



# HIGHER GROUND

DRUG REHABILITATION TRUST

## Review of Outcomes for clients of Higher Ground 2012-2018

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Final report

21 June 2019

Prepared for: Higher Ground Drug Rehabilitation Trust



Judy Oakden Consultancy • Research Evaluation Consultancy  
The Knowledge Institute • Julian King & Associates



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Prepared for: Higher Ground Drug Rehabilitation Trust

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## Executive summary

This report presents data analysis and evaluation of clients' treatment outcomes from Higher Ground's residential therapeutic community (TC) programme.

The study includes 1,108 clients who entered Higher Ground between 1 July 2012 and 30 June 2018. These clients were predominantly of Pākehā (63%) and Māori (30%) ethnicities (with the proportion of Māori growing over time alongside the success of the Māori programme). About three quarters of clients were aged in their 20s-30s. Primary drugs of choice during the six-year period were methamphetamine (55%), alcohol (30%) and cannabis (10%), with a trend toward an increasing proportion of methamphetamine clients. Length of stay was 80 days on average, and 126 days for those who completed the full programme.

Higher Ground clients presented with histories of addiction which often had significant negative associations with their mental health (e.g., depression, anxiety, stress, and post-traumatic stress disorder), as well as their physical health, relationships, work, accommodation and criminal behaviour. By the time they exited the programme, clinically and statistically significant improvements were seen across multiple indicators. Of particular note:

- Mean days of any substance use in the preceding 28 days reduced from approximately half of the time (13.5 days out of the last 28) on first presentation to infrequent use (1.8 days out of the last 28) on discharge and these improvements were sustained within the range of 2-3 days per 28 days in the 12 months after discharge, for those followed up.
- Abstinence rates increased from first presentation to admission, further increased from admission to post-discharge follow up, and were sustained for 12 months post discharge with approximately three-quarters of those followed up remaining abstinent for a year after completing the programme.
- Mean post-traumatic stress disorder (PTSD) checklist scores reduced from 43 on admission to 34 on discharge. Clients who had a high PTSD score (44 or more) on entry experienced improvements such that 65% of these clients had PTSD scores below 44 on discharge.
- The majority of clients on first presentation had Depression, Anxiety and Stress (DASS) scores consistent with severe or extremely severe depression, anxiety and/or stress. Clients' emotional states on all three scores were within the normal to mild

range by discharge and remained in this range for those followed up over the subsequent 12 months.

- Responses to the Alcohol and Drug Outcome Measure (ADOM) questionnaire showed improvements across various indicators of daily functioning (including physical health, psychological health, conflict with friends or family, engagement in work, housing difficulties, and criminal behaviour).
- Mean Personality Inventory (PID-5-BF) scores reduced across the four individual trait domains of detachment, disinhibition, negative affect, and psychoticism, indicating improvements in these personality traits.
- Similarly positive trends were indicated in Maudsley Addiction Profile physical health risk symptoms, the Therapeutic Community Client Assessment Inventory, and the Higher Power Relationship Scale.

Reductions in scores were also seen in the Eating Attitudes Test and the Self-Harm Inventory. However, these reductions were not statistically significant.

These positive trends were seen for all major client subgroups, were stronger for clients who completed the programme than those who exited before completing, and are broadly consistent with previous analysis of Higher Ground outcome data (Raymont, 2012; Raymont, 2013; Raymont et al., 2013; King, 2014; King & Stevenson, 2016). The findings are also consistent with qualitative research into the experiences of residents at Higher Ground (Moss & King, 2016). The observed trends meet Bradford Hill Criteria for causal inference of strength, consistency, temporality and coherence.

Overall these results, when benchmarked against performance standards informed by literature, demonstrate that Higher Ground works effectively with its clients and supports them to achieve successful outcomes with those who complete the TC programme and engage in continuing care. Furthermore, scenario analysis of the economic value of Higher Ground's outcomes suggests that Higher Ground creates more value for society than it consumes and is therefore worth funding on efficiency grounds.

## 1 Background and methods

Higher Ground Drug Rehabilitation Trust engaged Julian King & Associates to review service data on clients' treatment outcomes from its residential programmes. This report presents findings from the review and updates a previous study (King & Stevenson, 2016), adding a further three years' data and additional research instruments.

