7% reduction in the likelihood of completion.

One socioeconomic factor significantly predicted program completion: likelihood of program completion reduced by 8% with every standard deviation increase in relative social advantage. Amongst demographic characteristics, males were 48% more likely to complete than females, and each year older an offender was at referral increased the likelihood of completion by 3%. Although the program engagement variable block did not contribute unique variance above and beyond other individual-level factors, within the final model one individual program engagement variable was significant: for every unique commencement of an EQUIPS program in the community, there was an 7% increase in the likelihood that a person would complete an EQUIPS program.

Operational factors predicting participation and completion

Operational factors associated with EQUIPS program participation

The following table presents the operational factors significantly associated with EQUIPS program participation through the custodial referral pathway and the community referral pathway.

Table 5 . Operational factors significantly associated with EQUIPS program participation

Note. Included those significant at $p < 0.05$. Factors are listed in terms of strength of association.

Custody Referral Pathway (Analysis 5)

Full results from cross-classified models can be found in Appendix: Table 8. Several operational factors were associated with program participation amongst offenders going through the custodial referral pathway. **Increased program participation was associated with employment (38% increase) and undergoing education (12% increase) within the centre at the time of referral**. Participation increased by 12% for offenders who had a parole period attached to their sentence compared to those without. Given that participation outcomes followed custody-based people into their parole period, this result means may reflect increased participation because offenders can be referred in custody but then actually commence once released into the community. Offenders who were referred to EQUIPS Aggression were 34% less likely to attend the program than offenders allocated to EQUIPS Foundation, but no differences were apparent between Foundation and other programs.

Timing of referral also impacted likelihood of program participation. Every extra month between referral and the end of their custodial sentence increased likelihood of program participation by 3%. Every extra month between the advent of EQUIPS program suite and an individual's referral

Factors associated with increased participation		
	Custody	Community
Operational-level factors	• Parole period as part of sentence • Employed at the time of referral • Program type: Foundation rather than Aggression • Undergoing education at the time of referral • More days left in custodial sentence at referral • CSNSW running EQUIPS programs for fewer days before referral • Fewer referrals to EQUIPS programs in the past	• Program type: Addiction or Aggression rather than Foundation • Fewer referrals to EQUIPS programs in the past • Less days since beginning of community sentence at referral • More days left in community sentence at referral • CSNSW running EQUIPS programs for fewer days before referral

was associated with a 1% decrease in program participation. Each extra community-based referral an offender received over the study period was associated with a 6% reduction in program participation.

Community Referral Pathway (Analysis 6)

Full results from cross-classified models can be found in Appendix: Table 9. In brief, several operational factors were significantly associated with differences in likelihood of program

participation through the community referral pathway. **Timing of referrals impacted the likelihood of program participation.** Each additional month that CSNSW had been delivering EQUIPS programs at the time of referral decreased likelihood of program participation by 1%. Every additional month since the beginning of an offender's sentence reduced program participation by 1%, whereas every extra month prior to the end of a community sentence at referral increased participation by 1%. **Program type also impacted program participation:** referral to Addiction was associated with 54% reduction and referral to Aggression was associated with 64% reduction in likelihood of program participation compared to referral to Foundation. Every extra program referral an offender received through the community pathway was associated with a 9% reduction in program participation.

Operational factors associated with EQUIPS program completion

The following table presents the operational factors significantly associated with EQUIPS program completion through the custodial referral pathway and the community referral pathway.

Table 6 . Operational-Level Factors significantly associated with EQUIPS program completion

Factors associated with increased completion		
	Custody	Community
Operational level factors	• Program type: Addiction or Aggression rather than Foundation • Employed at the time of referral • Participated in EQUIPS programs in the past • More days left in sentence when started attending the program. • CSNSW running EQUIPS programs for more days before first attendance.	• Program type: Domestic Abuse rather than Foundation • Not having a parole period as part of sentence • Moving to another Community Corrections office to participate in a program • More days left in sentence when started attending the program.

Note. Included those significant at $p < 0.05$. Factors are listed in terms of strength of association.

Custody Referral Pathway (Analysis 7)

The full results of this model can be observed below in Table 10. To summarise, **employment within the centre at the time of referral was associated with 22% increase in likelihood of completion.** Offenders attending Addiction and Aggression programs were 35% and 23% more likely to complete their program than offenders attending Foundation. **There were also significant effects of the timing of referral and program attendance.** Every extra month passed since launch of the EQUIPS programs increased likelihood of completion by 1%. Every extra month an offender had left on their sentence when they first started attending the program increased likelihood of completion by 3%. Further, with each additional attempt at an EQUIPS program during the study period, the likelihood of completion increased by 15%.

Community Referral Pathway (Analysis 8)

Full results can be observed in Appendix: Table 11. In brief, **offenders who had parole attached to their sentence were 23% less likely to complete programs than those who did not**. Similarly, offenders who did not have to move Community Corrections offices in order to attend their EQUIPS program were 20% less likely to complete programs than offenders who did have to move. There was also **a significant effect between timing of program attendance within an offender's sentence and program completion**. Every extra month between an offender's first program attendance and the end of the sentence increased likelihood of completion by 1%. Offenders attending Domestic abuse were 39% more likely to complete their program than offenders attending EQUIPS Foundation.

Discussion

This report aimed to identify individual- and operational-level (system-level) factors that are associated with participation and completion of EQUIPS suite of programs in custody and in the community. From an institutional perspective, it is vital that CSNSW consider both operational and individual-level factors that may impact the throughput of offenders through EQUIPS programs. Exploring operational factors highlights the broader logistical or structural issues and barriers present within a system that CSNSW can address and modulate to improve the throughput of offenders through programs (Sachs & Miller, 2018). The RNR concept of 'responsivity' posits that the success of offender treatment programs is contingent on how well they cater to an offender's characteristics or traits and are tailored to their individual needs (Cohen & Whetzel, 2014; Crites & Taxman, 2013). Thus, identifying individual-level barriers to participation or completion can also indicate program refinements to improve responsivity to individual needs of participants.

Participation rates were roughly equivalent in custodial and community referral contexts, with approximately two in every five referrals resulting in program participation.

Overall, program participation rates were low amongst offenders referred to programs through both custody and community pathways, with less than half of offenders participating in at least one session of a program that they were referred to in each pathway. Participation rates were roughly equivalent in custodial and community referral contexts, with approximately two in every five referrals resulting in program participation. The majority (64.8%) of those who participated in at least one program session went on to complete the program (a 35.2% non-completion rate). The program completion rate was higher amongst custodial-based referrals (71.5%) than community-based referrals (59.6%) both overall and across all of the four EQUIPS programs.