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### Higher Ground residential programme

Higher Ground provides abstinence-based treatment, within a 52-bed Therapeutic Community (TC) for adult New Zealanders. Higher Ground's rehabilitation programmes are based on Narcotics Anonymous 12-step recovery principles and other evidence-based therapies. The programmes are based on the belief that spiritual dimensions of honesty, open mindedness, willingness, faith, hope, respect and generosity are the foundations of healing. Higher Ground emphasises that clients need to take individual responsibility for their recovery.<sup>1</sup>

The TC programme duration is up to 18 weeks. Prior to entering the TC, a pre-admission community team provides assessment, support and group work to develop readiness for the intensive residential support of the programme. After graduation from the TC, continuing care is provided consisting of group and individual therapies, and supportive accommodation while people re-adjust to life in the community (Raymont et al., 2013).

The primary goal of the TC is to foster personal growth. This is accomplished by changing an individual's lifestyle through a community of concerned people working together to help themselves and each other.

The TC represents a highly structured environment with defined boundaries, both behavioural and ethical. It employs sanctions imposed by the community as well as earned advancement of status and privileges as part of the recovery and growth process. The TC has a series of defined stages. Attainment of each stage recognises increased personal awareness and growth demonstrated through behaviour, attitudes and values.

Being part of something greater than oneself is an especially important factor in facilitating positive growth. People in a TC are members, as in any family setting (as distinct from patients, as in an institution). Members play a significant role in managing the therapeutic community and act as positive role models for others.

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<sup>1</sup> For more information see [www.higherground.org.nz](http://www.higherground.org.nz)



Members and staff act as facilitators, emphasising personal responsibility for one's own life and self-improvement. Staff support the members. Staff ensure that for personal privacy and dignity, each client is addressed by their preferred name. There is a sharing of meaningful labour so that there is a true investment in the community.

Peer pressure is often the catalyst that converts criticism and personal insight into positive change. High expectations and high commitment from both members and staff support this positive change. Insight into one's problems is gained through group and individual interaction. Learning through experience, failing and succeeding, and experiencing the consequences is considered an important influence toward achieving lasting change.

The TC emphasises the integration of an individual within the community. Progress is measured within the context of the community and against the community's expectations. It is this community, along with the individual, that accomplishes the process of positive change in the member. This transition is taken as an important measure of readiness to move toward integration into the larger society.

TC programmes operate within a set of cardinal rules that apply to all clients, staff and visitors. Any breaches of the following rules could result in discharge from the programmes: no drugs including alcohol; no gambling; no sex; no violence, threats of violence or harassment; no stealing, dishonesty or criminal activity; no leaving Higher Ground premises without permission of staff; and no withholding of knowledge for any of the above.

Within the TC setting, Higher Ground provides a range of evidence-based therapies. Staff members are trained therapists who use group, individual and family approaches including cognitive behaviour therapy (CBT), dialectical behaviour therapy (DBT), motivational interviewing (MI), 12-step facilitation, psycho-education, relapse prevention and family/whānau therapy. Programmes to address criminal and addictive thinking, such as moral reconnection therapy (MRT) and trauma therapy were introduced in the context of the AOD Treatment Court. There is also an extensive family education and therapy programme. Higher Ground is culturally responsive – for example, there is a Māori programme which uses Māori symbolism and rituals to explore issues related to addiction (Waigh, 2012; 2017).

The TC programme is funded through contracts with the Waitemata District Health Board, Waikato District Health Board, the Ministry of Health, Department of Corrections, and the AOD Treatment Court. Additionally, where a client is eligible for a benefit from Work & Income, a portion of the benefit is paid directly to Higher Ground as the client's contribution toward the cost of their time in the programme.

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## Research programme

In 2009 Higher Ground implemented a research and monitoring programme to assess clients as they made their way through the residential TC programme. The monitoring programme aims to provide evidence of clients' progress, assist with clinical management and identify areas where the programme might be improved (Raymont, 2013).

Higher Ground administers standardised research tools at regular intervals from pre-admission through to discharge ("in-treatment research") and up to 12 months post discharge ("post-treatment research"). Table 1 summarises the research tools covered by this study and the points in time they were administered in relation to each client's therapeutic journey, and further information on each tool is provided below the table.

Some changes have been made to the research programme over time, including the introduction of the Alcohol and Drug Outcome Measure (ADOM) in October 2011 (Raymont, 2012); the introduction of three new instruments in 2015: the Personality Inventory for DSM-5—Brief Form (PID-5-BF)—Adult; the Self-Harm Inventory (SHI); qualitative questions at 3-month follow up in 2015; and administering the Eating Attitudes Test at discharge, in addition to admission, since 2015. The current study is the first time data has been analysed from the new tools added in 2015.

Table 1: Summary of research tools covered by this study

Tool	In-treatment research					Post-treatment research			
	First presentation	Admission	42 days	90 days	126 days/ discharge	3 months	6 months	9 months	12 months
ADOM	*	*				*	*	*	*
Maudsley (short-form)	*	*	*	*	*	*	*	*	*
DASS 21	*	*	*	*	*	*	*	*	*
Client Assessment Inventory		*	*	*	*				
PTSD		*			*		*		
Spiritual Assessment		*			*	*	*	*	*
Canadian Problem Gambling Inventory		*							
Eating Attitudes Test		*			+				
Personality Inventory (PID-5-BF)	+				+				
Self-Harm Inventory		+							+
Qualitative research questions						+			

**Keys:** \* In use since prior to 2015 <sup>+</sup> In use since 2015

*Alcohol and Drug Outcome Measure (ADOM):* A brief outcome questionnaire developed for New Zealand alcohol and drug services, comprising 11 questions on substance use and 7 questions on lifestyle change and wellbeing. Although not validated for residential treatment, a system has been developed to administer this tool prior to, and following, a person's TC residency.

*Maudsley Addiction Profile (MAP) – short form:* A brief, multidimensional instrument designed for assessing treatment outcomes for people with AOD problems. Only the sections on physical health and personal/social functioning are administered at Higher Ground. Use of the full MAP instrument was discontinued with the introduction of ADOM in October 2011.

*Depression, Anxiety and Stress Scale (DASS-21):* A questionnaire with three self-report scales which are used not for diagnostic purposes, but to assess degrees of depression, anxiety and stress relative to normal subjects.

*Therapeutic Community Client Assessment Inventory (CAI):* An instrument developed from a comprehensive theory of TC treatment and recovery, measuring client self-report of progress along 14 domains of behaviour, attitude and cognitive change (Kressel & De Leon, 1997).

*Post-Traumatic Stress Disorder (PTSD) scale (PCL-5):* A 20-item self-report measure that assesses (but does not diagnose) the 20 DSM-V symptoms of PTSD.

*Spiritual Assessment:* Adapted from the Higher Power Relationship Scale (HPRS), the instrument used by Higher Ground comprises 17 self-rated items to assess the strength of clients' beliefs in a higher power, together with a question on recent attendance at 12 Step meetings and recent sponsor contact.

*Personality Inventory (PID-5-BF):* A brief form 25-item self-rated personality trait assessment scale for adults aged 18 and older (based on the full 220 item PID-5 form).

*Eating Attitudes Test:* A 26-item questionnaire designed to identify abnormal eating habits and concerns about weight.

*Self-harm Inventory (SHI):* A 22-item, yes/no, self report questionnaire that explores respondents' histories of self-harm.

*Qualitative research questions:* Five questions (see Tables 57-61, Appendix B) asked at 3 months follow up.

In addition to the research tools summarised above, Higher Ground administered, on admission only, a Problem Gambling Severity Index.

Additionally, a Staff Assessment Summary was completed at 42 days, 90 days and at discharge providing a staff evaluation of client progress.

Residents provide written informed consent to participate in the research programme. Research data are entered into a secure database by a research analyst who is independent from the programme delivery team.

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## **Study objectives and method**

This study updates previous analysis of client outcome data (Raymont, 2012; Raymont, 2013; Raymont et al., 2013; King, 2014; King & Stevenson, 2016). Its purpose is to investigate client recovery outcomes by analysing outcome data for all clients who entered Higher Ground over the last six years.

### *Research method*

The analysis covers a six-year period from 1 July 2012 to 30 June 2018. As this report updates previous analysis (King & Stevenson, 2016) it includes a comparison between two time periods as follows, to investigate whether there have been any changes in client characteristics or outcomes:

- Period 1 includes 540 clients who entered Higher Ground between 1 July 2012 and 2 June 2015 (the time period covered by the previous report).
- Period 2 includes 568 clients who entered between 3 June 2015 and 30 June 2018 (the new data).

Higher Ground provided data to the researchers in Microsoft Excel (with identifying details removed) in three separate files as follows:

- Research log (demographic information, entry and exit dates, drug of choice, exit type, highest qualification, identification of Justice and non-Justice clients, together with a sequential identifier for linking purposes)
- In-treatment research (assessment data from first presentation through to discharge)
- Post-treatment research (assessment data at 3, 6, 9 and 12-month follow up).

These spreadsheets were merged and cleaned in Microsoft Excel and were imported into SPSS for analysis.

Clients did not always have a measurement at every point in time. In order to allow for the inclusion of data for clients with missing data, a generalised linear mixed model was used (enabling the inclusion of all

clients with two or more measures) with the period between measurements for each client defined as the number of days since referral (modelled as a first-order autoregressive within-subject term). This enabled a greater number of clients to be included in the analysis, increasing statistical power, compared to a design that only includes those who completed all questionnaires at all points in time.