Factors associated with participation and completion in the custodial referral pathway

Among individual level factors, the nature of an offender's most serious offence was most consistently associated with program participation and program completion for offenders referred in a custodial pathway. Unfortunately, offenders with higher rated criminogenic risk were less likely to attend programs they were referred to. Offenders whose most serious offence in their index sentence was serious violence, breach of a court order, drug or driving offences were more likely to participate in a program than those with 'other' offences. Offenders whose most serious offence were drug offences were more likely to complete programs compared to other offence types, whereas those whose most serious offence was breach of parole were less likely to complete. Offenders who return to custody due to a Breach of Parole offence may be challenging to complete programs with as these periods of custody may be less well defined and more unpredictable, making it hard to plan when they are likely to have adequate time to complete a program. Altogether, these findings suggest that CSNSW is particularly proficient in facilitating program participation and completion amongst certain groups of offenders. These individual-level results were accounting for clustering of variance within different program types, meaning that the results identify factors association with program participation/completion, irrespective of program type.

Other individual-level factors were associated with program participation and completion within the custodial pathway. Reduced likelihood of program participation in custodial settings was associated with living in a more remote region prior to entering custody (albeit a small effect) and being older. However, being older also increased the likelihood of program completion. The finding that an offender's location prior to custody still had a bearing on their likelihood to participate in programs while incarcerated was unexpected, and further research is required to understand this relationship. The relevance of age to participation was consistent across contexts, and may correspond to life course criminological theory which posits that an individual's desistance from crime tends to increase with age (Rakes, Prost, & Tripodi, 2018; Sampson & Laub, 2005). The current findings may indicate that older offenders are more motivated to gain skills to reduce recidivism, although given the lower rates of completion in custodial settings, refinements may be needed to ensure that programs retain older participants.

Findings indicate that CSNSW is particularly proficient in facilitating program participation and completion amongst certain groups of offenders.

Offenders with higher family and marital needs were less likely to complete programs. One rationale for this effect may be that this offenders with poorer familial and romantic relationships may be less motivated due to lower perceived responsibility and/or less familial support. Offenders with higher alcohol and drug needs were more likely to participate in referred programs, suggesting that CSNSW may be particularly good at program throughput for those with substance use needs. However, offenders with housing issues or past homelessness were less likely to participate in programs in the custodial setting. This a cause for concern, considering our finding in a previous report that over half of offenders referred to EQUIPS had been homeless prior to their incarceration.[10] Further research is required into the link between housing issues and homelessness and prison program engagement.

Offenders [with] higher needs in emotional/personal and attitude/orientation domains were less likely to participate in programs.

Those with higher needs in education/employment, accommodation, companions and alcohol and drugs were less likely to complete, as were those with a more extensive prison history.

Operational factors that contributed to the likelihood of program participation and completion were related to the timing of program referral and participation. The earlier an offender received a referral to an EQUIPS program within their custodial sentence, the more likely they were to both participate in and complete the program. This suggested that having more time left at the time of referral may give offenders adequate time to commence and complete the program successfully. It was also found that the longer the EQUIPS suite of programs had been online at the time of an offender's referral (i.e. the more months which had passed since EQUIPS first started to be delivered in custody and community), the less likely the offender would participate in a program. However, we note the size of these timing effects were small. A possible explanation for this finding is that offenders may be more enthusiastic about a new or novel program, but the longer the program has run there is

The earlier an offender received a referral to an EQUIPS program within their custodial sentence, the more likely they were to both participate in and complete the program.

[10] This statistic came from a small proportion of offenders who had answered a relevant question on the Inmate Screening Questionnaire on entry to custody and should not be considered representative of the offender population overall.

increased likelihood offenders may have had more exposure to possible negative discussions around the program impacting likelihood they would attend. Alternatively, referral pathways may have become less efficient from an administrative standpoint over time. Interestingly, the longer EQUIPS programs had been available when an offender started attending a program, the more likely an offender would complete that program. This suggested that CSNSW delivery of the programs may have improved over time in terms of their capacity to retain offenders and facilitate completion.

Offenders who had a parole period as part of their sentence were significantly more likely to attend programs that they were referred to than those without a parole period. This may reflect that having a parole period may be motivating, as offenders may feel that completing programs could increase their likelihood of obtaining parole. A similar finding has occurred in a process evaluation on CSNSW sex offender programs (Howard, 2016). It is also possible that parolees may be more likely to attend programs because they receive two opportunities (and maximised time) to attend programs they are referred to - in custody and again in community.

Offenders who were employed or receiving education at the time of referral were significantly more likely to attend programs they were referred to than those who were not employed or undergoing education. Offenders who were employed at the time of referral, but not those engaging in education, were more likely to complete programs. These findings may indicate these individuals who are working are likely more compliant and/or have a greater capacity for mental and social engagement. It may also indicate that offenders who are doing education at the time of referral may be more likely to participate later in EQUIPS programs because they are already dealing with areas of need associated with education (so less clash across different interventions) or addressing responsivity factors (e.g., low literacy) that might affect their suitability to attend EQUIPS.

Factors associated with participation and completion in the community referral pathway

Several individual-level factors acted as barriers to program participation amongst offenders on the community referral pathway. Male offenders were more likely to attend and complete EQUIPS programs they were referred to than female offenders. Offenders living in a more remote region were less likely to attend a program they were referred to than those in less remote regions. This finding may reflect issues with location of program delivery if sites running the program are not proximal to referred offenders. Offenders with higher leisure/recreation needs were more likely to attend programs, which may reflect increased motivation when there is a lack of alternative or competing activities for an offender to engage with.

Other individual-level factors acted as a barrier to program participation and completion. Offenders who were assessed as having higher emotional/personal and attitude/orientation domains needs were less likely to participate in programs. Those who had a more extensive history of contact with the criminal justice system (more convictions and time in prison over their lifetimes) were also less likely to participate in programs than those without this history. Having higher needs in relation to education/employment, accommodation, companions and alcohol and drugs was associated with reduced likelihood of completion, as was having a more extensive prison history. These findings are similar to international studies (Olver et al., 2011; Olver & Wong, 2011) in highlighting that offenders with higher criminogenic needs, who are the intended targets of these programs, may be precisely those who are missing out on the therapeutic benefits programs provide. However, the higher an offender's assessed criminological risk, the

more likely they were to complete a program that they had commenced. This finding is promising, suggesting that Community Corrections is doing a good job at maintaining the engagement to the higher needs offenders when they do take up referrals to the programs.

In terms of the operational factors, timing of referral and program participation both impacted participation and completion. The longer that an offender was referred to a program prior to the end of their community sentence, the higher their likelihood of participating in that program and the more time between sentence start and program referral the less likely an offender was to participate in a program. Just as in the custodial pathway, these findings provide evidence for timely referral to an EQUIPS program to maximise the likelihood of program participation, but the size of these effects were small. Earlier program participation relative to sentence end was also associated with a higher likelihood of program completion.

Offenders who had parole as part of their sentence were less likely to complete programs than those without a parole period, at any time during their sentence (i.e. both whilst in custody and on parole). This may be reflective of the experience of attending a program post-incarceration during a Parole/Conditional Release period. For these individuals, the often tumultuous experiences of 'getting back to normal' after release from prison may be a barrier to attending and completing a program (Carlton & Segrave, 2016).This effect may not be as much of a barrier for those undertaking community sentences but were not on parole post-release from custody, who may be relatively more stabilised in their communities to attend programs. Additionally, moving between Community Corrections offices between referral and first participation was associated with increased likelihood of program completion. This finding was somewhat counterintuitive, suggesting that attending a program at a different office to which referral occurred helped improve chances of completing a program. This could be because Community Corrections officers may have decided on the particular office location of program attendance to better suit the location and needs of the offender, which may have improved their likelihood of attending.