A Scheffe post-hoc test was used to test for between-subject differences for each category in any ordinal/nominal independent variables. Supplemental statistical analysis included paired samples t-tests (for significant changes in mean values between two time periods) and a repeated measures ANOVA where it was necessary to test for changes in mean values between groups over time.

### *Evaluation-specific methodology*

Evaluation is the systematic determination of the quality, value or importance of something (e.g., an initiative, programme, project, organisation, etc), underpinned by analysis of evidence. Evaluation seeks to determine *how good* something is, and whether it is *good enough* (Davidson, 2005). Accordingly, the practice of evaluation requires engagement with values. While scientific and social research aims to be “as values-free as possible” (Gluckman, cited in Hubbard, 2012), evaluation uses agreed definitions of quality, value or importance to make sense of empirical evidence for a particular context – a process of reasoning called *probative inference* (Scriven, 1995). In the process of conducting an evaluation, research methods are used to underpin the collection of robust evidence.

Sound evaluation requires an explicit basis for making evaluative judgments. An evaluation framework should therefore specify *a priori* (pre-determined) performance criteria and standards so that evaluative judgments are made transparently and on an agreed basis (Scriven, 1995; Davidson, 2005). There is an extensive body of evaluation literature underpinning the use of criteria and standards to reach explicitly evaluative conclusions from empirical evidence (e.g., Scriven, 1967, 1972; Eisner, 1976; Stake, 1975, 2000; House & Howe, 1999; cited in Alkin, 2004).

### *Higher Ground criteria and standards*

Performance criteria for this evaluation were developed with reference to the literature and in consultation with Higher Ground service leaders. Due to the nature of evidence on TCs, the performance criteria are evidence-informed but also required the expert judgment of Higher Ground staff to set standards appropriate to the specific Higher Ground TC context. These standards were set prior to data analysis commencing. The standards



were initially developed in 2014 and have been periodically reviewed to take account of newer literature.

A rapid review of the literature on TCs (Appendix A) identified a body of evidence indicating that TCs are effective, though there was less research seeking to determine why and how they work (De Leon, 2000; Pearce & Pickard, 2012). ATCA (2002) noted that evidence-based practice has tended to focus more on treatment content within TCs, than on the TC model itself.

Comparing results of different TC programmes is problematic because TCs vary, treatment approaches vary, and the chronic and relapsing nature of AOD dependence means individual recovery pathways vary (Bahr et al, 2012; De Leon, 2010; McKetin et al, 2010). There is a wide diversity of TCs and not one "best" model. In a TC context, emergent evidence may be informed by practice as much as practice is informed by evidence.

Four sets of performance criteria were identified in the literature and agreed to be appropriate for evaluating the performance of Higher Ground: completion rates, changes in substance use, psychological symptoms, and consequential factors. The following paragraphs summarise key international evidence on TC performance against these criteria.

*Completion rates:* International literature on TCs indicate that completion rates vary widely, between 9-75%, with midpoint completion rates around 30% (Guydish et al, 1998; Nemes et al, 1999; Nuttbrock et al, 1998; McCusker et al, 1997; McCusker et al, 1996; Coombs, 1981; Ravndal and Vaglum, 1998; Ogborne and Melotte, 1977 – cited in Vanderplasschen et al., 2014; Aslan, 2015; Šefránek & Mioviský, 2017, Gómez-Restrepo et al., 2017; Harley, Pit, Rees & Thomas 2018). These studies predominantly covered 12-month TC programmes but included a few 1, 3 and 6-month programmes as well as some that were longer than 12 months. Completion rates were higher in the short-term programmes.

*Changes in substance use behaviour:* Abstinence rates at 3-6 months post-discharge follow up have been found to vary widely between 16-85%, with midpoint abstinence rates of around 70% (Nuttbrock et al, 1998; Martin et al, 1999; Nielsen et al, 1996; Greenwood et al, 2001; McCusker et al, 1995; Hartmann et al, 1997– cited in Vanderplasschen et al., 2014; Van Stelle, Blumer and Moberg, 2004 – cited in Magor-Blatch, 2014). Abstinence rates at 12-month follow up have ranged from 25-73%, with midpoint abstinence rates around 50% (Sullivan et al, 2007; Greenwood et al, 2001; Bale et al, 1980; Coombs, 1981; McCusker et al, 1995 – cited in Vanderplasschen et al., 2014; Van Stelle, Blumer and Moberg, 2004 – cited in Magor-Blatch, 2014).

Positive outcomes following treatment are related to the length of time in treatment (Bell et al, 1996; De Leon, 2010; Inciardi et al, 2004; Welsh, 2007; Welsh & McGrain, 2008), and to successfully completing the goals of all TC programme stages (Coombs, 1981; Toumbourou, Hamilton & Fallon, 1998; cited in De Leon, 2000).

*Psychological symptoms:* A number of studies have found that TCs are effective in reducing psychological symptoms including depression, anxiety and stress, among others (Prendergast et al, 2004; Guydish et al, 1999; French et al, 1999; Nuttbrock et al, 1998; cited in Vanderplasschen et al, 2014). However, the range of assessment tools used in these studies did not offer directly comparable or transferrable benchmarks for Higher Ground.

One study that *did* use the DASS-21 showed similar positive results, with clinically significant shifts and mean DASS scores in the normal to *mild* range following completed treatment. Non-completers (those who decided to leave or were asked to leave before completing the programme) had a similar improved trajectory, but slightly less prominent than completers (Harley et al, 2018). Studies of other interventions that included DASS scores generally showed mean scores in the normal to moderate range following treatment (Blatch, 2013; Crawford and Henry, 2003; Lovibond and Lovibond, 1995; Nicholas et al, 2008; all cited in Blatch et al, 2013).

A small study by Perryman, Dingle and Clark (2016), found that PTSD symptomatology (PTSS), irrespective of PTSD-specific treatment, significantly decreased in individuals during the course of treatment in a TC, and continued to decline post-treatment. Clinically meaningful change and reliable change applied to 45% and 13% respectively of participants whose change was measured during the course of treatment, and 47% and 11% respectively for those whose change was measured after the conclusion of treatment (with follow up of up to seven months).

*Consequential factors:* Patterson et al (2015) noted that a wide range of 'consequential factors' is commonly associated with substance use (e.g., physical and mental health, criminality, employment status, social conflict, quality of life, and morbidity), and effective substance use programmes should also address these factors. However, there is no consensus on which outcomes should be measured or how they should be measured. A wide range of psychometric tools is in use for tracking many of these outcomes, and this is a factor limiting comparability of results across studies. Šeřfránek & Miovský (2017) however, in their study of treatment outcomes found a reduction in Maudsley physical health mean scores of about 2-3 points between admission and discharge

Bearing in mind the nature of the existing evidence base, and the need to tailor performance criteria to the Higher Ground TC context, the following performance criteria (Table 2) were developed in consultation with Higher

Ground service leaders. They have been used as a guide to evaluative judgments in this report. These criteria were also used in previous outcome studies for Higher Ground (King, 2014; King & Stevenson, 2016) and were reviewed as part of the current study.

Table 2: Performance criteria for Higher Ground outcomes

Higher Ground recovery outcomes will be judged as...	If the following criteria are met...
Highly effective	<p>55% of clients complete the programme (i.e., are either discharged with staff approval or transfer to another programme)</p> <p>40% of clients with high PTSD scores on admission show clinically significant shifts at discharge</p> <p>40% of clients with severe or extremely severe DASS scores on admission show clinically significant shifts at discharge</p> <p>75% of those who can be followed up are not using any substance at 3 months, and 50% are not using at 12 months.</p>
Effective	<p>45% of clients complete the programme</p> <p>30% of clients with high PTSD scores on admission show clinically significant shifts at discharge</p> <p>30% of clients with severe or extremely severe DASS scores on admission show clinically significant shifts at discharge</p> <p>50% of those who can be followed up are not using any substance at 3 months, and 25% are not using at 12 months.</p>
Developing effectiveness	<p>35% of clients complete the programme</p> <p>20% of clients with high PTSD scores on admission show clinically significant shifts at discharge</p> <p>20% of clients with severe or extremely severe DASS scores on admission show clinically significant shifts at discharge.</p>
Acceptable	<p>25% of clients complete the programme</p> <p>10% of clients with high PTSD scores on admission show clinically significant shifts at discharge</p> <p>10% of clients with severe or extremely severe DASS scores on admission show clinically significant shifts at discharge.</p>
Ineffective	None of the above criteria are met.