Comparing custodial and community referral pathways

Socioeconomic and demographic factors made a stronger contribution to likelihood of program participation in the community than the custodial referral pathway. This suggests aspects of the custodial pathway may be protective against some of the individual-level barriers in program engagement.

Although the current study used models which only assessed individual predictors *within* referral samples (i.e. those referred through a custodial pathway *or* those referred through a community pathway) and did not make direct comparisons between samples, we can make general inferences about how the factors that were associated with variance in program participation and completion within these different cohorts and settings. One of the primary differences between the two pathways was that socioeconomic and demographic factors appeared to make a stronger contribution to likelihood of program participation in the community than the custodial referral pathway. Whereas socioeconomic factors were the weakest set of predictors of program participation in the custodial pathway, they were the strongest driver of participation in the community-based pathway. Comparatively, sentencing characteristics were one of the weakest predictors of program participation amongst those in the community referral pathway, relative to socioeconomic factors and criminological

factors. Moreover, a wider variety of criminological risk/needs factors were barriers to participation and completion through the community pathway than in the custodial pathway.

The fact that individual-level factors had a stronger impact program throughput in community, but not in custodial settings suggests that aspects of the custodial pathway may be protective against some of the individual-level barriers in program engagement. Other research has also identified the way that, comparative to closed and controlled custodial environments, people underdoing programs in the community have more obstacles and competing concerns to negotiate, such as employment, family obligations and transport, that pose less of an obstacle in prison settings (McMurran & Theodosi, 2007). In a similar vein, the fact that women were less likely to attend and complete programs in community settings, but not custodial settings suggest other external pressures within the community, such as caring roles, rather than motivation, which may pose a barrier to women in the community participating in programs.

Women were less likely to attend and complete programs in community settings, but not custodial settings. This suggests other external pressures within the community, such as caring roles, rather than motivation, which may pose a barrier to women in the community participating in programs.

Another difference between the community versus custodial referral pathway was the type of EQUIPS program that offenders were more likely to complete. In the custodial pathway, offenders referred to Aggression were significantly less likely to participate in programs than those referred to Foundation. In the community pathway, offenders who were referred to Addiction or Aggression were much more likely to participate than those referred to Foundation. Program completion rates also differed according to program type: in the community, offenders who participated in Domestic Abuse were significantly more likely to complete that program than offenders who participated in Foundation. In the custodial context, offenders who participated in Addiction and Aggression were more likely to complete than those who participated in Foundation.

In both custody and community referral pathways, offenders who had been referred to EQUIPS more than once in the same pathway over the study period were less likely to participate in a single given program than offenders who were referred less times. However, across both pathways, having participated in more EQUIPS programs during the study period was associated with a higher likelihood of completing the program. The implications of these findings will be discussed further below.

Strengths and limitations

A major strength of this study was the large dataset of over 60 000 referral datapoints, which allowed for examination of multiple predictors. However, we note that due to the large sample size, the study is sensitive to detection of small effects, which may not necessarily correspond to a meaningful effect. For this reason, we have indicated the size of effect where relevant (using odds ratios) and a caution in cases where the effect size is small. Due to the complex, real-world nature of this data, a sophisticated cross-classified statistical approach was employed to take into account the complex and often intersecting sources of variance. Accordingly, the analysis was able to account for the effects of multiple referrals, location of program delivery and different program on participation outcomes.

The reliance on administrative data collected by CSNSW for routine purposes limited in the selection of predictors to those readily available, and often proxies were used to approximate outcomes of interest. The available data limited understanding of psychological factors associated with participation and completion. For example, offenders' attitude/orientation needs were associated with decreased likelihood of participation in the community pathway suggesting that offender's personal capacity to engage in programs could be a primary barrier to participation, but it is hard to disentangle how much of this effect may be due to the failure of referral and program practice to meet the needs of offenders. Future research may benefit from qualitative interviews with offenders at each stage of the referral process for a more nuanced understanding of the subjective barriers to program participation and completion to maximise offender throughput. For example, UK qualitative findings found offenders felt less likely to engage in a program when there was a lack of information or care offered in the referral process and once programs had started, rigid program content or un-motivated, chaotic and disruptive group members also reduced engagement (Holdsworth et al., 2019).

Future research may benefit from qualitative interviews with offenders at each stage of the referral process for a more nuanced understanding of the subjective barriers to program participation and completion to maximise offender throughput.

Implications

Even though aspects of custodial environment appear to reduce some of the individual-level barriers to program participation and completion and have higher completion rates, there are still strong arguments for continuing to offer programs in both contexts. There is some suggestion that RNR services that are delivered in the community tend to be more effective than those offered in custody (D. A. Andrews, Zinger, Hoge, Bonta, & et al., 1996), likely because programs in the community allow an offender to practice skills in a real-world environment and are not impeded by restrictive cultures that occur within many prison settings (Wormith & Zidenberg, 2018). This interpretation is supported by the current finding that higher risk offenders were *more* likely to complete programs in the community referral pathway, a pattern which did not occur in the custodial setting, suggesting that some aspect of the community environment facilitated this group to successfully complete. However, we also observed several advantages to offering treatment programs within custodial settings, in terms of providing equitable access according to need and appearing to circumvent some of the individual barriers to participation such as being female or having higher criminogenic needs in the domains of criminal history, emotional/personal needs or attitude/orientation needs.

Findings suggested that significant between-centre variance in the custodial setting accounted for differences in the likelihood of program participation and completion. This shows that other unassessed aspects of a centre environment may impact the likelihood that someone stays in a program until completion. Other studies have identified local characteristics of program delivery, such as the demeanour of program trainers and facilitators (Holdsworth et al., 2019) or inadequate support (Sturgess, Woodhams, & Tonkin, 2015) as a barrier for engagement. Future research within CSNSW could explore trainer characteristics and quality as a possible lever to improve offender retention in programs.

The individual-level factors that acted as barriers to participation and completion of EQUIPS programs highlight potential opportunities to increase the specific responsivity of programs to different offender cohorts. One example of this is the barrier posed by education/employment needs for completion in the community pathway, suggesting more assistance may be required to support those with education needs to continue engagement in programs. Other research has highlighted that offenders with low levels or experience of formal education and difficulties obtaining and maintaining employment may find therapeutic programs like EQUIPS, which have a classroom environment, text-based structures, homework and a need for prolonged attentional engagement, difficult (Holdsworth et al., 2019). Another example is the barrier that accommodation and housing issues had on program engagement. Offenders with higher accommodation needs/issues were less likely to participate in programs in custody (however we note the size of this effect was very small) and less likely to complete programs in the community referral pathway. Australian research has identified the complex needs that people who have experienced homelessness, including high rates of mental health and substance use comorbidity and trauma (Taylor & Sharpe, 2008; Teesson, Hodder, & Buhrich, 2003, 2004), with some experiencing a 'revolving door' between prison and homelessness (Moschion & Johnson, 2019). Higher rates of complex needs may partly explain reduced program participation in custody. In the community, the time, resources and effort needed to find and maintain stable housing may prove an obstacle in attending programs to completion. Accommodating the specific psychosocial needs associated with accommodation issues may help to improve offenders' responsivity.