## 2 Results

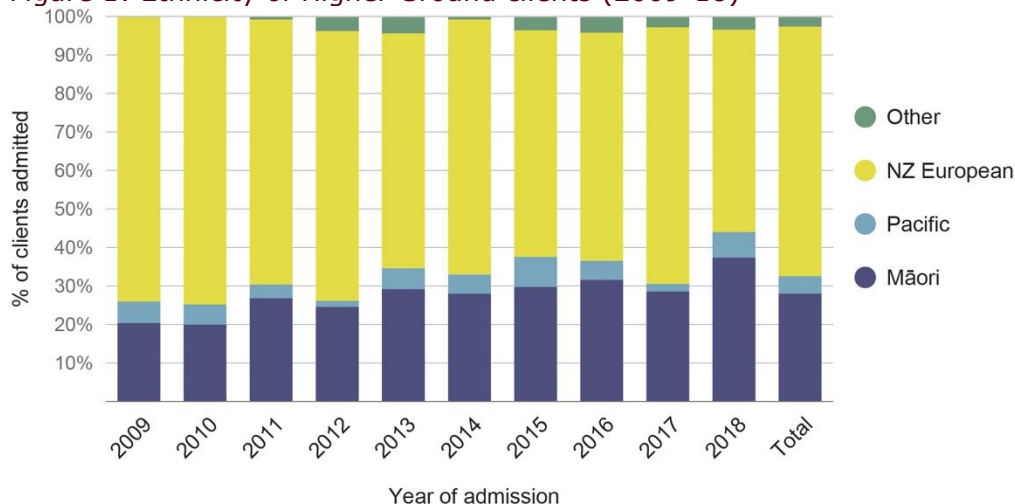
1,108 clients were admitted to Higher Ground between 1 July 2012 and 30 June 2018. Collectively, clients who have used Higher Ground's TC programme in the past six years show clinically relevant and statistically significant improvements across multiple indicators. This section presents key findings. Additional detail is provided in data tables in Appendix B.

### Client characteristics

Residents were 59% male, 40% female, 0.7% transgender. This is broadly consistent with previous research at Higher Ground (Raymont, 2013; King & Stevenson, 2016). The vast majority of residents in the past six years gave their ethnicity as either European (63%) or Māori (30%).

Analysis of ethnicity trends, including historical data back to the commencement of the research programme in 2009, shows that the primary ethnicities of Higher Ground residents were consistently Pākehā and Māori, while the proportion of Māori has increased from 25% in 2012 to 38% in 2018 (Figure 1). This trend accompanies the success of Higher Ground's Māori Programme, as documented in qualitative research by Waigh (2012; 2017) and Moss and King (2016). The Māori Programme extends the concept of recovery and treatment to include factors such as relational integration and strengthening Māori identity, supporting participants to manage recovery in ways that relate to their experience as Māori (Waigh, 2017).

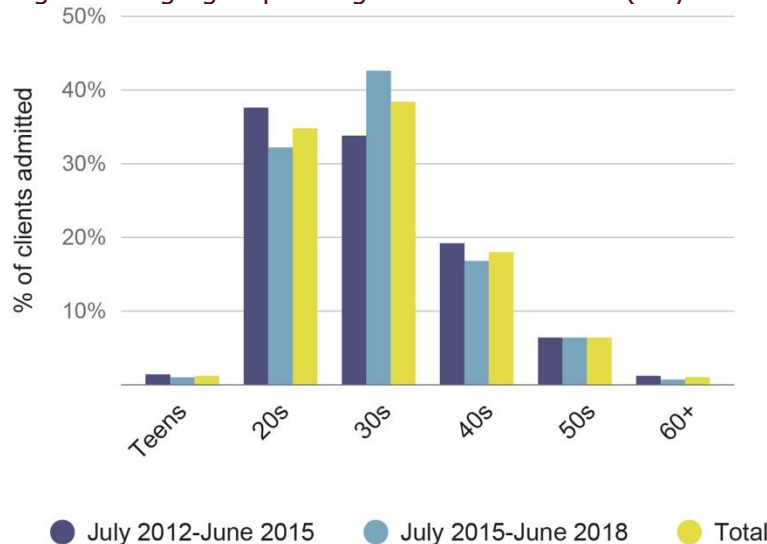
Figure 1: Ethnicity of Higher Ground clients (2009-18)<sup>2</sup>



<sup>2</sup> The graph shows calendar years for the full Higher Ground time series, whereas Table 9 in Appendix B shows the six-year period 1 July 2012 to 30 June 2018, which is the time period covered by the outcome data in this report.