The individual-level factors that acted as barriers to participation and completion of EQUIPS programs highlight potential opportunities to increase the specific responsivity of programs to different offender cohorts.

Having multiple referrals was associated with reduced likelihood of participating in a given EQUIPS program, but actually attending more programs over a study period was associated with higher likelihood of completion. This finding raises the possibility that two cohorts of offenders existed, each following different pathways. The first includes those who upon repeated referral continues to avoid participating, as with each subsequent referral, offenders were less likely to participate. This may also illustrate order effects as this group may potentially continue to receive referrals when they do not engage with the program. The latter includes offenders who are more likely to participate in and successfully complete programs. If correct, this finding speaks to a possibility that programs are catering to a group that already has a level of functional capacity or willingness to adhere to the requirements of their sentence, and may instead be missing out on the group who is less willing or has less capacity to engage and who may actually benefit more from treatment. There is a need to ensure that higher risk offenders participate and complete EQUIPS programs that they are referred to, to ensure provision of EQUIPS leads to the best possible outcomes on reoffending. This area, looking at EQUIPS program 'dosage' and reoffending outcomes, will be addressed in an upcoming report.

Having multiple referrals was associated with reduced likelihood of participating in a given EQUIPS program, but actually attending more programs over a study period was associated with higher likelihood of completion.

Conclusion

This study investigated the individual- and systems-level factors associated with EQUIPS program participation and completion within custodial and community settings. Program outcomes were similar within both custodial and community settings, with around half of all EQUIPS referrals conferred into program participation and a quarter into program completions, on average. The profile of individual- and systems-level factors predicting program participation and completion appeared to be different within community and custodial referral pathways. Socioeconomic and demographic factors made a stronger contribution to program participation relative to criminological and sentencing characteristics in the community referral pathway, whereas the opposite pattern occurred within the custodial referral pathway. There are several implications for CSNSW in terms of reducing barriers to EQUIPS throughput, including operational issues like timing of program referral and delivery within a sentence, and for custodial settings, engaging offenders who may not be involved in other centre activities like education and/or employment. Results also highlighted individual-level barriers to participation, particularly criminological risk domains, age, gender and particularly in community settings, sociodemographic and history of criminal justice involvement.

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Appendix

Appendix Table 1 Number and proportion of program referrals conferred into program participations and completions across EQUIPS programs in custody and the community.

		EQUIPS Programs				
	Referral Source	Foundation n (%)	Domestic Abuse n (%)	Addiction n (%)	Aggression n (%)	Any program n (%)
Participation	Custody (n=17909)	2232 (38.62)	653 (36.93)	2881 (38.92)	1075 (34.62)	6841 (38.20)
	Community (n=21818)	3828 (45.07)	2411 (48.38)	1691 (31.57)	808 (27.07)	8738 (40.05)
	Total (n=39727)	6060 (42.89)	3064 (45.39)	4572 (35.84)	1883 (30.92)	15579 (39.22)
Completion	Custody (n=17909)	1487 (26.39)	442 (25.00)	2080 (28.10)	775 (24.96)	4784 (26.71)
	Community (n=21818)	2185 (25.72)	1598 (32.07)	910 (16.99)	440 (14.74)	5133 (23.53)
	Total (n=39727)	3672 (25.99)	2040 (30.22)	2990 (23.44)	1215 (19.95)	9917 (24.96)

Appendix Table 2 Individual-level predictors of program participation and completion of offenders referred through the custodial pathway and those referred through the community pathway. The results presented in this table are results of the final model of each regression analysis. For simplicity, only statistically significant results are included in the table.

	Individual-level Predictors			
	Custody		Community	
	Participation N=16308	Completion N=6085	Participation N=16266	Completion N=7287
Block One: Demographic factors				
LR Test	33.68***	20.67***	26.12****	89.85****
Older age	.98****	1.02****		1.03****
Gender (male)			1.24****	1.48***
CALD			1.27*	
In a relationship				
Block Two: Socioeconomic factors – geographic location of origin				
LR Test	3.86	3.21	106.57****	7.78*
Higher relative advantage				.91**
Living in a more remote region	.95*		.81*	
Block Three: Criminogenic factors (LSI-R Risk category and subcategories)				
LR Test	37.35****	42.48****	52.30****	128.96****
Higher Risk Category[1]	.90**			1.19*

	Individual-level Predictors			
	Custody		Community	
	Participation N=16308	Completion N=6085	Participation N=16266	Completion N=7287
Criminological domains				
1. Criminal History			.95*	.82****
2. Education/ Employment				.92*
3. Financial				
4. Family/ Marital		.87****		
5. Accommodation	.96*			.86**
6. Leisure/ Recreation			1.06**	
7. Companions				.92**
8. Alcohol and Drug	1.03*			.91**
9. Emotional/ Personal			.95**	
10. Attitude/Orientation			.93****	
Block Four: History of contact with criminal justice system and sentencing characteristics				
LR Test	267.03****	60.51****	32.37****	31.24***
Higher Conviction Count (over lifetime)			.95*	
More time in prison over lifetime			.96*	.93*
Most serious offence type[11]				
Serious Violent Offence[3]	1.15*		1.25***	
Nonserious Violent Offence				
Property offence				.74*
Breach of court order	.56****			
Drug offence	1.32***	1.95****		
Driving Offence	.76**			
Block Five: Program engagement				
LR Test	28.86****	16.71****	64.19****	3.78*
More referrals over study period in same referral pathways	.91****	1.22****	.84 ****	1.07*

**** significant at $p<.0001$ level
*** significant at $p<.001$ level
**significant at $p<.01$ level
*significant at $p<.05$ level

[11] These are binary variables where each offender is identified as having one category of most serious offence as part of their index sentence, compared with all other offence types.

Appendix Table 3 Systems-level predictors of program participation and completion of offenders referred through the custodial pathway and those referred through the community pathway. The results presented in this table are results of the final block in nested regression analyses. For simplicity, only statistically significant results are included in the table.

Operational (operational) Predictors				
	Custody		Community	
	Participation	Completion	Participation	Completion
Employed at time of referral	1.38 (.05)****	1.22 (.08)**	NA	NA
Receiving education at time of referral	1.12 (.04)***		NA	NA
Parole attached to sentence	1.43 (.12)****			.77 (.04)****
Not needing to move centres to complete			NA	.80 (.05)****
Months since EQUIPS program commenced at referral	.99 (.00)****	1.01 (.00)**	.99 (.00)****	
Months between sentence start and first program attendance			.99 (.00)*	
Months between sentence end and first program attendance	1.03 (.00)****	1.03 (.00)****	1.01 (.00)****	1.01 (.00)****
No. times referred/ commenced EQUIPS program through same referral pathway	.94 (.02)***	1.15 (.06)**	.91 (.02)****	
EQUIPS Program type (compared with Foundation)				
Addiction		1.35 (.10)****	.46 (.02)****	
Domestic Abuse				1.39 (.08)****
Aggression	.66 (.03)****	1.23 (.12)*	.37 (.02)****	

**** significant at $p<.0001$ level
*** significant at $p<.001$ level
**significant at $p<.01$ level
*significant at $p<.05$ level

Appendix Table 4 Statistical results of analysis one, a block-wise multilevel regression model assessing the impact of individual-level factors on the likelihood of offenders referred through a custodial pathway participating in a program. Random effects of Offender-level variance and program type were crossed. Order of block variables included demographic factors, socioeconomic factors, criminogenic factors, sentencing and history of criminal justice contact factors and program engagement.

	Model 0 N=16308 OR (SE)	Model 1 N=16308 OR (SE)	Model 2 N=16308 OR (SE)	Model 3 N=16308 OR (SE)	Model 4 N=16308 OR (SE)	Model 5 N=16308 OR (SE)
Level One: Fixed effects						
Block one: Demographic factors						
Age at referral		.99 (.00)****	.99 (.00)****	.98 (.00)****	.98 (.00)****	.98 (.00)****
Gender (male)		.99 (.06)	.99 (.06)	.97 (.06)	.95(.06)	.97 (.06)
CALD		.98 (.09)	.96 (.09)	.95 (09)	.91 (.09)	.90 (.09)
In a relationship		.99 (.04)	.99 (.04)	.99 (.04)	.99 (.04)	.99 (.04)
Block two: Socioeconomic factors						
SEIFA IRSAD			1.00 (.02)	1.00(.02)	.99 (.02)	.99 (.02)
ABS Remoteness Index			.96 (.02)	.96(.02)	.95 (.02)*	.95 (.02)*
Block three: Criminogenic Factors (LSI-R Risk category and subcategories)						
LSI-R Risk Category[1] (overall)				.86 (.04)***	.90 (.04)*	.90 (.04)*
Criminal History[2]						
Education/Employment				1.02 (.02)	1.01 (.02)	1.01 (.02)
Financial				1.01 (.02)	1.02 (.02)	1.02 (.02)
Family/Marital				1.01 (.02)	1.02 (.02)	1.02 (.02)
Accommodation				.97 (.02)	.96 (.02)	.96 (.02)*
Leisure/Recreation				1.02 (.02)	1.01 (.02)	1.01 (.02)
Companions				.99 (.02)	.99 (.02)	.99 (.02)
Alcohol and Drug				1.05 (.02)*	1.03 (.02)	1.04 (.02)
Emotional/Personal				.97 (02)*	.98 (.02)	.98 (.02)
Attitude/Orientation[2]				1.01 (.02)	1.01 (.02)	1.01 (.02)
Block four: History of contact with criminal justice system and sentencing characteristics.						
Accumulated Conviction Count (lifetime)					.95 (.02)*	.95 (.02)
Cumulative time in prison (lifetime)					1.01 (.02)	1.01 (.02)
Most Serious Offence Category (compared with other types of offences)						
Serious Violent Offence[3]					1.14 (.08)*	1.15 (.08)*
Nonserious Violent Offence					.87 (.06)	.88 (.06)

	Model 0 N=16308 OR (SE)	Model 1 N=16308 OR (SE)	Model 2 N=16308 OR (SE)	Model 3 N=16308 OR (SE)	Model 4 N=16308 OR (SE)	Model 5 N=16308 OR (SE)
Level One: Fixed effects						
Block one: Demographic factors						
Property offence					1.11 (.08)	1.11 (.08)
Breach of court order					.55 (.04)****	.56 (.04)****
Driving offence					.77 (.08)**	.76 (.08)**
Drug Offence					1.34 (.13)***	1.32 (.12)***
Block five: program engagement						
Number of unique commencements of EQUIPS programs through community pathway						.91 (.02)****
Level 2: Random effects	34.07****	39.72****	39.66****	41.18****	50.82****	40.92****
Offender-level (U1)	$1.35e^{-11}$ ($2.66e^{-11}$) 95%CI ($2.86e^{-13}$, $6.38e^{-10}$)	$6.66e^{-11}$ ($1.10e^{-10}$) 95%CI ($2.61e^{-12}$, $1.70e^{-09}$)	$6.90e^{-11}$ ($1.14e^{-10}$) 95%CI ($2.75e^{-12}$, $1.73e^{-09}$)	$1.43e^{-10}$ ($2.20e^{-10}$) 95%CI ($7.07e^{-12}$, $2.90e^{-09}$)	$2.91e^{-10}$ ($4.34e^{-10}$) 95%CI ($1.57e^{-11}$, $5.40e^{-09}$)	$2.67e^{-10}$ ($4.00e^{-10}$) 95%CI ($1.42e^{-11}$, 5.02^{-09})
PROGRAM TYPE (U2)	.01 (.01) 95%CI(.00 , .06)	.02 (.01) 95%CI (.00, .07)	.02 (.01) 95%CI (.00, .07)	.01 (.01) (.00, .07)	.02 (01) (.00,.07)	.01 (.01) (.00, .06)
Model Statistics						
Log Likelihood	-10825.15	-10808.30	-10806.38	-10787.44	-10653.92	-10639.49
Integration points	1	1	1	1	1	1
Wald Chi2		28.93	32.81	71.60	324.61	351.27
df		4	6	16	24	25
p		<.00005	<.00005	<.00005	<.00005	<.00005
AIC	21658.29	21632.61	21632.75	21614.87	21363.84	21336.98
BIC	21689.09	21694.2	21709.75	21768.86	21579.42	21560.27
-2Likelihood Test (*p*)						
LR test with previous model		33.68****	3.86	37.35****	267.03****	28.86****

[1] Last LSI-R score found within previous 13 months, or If this is absent, the most recent one to this.

[2] the LSI-R Criminal History subdomain was removed from the model because of high multicollinearity.

[3] As rated in ANZSOC Most Serious Offence

[4] Program type dummy variables all compared with EQUIPS Foundation.

**** significant at $p<.0001$ level

*** significant at $p<.001$ level

**significant at $p<.01$ level

*significant at $p<.05$ level

Appendix Table 5 Statistical results of analysis two - a block-wise multilevel regression model assessing the impact of individual-level factors on the likelihood of offenders referred through a community pathway participating in an EQUIPS program. Random effects of Offender-level variance and EQUIPS program type were included as crossed multilevel predictors. Order of block variables included demographic factors, socioeconomic factors, criminogenic factors, sentencing and history of criminal justice contact factors and program engagement.