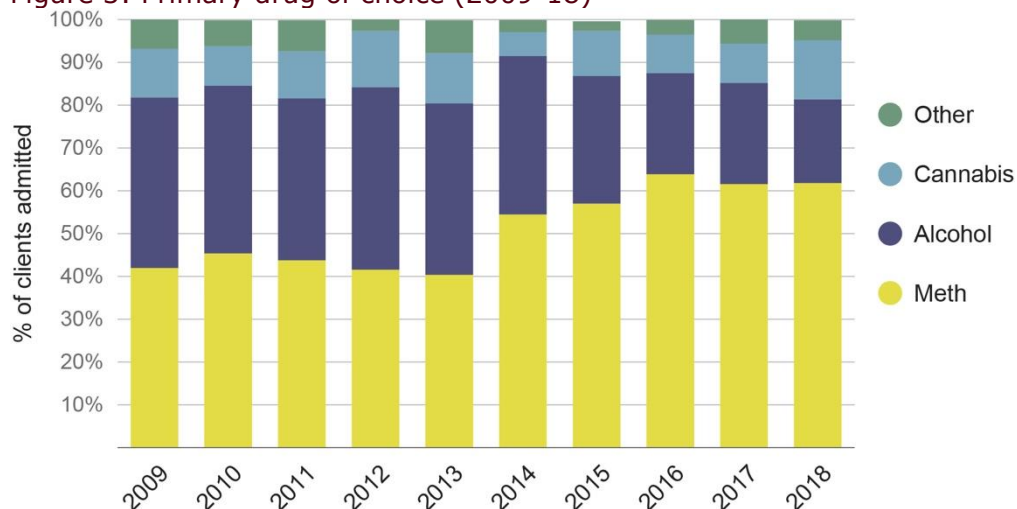
Nearly three quarters of residents were aged in their 20s (35%) and 30s (38%) (Figure 2). The mean age of residents was 34 years. This is consistent with previous research (Raymont, 2013; King & Stevenson 2016) and has remained similar over time (as shown in Table 11, Appendix B).

Figure 2: Age group of Higher Ground clients (July 2012 – June 2018)



Comparison of drugs of choice since 2009 shows that methamphetamine and alcohol have consistently been the primary substances used by people who entered Higher Ground (Figure 3). However, the proportion of residents whose primary drug of choice was methamphetamine has increased over the past six years from 42% in 2012 to 62% in 2018, while alcohol has correspondingly reduced during the same time period.

Figure 3: Primary drug of choice (2009-18)



The proportion of Higher Ground residents who were referred by the justice system (courts, probation or prison) has increased over time, with

some fluctuation (e.g., 35% in 2009 versus 46% in 2018) (Figure 4). Overall, since 2009, 42% of Higher Ground residents have been referred from the justice system (Table 14, Appendix B).

**Figure 4: Clients referred from the justice system (2009-18)**

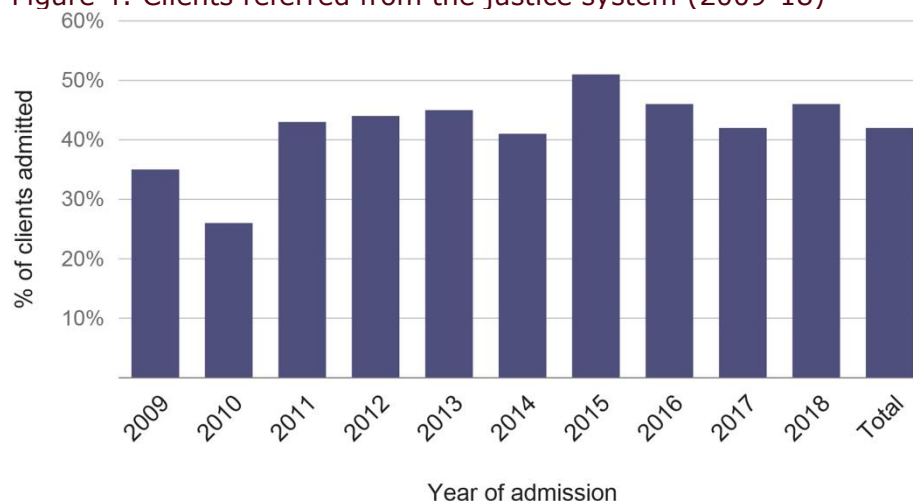
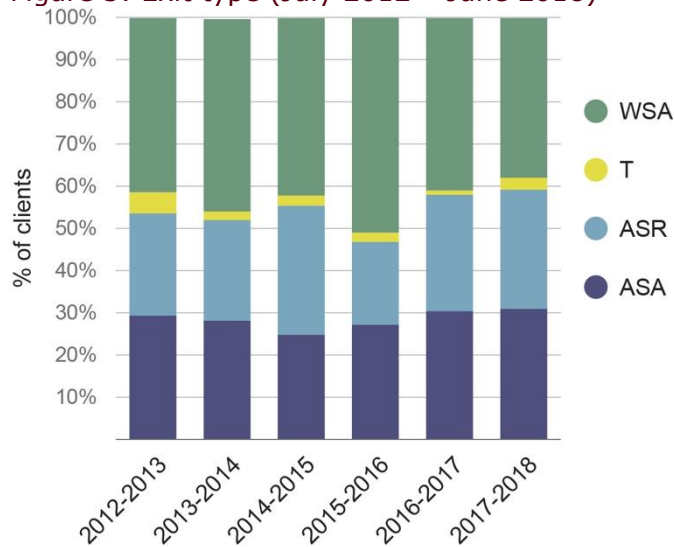