	Model 0 N=16266 OR(SE)	Model 1 n=16266 OR (SE)	Model 2 N=16266 OR (SE)	Model 3 N=16266 OR (SE)	Model 4 N=16266 OR (SE)	Model 5 N=16266 OR (SE)
Level One: Fixed effects						
Block one: Demographic factors						
Age at referral		1.00 (.00)	1.00 (.00)	1.00 (.00)	1.00 (.00)	1.00 (.00)
Gender (male)		1.22 (.06)****	1.21 (.06)****	1.21 (.06)****	1.22(.07)****	1.24 (.07)****
CALD		1.47 (.17)***	1.31 (.16)*	1.29 (.16)*	1.27 (.15)*	1.25 (.15)
In a relationship		0.99 (.04)	.97 (.04)	.96 (.04)	.96 (.04)	.95 (.04)
Block two: Socioeconomic factors						
SEIFA IRSAD			1.02 (.02)	1.02 (.02)	1.02 (.02)	1.02 (.02)
ABS Remoteness Index			.81 (.02)****	.81 (.02)****	.81 (.02)****	.82 (.02)****
Block three: Criminogenic Factors (LSI-R Risk category and subcategories)						
LSI-R Risk Category[1] (overall)				1.09 (.06)	1.09 (.06)	1.09 (.06)
Criminal History[2]				.92 (.02)***	.94 (.02)**	.95 (.02)*
Education/Employment				.98 (.02)	.99 (.02)	1.00 (.02)
Financial				1.01 (.02)	1.01 (.02)	1.01 (.02)
Family/Marital				.96 (.02)	.97 (.02)	.97 (.02)
Accommodation				1.00 (.02)	1.00 (.02)	1.00 (.02)
Leisure/Recreation				1.06 (.02)**	1.06 (.02)***	1.06 (.02)**
Companions				1.00 (.02)	1.00 (.02)	1.00 (.02)
Alcohol and Drug				1.00 (.02)	1.00 (.02)	1.01 (.02)
Emotional/Personal				.94 (.02)**	.94 (.02)**	.95 (.02)**
Attitude/Orientation[2]				.93 (.02)****	.93 (.02)****	.93 (.02)****
Block four: History of contact with criminal justice system and sentencing characteristics.						
Accumulated Conviction Count (lifetime)					.94 (.02)*	.95 (.02)*
Cumulative time in prison (lifetime)					.96 (.02)*	.96 (.02)*
Most Serious Offence Category (compared with 'other' types)						
Serious Violent Offence[3]					1.24 (.08)***	1.25 (.08)***
Nonserious Violent Offence					1.11 (.07)	1.12 (.07)
Property offence					1.15 (.08)*	1.13 (.08)

	Model 0 N=16266 OR(SE)	Model 1 n=16266 OR (SE)	Model 2 N=16266 OR (SE)	Model 3 N=16266 OR (SE)	Model 4 N=16266 OR (SE)	Model 5 N=16266 OR (SE)
Breach of court order					1.18 (.12)	1.22 (.13)
Driving Offence					1.13 (.12)	1.10 (.12)
Drug offence					1.13 (.09)	1.11 (.09)
Block five: Program engagement						
Number of unique commencements of EQUIPS programs in custody						.84 (.02)****
Level Two: Random effects	457.13****	436.12****	435.23****	445.74****	453.50****	444.25****
Offender-level (U1)	3.83e^{-11} (6.03^{-11}) 95%CI(1.75 e^{-12}, 8.38e^{-10})	1.78e^{-11} (3.85^{-11}) 95%CI(2.58e^{-13}, 1.23e^{-09})	3.29e^{-11} (5.96e^{-11}) 95%CI(9.49 e^{-13}, 1.14e^{-09})	1.24e^{-10} (1.93e^{-10}) 95%CI (5.96e^{-12} , 2.60e^{-09})	2.56e^{-10} (3.81e^{-10}) 95%CI 1.38e^{-11}, 4.72e^{-09})	2.23e^{-10} (3.34e^{-10}) 95%CI (1.18e^{-11}, 4.21e^{-09})
PROGRAM TYPE (U2)	.15 (.11) 95%CI(.04,. 62)	.15 (.11) (.04, .61)	.15 (.11) 95%CI (.04, .62)	.16 (.11) 95%CI (.04, .63)	.16 (.11) 95%CI (.04, .64)	.16 (.11) 95%CI (.04, .63)
Model Statistics						
Log Likelihood	-10706.20	-10693.14	-10639.86	-10613.71	-10597.53	-10565.43
Integration points	1	1	1	1	1	1
Wald Chi2		25.99	129.21	180.06	211.14	271.09
df		4	6	17	25	26
p		<.00005	<.00005	<.00005	<.00005	≤.00005
AIC	21420.40	21402.28	21299.71	21269.42	21253.05	21190.86
BIC	21451.18	21463.85	21376.68	21431.05	21476.26	21421.77
LR Test		26.12****	106.57****	52.30****	32.37***	64.19****

Appendix Table 6 Statistical results of analysis three - a block-wise multilevel regression model assessing the impact of individual-level factors on the likelihood of offenders referred through a custodial pathway completing an EQUIPS program. Random effects of Offender-level variance and program type were included as crossed multilevel predictors. Order of block variables included demographic factors, socioeconomic factors, criminogenic factors, sentencing and history of criminal justice contact factors and program engagement.

	Model 0 N=6085	Model 1 n= 6085 OR (SE)	Model 2 N= 6085 OR (SE)	Model 3 N= 6085 OR (SE)	Model 4 N=6085 OR (SE)	Model 5 N=6085 OR (SE)
Level One: Fixed effects						
Block one: Demographic factors						
Age at referral		1.02 (.00)****	1.02 (.00)****	1.02 (.00)****	1.02 (.00)****	1.02 (.00)****
Gender (male)		1.27 (.13)*	1.28 (.13)*	1.18 (.12)	1.14 (.12)	1.12 (.12)
CALD		.97 (.16)	.94 (.16)	.85 (.14)	.83 (.14)	.83 (.14)
In a relationship		1.06 (.07)	1.06 (.07)	1.04 (.07)	1.05 (.07)	1.05 (.07)
Block two: Socioeconomic factors						
SEIFA IRSAD			1.01 (.03)	1.00 (.03)	1.00 (.03)	1.00 (.03)
ABS Remoteness Index			.94 (.04)	.97 (.04)	.96 (.04)	.96 (.04)
Block three: Criminogenic Factors (LSI-R Risk category and subcategories)						
LSI-R Risk Category[1] (overall)				1.11 (.10)	1.11 (.10)	1.11 (.10)
Criminal History[2]				.94 (.03)	.97 (.04)	.96 (.04)
Education/Employment				.94 (.04)	.94 (.04)	.94 (.04)
Financial				.99 (.03)	1.00 (.03)	1.00 (.03)
Family/Marital				.87 (.03)****	.87 (.03)****	.87(.03)****
Accommodation				.95 (.03)	.95 (.03)	.95 (.03)
Leisure/Recreation				.97 (.03)	.96 (.03)	.96 (.03)
Companions				1.02 (.03)	1.02 (.03)	1.02 (.03)
Alcohol and Drug				.97 (.03)	.97 (.03)	.96 (.03)
Emotional/Personal				.95 (.03)	.96 (.03)	.96 (.03)
Attitude/Orientation[2]				.96 (.03)	.96 (.03)	.96 (.03)
Block four: History of contact with the criminal justice system and sentencing characteristics						
Accumulated Conviction Count (lifetime)					1.03 (.04)	1.04 (.04)
Cumulative time in prison (lifetime)					.97 (.04)	.96 (.04)
Most Serious Offence Category						
Serious Violent Offence[3]					1.26 (.15)	1.25 (.15)
Nonserious Violent Offence					.94 (.12)	.94 (.12)
Property offence					.95 (.12)	.94 (.12)
Drug offence					1.93 (.34)****	1.94(.34)****
Driving Offence					1.02 (.19)	1.05 (.19)

	Model 0 N=6085	Model 1 n= 6085 OR (SE)	Model 2 N= 6085 OR (SE)	Model 3 N= 6085 OR (SE)	Model 4 N=6085 OR (SE)	Model 5 N=6085 OR (SE)
Breach of court order					.72 (.10)*	.72 (.10)*
Block five: Program engagement						
Number of unique commencements of EQUIPS programs in custody						1.22 (.06)****
Level Two: Random effects	30.77****	24.01****	23.76****	25.14****	23.53****	25.42****
Offender-level (U1)	.1.87e^{-10} (2.88e^{-10}) 95%CI (9.13e^{-12}, 3.83e^{-09})	1.11e^{-27} (2.37e^{-19}) 95%CI (.00, .00)	3.29e^{-26} (1.28e^{-18}) 95%CI (.00, 00)	4.93e^{-18} (2.13e^{-14}) 95%CI (.00, .00)	9.78e^{-23} (8.76e^{-17}) 95%CI (.00, .00)	6.90e^{-19} (7.79e^{-15}) 95%CI (.00, .00)
PROGRAM TYPE (U2)	.02 (.02) 95%CI (.00, .12)	.03 (.02) 95%CI (.01, .13)	.02 (.02) 95%CI (.00, .12)	.03 (.02) 95%CI(.01,.12)	.02 (.02) 95%CI (.00, .12)	.02 (.02) 95%CI (.00, .12)
Model Statistics						
Log Likelihood	-3979.95	-3590.12	-3588.51	-3567.28	-3537.02	-3528.67
Integration points	1	1	1	1	1	1
Wald Chi2		28.92	32.11	73.39	128.42	143.85
df	1	4	6	17	25	26
p	≤.00005	<.00005	<.00005	<.00005	≤.00005	≤.00005
AIC	7208.91	7196.24	7197.03	7176.55	7132.04	7117.34
BIC	7235.76	7249.95	7264.16	7317.54	7326.74	7318.74
LR test	-	20.67***	3.21	42.48****	60.51****	16.71****

Appendix Table 7 Statistical results of analysis four - a block-wise multilevel regression model assessing the impact of individual-level factors on the likelihood of offenders referred through a community referral pathway completing an EQUIPS program. Offender-level variance was included as a single-level random effect. Order of block variables included demographic factors, socioeconomic factors, criminogenic factors, sentencing and history of criminal justice contact factors and program engagement.

	Model 0 N=7323 OR (SE)	Model 1 N=7323 OR (SE)	Model 2 N=7323 OR (SE)	Model 3 N=7323 OR (SE)	Model 4 N=7323 OR (SE)	Model 5 N=7323 OR (SE)
Level One: Fixed effects						
Block one: Demographic factors						
Age at referral		1.03 (.00)****	1.03 (.00)****	1.03 (.00)****	1.03 (.00)****	1.03 (.00)****
Gender (male)		1.61 (.15)****	1.60(.15)****	1.57 (.15)****	1.50 (.14)****	1.48 (.14)****
CALD		1.04 (.19)	1.00 (.19)	.95(.18)	.98 (.18)	.99 (.19)
In a relationship		1.08 (.07)	1.09 (.07)	1.07 (.07)	1.06 (.07)	1.07 (.07)
Block two: Socioeconomic factor						
SEIFA IRSAD			.92 (.03)**	.91 (.03)**	.91 (.03)**	.91 (.03)**
ABS Remoteness Index			.96 (.04)	.97 (.04)	.96 (.04)	.96 (.04)
Block three: Criminogenic Factors (LSI-R Risk category and subcategories)						
LSI-R Risk Category[1] (overall)				1.18 (.10)*	1.19 (.10)*	1.19 (.10)*
Criminal History				.80 (.03)****	.82 (.03)****	.82 (.03)****
Education/Employment				.92 (.03)*	.93 (.03)*	.93 (.03)*
Financial				.94 (.03)	.95 (.03)	.95 (.03)
Family/Marital				.97 (.03)	.96 (.03)	.96 (03)
Accommodation				.86 (.03)****	.86 (.03)****	.86 (.03)**
Leisure/Recreation				.97 (.03)	.97 (.03)	.97 (.03)
Companions				.91 (.03)**	.92 (.03)**	.92 (.03)**
Alcohol and Drug				.91 (.03)**	.91 (.03)**	.91 (.03)**
Emotional/Personal				.99 (.03)	.98 (.03)	.98 (.03)
Attitude/Orientation				.97 (.03)	.97 (.03)	.97 (.03)
Block four: History of contact with criminal justice system and sentencing characteristics						
Accumulated Conviction Count (lifetime)					1.04 (.04)	1.04 (.04)
Cumulative time in prison (lifetime)					.93 (.03)*	.93 (.04)*
Most Serious Offence Category (compared to 'Other')						
Serious Violent Offence[2]					1.11 (.11)	1.11 (.12)
Nonserious Violent Offence					1.02 (.11)	1.02 (.11)
Property offence					.74 (.09)*	.74 (.09)*
Breach of court order					1.16 (.20)	1.15 (.20)

	Model 0 N=7323 OR (SE)	Model 1 N=7323 OR (SE)	Model 2 N=7323 OR (SE)	Model 3 N=7323 OR (SE)	Model 4 N=7323 OR (SE)	Model 5 N=7323 OR (SE)
Driving Offence					.74 (.14)	.74 (.13)
Drug offence					.96 (.14)	.97 (.14)
Block five: program engagement						
Number of unique commencements of EQUIPS programs through community pathway						1.07 (.04)*
Level Two: Random effects	21.84****	20.53****	20.11****	16.74****	16.17****	16.97****
Offender-level (U1)	.77 (.22) 95%CI (.44, 1.34)****	.74 (.22) 95%CI (.42, 1.31)****	.74 (.21) 95%CI (.42, 1.30)****	.66 (.21) 95%CI (.36, 1.21)****	.64 (.20) 95%CI (.35, 1.20)****	.67, .21 95%CI (.36, 1.23)****
Model Statistics						
Log Likelihood	-4960.70	-4914.11	-4910.54	-4845.43	-4829.81	-4827.92
Integration points	7	7	7	7	7	7
Wald Chi2		81.59	87.18	174.63	192.58	192.98
df		4	6	17	25	26
p		≤.0005	≤.0005	≤.0005	≤.0005	≤.0005
AIC	9925.40	9840.23	9837.09	9728.87	9713.62	9711.84
BIC	9939.20	9881.62	9892.28	9859.95	9899.89	9905.01
-2Likelihood Test (*p*)		93.17****	7.14*	130.22**	31.24***	3.78*

Appendix Table 8 Statistical results of analysis five - a multilevel regression model assessing the impact of operational-level factors on the likelihood of offenders referred through a custodial pathway participating in an EQUIPS program. Random effects of Offender-level variance and centre location of program participation were included as crossed level two predictors.

Operational Predictors	Model 0 N=17165 Null model	Model 1 N= 17165 Cross-classified
Level One: Fixed effects		
Inmate employed at centre at time of referral		1.38 (.05)****
Inmate undergoing education at time of referral		1.12 (.04)***
Parole attached to sentence		1.43 (.12)****
Months since EQUIPS program commenced at referral		.99 (.00)****
Months prior to sentence end when first attending program		1.03 (.00)****
Months since sentence started when first attending program		.1.00 (.00)
Number of unique commencements of EQUIPS programs		.94 (.02)***
Program Type		
Addiction		.96 (.04)
Domestic Violence		.91 (.05)
Aggression		.66 (.03)****
Level Two: Random effects	615.30****	502.64****
Program participation location (U1)	.40 (.11) 95%CI (.24, .69)	.37 (.10) 95%CI (.22, .65)
Offender-level (U2)	$1.43e^{-11}$ ($2.76e^{-11}$) 95%CI ($3.20e^{-13}$, $6.35e^{-10}$)	$1.39e^{-12}$ ($1.01e^{-11}$) 95%CI ($8.68e^{-19}$, $2.23e^{-06}$)
Model Statistics		
Log Likelihood	-11082.31	-10709.62
Integration points	1	1
Wald Chi2		680.56
df	0	10
p	≤.0005	≤.0005
AIC	22172.61	21447.23
BIC	22203.61	21555.74
LR Test		745.38****

[1] Last LSI-R score found within previous 13 months, or If this is absent, the most recent one to this.
[2] Criminal History and Attitude and Orientation was removed from the model because of high multicollinearity.
[3] As rated in ANZSOC Most Serious Offence
[4] Program type dummy variables all compared with EQUIPS Foundation.
**** significant at $p<.0001$ level
*** significant at $p<.001$ level
**significant at $p<.01$ level
*significant at $p<.05$ level

Appendix Table 9 Statistical results of analysis six - a multilevel regression model assessing the impact of operational-level factors on the likelihood of offenders referred through a community referral pathway participating in an EQUIPS program. Random effects of Offender-level variance and centre location of program participation were included as crossed level two predictors.

	Model 0 N=21695 Null model	Model 1 N=21695 Cross-classified
Level One: Fixed effects		
Parole attached to sentence		1.14 (.04)
Months since EQUIPS program commenced at referral		.99 (.00)****
Months prior to sentence end when referred to program		1.01 (.00)****
Months since sentence started when referred		.99 (.00)*
Times referred to program		.91 (.02)****
Program Type		
Addiction		.46 (.02)****
Domestic Violence		1.02 (.04)
Aggression		.37 (.02)****
Level Two: Random effects	713.53****	717.40****
Program participation location (U1)	.22 (.05) 95%CI(.15, .33)	.24 (.05) 95%CI (.16, .36)
Offender-level (U2)	3.93e-11 ($6.01e^{-11}$) 95%CI ($1.96e^{-12}$, $7.87e^{-10}$)	3.67 e^{-11} ($5.67e^{-11}$) 95%CI($1.77e^{-12}$, $7.60e^{-10}$)
Model Statistics		
Log Likelihood	-14253.9	-13822.82
Integration points	1	1
Wald Chi2		809.34
df		8
p		<.0001
AIC	28515.8	27669.64
BIC	28547.74	27765.46
LR Test		862.16****

Appendix Table 10 Statistical results of analysis seven - a multilevel regression model assessing the impact of operational-level factors on the likelihood of offenders referred through a custodial pathway completing an EQUIPS program. Random effects of Offender-level variance and centre location of program participation were included as crossed level two predictors.

	Model 0 N=5562 Null model	Model 1 N=5562 Cross-classified
Level One: Fixed effects		
Inmate employed at centre at time of referral		1.22 (.08)**
Inmate undergoing education at time of referral		1.11 (.07)
Parole attached to sentence		1.27 (.25)
Not needing to move centres to participate in program		1.01 (.07)
Months since EQUIPS program commenced at referral		1.01 (.00)**
Months since custodial sentence started when first attending program		1.00 (.00)
Months prior to sentence end when first started attending program		1.03 (.00)****
Number of times commenced EQUIPS program through custody referral pathway		1.15 (.06)**
Program type		
Addiction		1.35 (.10) ****
Domestic Abuse		1.09 (.12)
Aggression		1.23 (.12)*
Level Two: Random effects	7.81*	8.86*
Program participation location (U1)	$2.13e^{-10}$ ($3.27e^{-10}$) 95%CI ($1.05e^{-11}$, $4.31\ e^{-09}$)	$2.36e^{-10}$ ($3.61e^{-10}$) 95%CI ($1.18e^{11}$, $4.73e^{-09}$)
Offender-level (U2)	$1.30e^{-06}$ ($4.09e^{-06}$) 95%CI *$2.71e^{-09}$, .00)	$2.40e^{-06}$ ($5.64e^{-09}$) 95%CI ($2.39e^{-08}$, .00)
Model Statistics		
Log Likelihood	-3301.2935	-3193.52
Integration points	7	7
Wald Chi2		199.27
df	0	11
p		<.0001
AIC	6610.59	6417.04
BIC	6637.08	6516.39
LR Test		215.55****

Appendix Table 11 Statistical results of analysis seven - a multilevel regression model assessing the impact of operational-level factors on the likelihood of offenders referred through a community referral pathway completing an EQUIPS program. Random effects of Offender-level variance and centre location of program participation were included as crossed level two predictors.

	Model 0 Null model N=8576	Model 1 Cross-classified N=8576
Level One: Fixed effects		
Parole attached to sentence		.77 (.04)****
Not needing to move centres to participate in program		.80 (.05)****
Months since EQUIPS program commenced at referral		1.00 (.00)
Months since comm sentence started when first attending program		.99 (.00)
Months prior to sentence end when first started attending program		1.01 (.00)****
Number of unique commencements of EQUIPS programs		1.02 (.03)
Program type		
Addiction		.89 (.06)
Domestic Abuse		1.39 (.08)****
Aggression		.90 (.07)
Level Two: Random effects	17.00***	16.42***
Program participation location (U1)	.00 (.00) 95%CI ($7.81e^{-07}$, .00)	.00, .00 95%CI ($6.40e^{-07}$, $1.24e^{-09}$)
Offender-level (U2)	$1.20e^{-11}$ ($2.86e^{-11}$) 95%CI ($1.12e^{-13}$, $1.28e^{-09}$)	$4.75e^{-11}$ ($7.89e^{-11}$) 95%CI ($1.82e^{-12}$, $1.24e^{-09}$)
Model Statistics		
Log Likelihood	-5776.9874	-5706.5271
Integration points	7	7
Wald Chi2		137.34
df	0	9
p		<.0001
AIC	11561.97	11439.05
BIC	11590.20	11530.79
LR Test		140.63****