Figure 5 shows a breakdown of residents by exit type. Overall, 42% of clients exited with staff approval (WSA) while 29% exited against staff advice (ASA), 23% at staff request (ASR) and 3% transferred to another AOD service (T). Both WSA and transfers may be regarded as successful completions (i.e., 45% of residents completed the programme). Neither ASR nor ASA discharges should be regarded as 'failures' as early discharge is regarded as a therapeutically important feature of the programme design and clients are encouraged to return when they are ready to resume the programme.

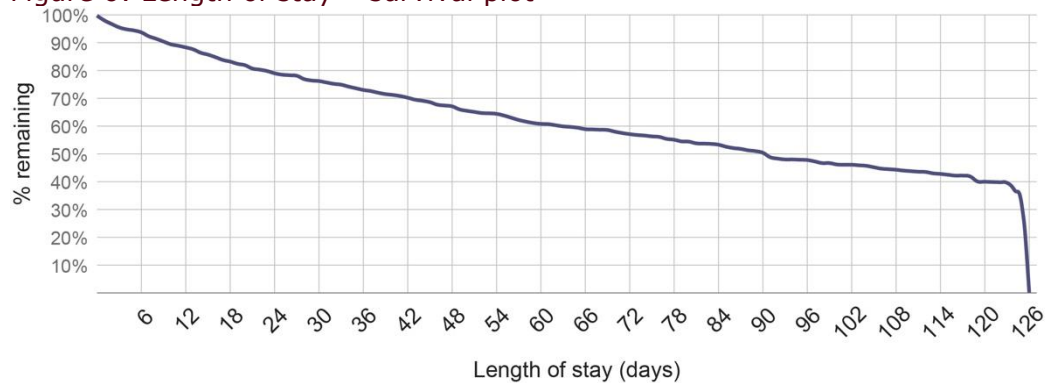


Figure 5: Exit type (July 2012 – June 2018)<sup>3</sup>

Overall, average length of stay (ALOS) was 80 days with a standard deviation of 48 days. Those who completed WSA had an ALOS of 126 days. Of those discharged early, ALOS was 58 days for ASR and 33 days for ASA.

Figure 6 shows a 'survival plot' of the percentage of residents remaining by LOS. This graph shows that 70% of those who commenced the TC programme remained engaged at 42 days, 51% at 90 days, and 32% at 126 days.<sup>4</sup> This distribution is consistent with that seen in previous research (Raymont, 2013; King & Stevenson, 2016).

Figure 6: Length of stay – survival plot



<sup>3</sup> Note that 2017-2018 figures exclude clients who have not yet graduated from the programme.

<sup>4</sup> Clients who entered the programme in 2018 were only included in the LOS analysis if they had started early enough to complete the programme. This approach was used to avoid skewing the data.

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## ADOM and abstinence post-discharge

The alcohol and drug outcome measure (ADOM) is a brief outcome measure developed for use in New Zealand AOD services. The questionnaire is designed for clients and clinicians to complete together and includes 11 questions on substance use and 7 questions on lifestyle change and wellbeing (Te Pou, 2009). Higher Ground administered the ADOM questionnaire on first presentation, admission, and follow up.

ADOM data overall indicates that Higher Ground residents presented with histories of addiction which often had significant negative associations with their physical and psychological health, their relationships, work, accommodation and criminal behaviour. By the time people exited the programme, data indicates substantial improvements across all ADOM indicators, as observed in previous research (Raymont, 2013; King & Stevenson, 2016).

Figure 7 shows mean days of substance use in the last 28 days for the top three primary drugs of choice. By the time people entered the TC programme, the impacts of preadmission work were already evident with a decrease in substance use between first presentation and admission. Follow up at 3, 6, 9 and 12 months<sup>5</sup> showed that among those clients who participated in the follow up research, rates of substance use remained low compared to rates at first presentation and admission.

When interpreting these results, it is important to note that about two thirds (68% and 72% at 3 and 12 months respectively) of clients who participated in follow up research were people who completed the TC programme and were discharged with staff approval (WSA). These clients had greater success rates in general as well as being more likely to engage in continuing care. These results indicate that when people complete the TC programme and engage in continuing care, the programme is effective.

Overall, clients reported substance use in 13.5/28 days on first presentation, 4.5/28 on admission, 1.8/28 on 3 month follow up, 2.6 at 6 months, 2.7 at 9 months, and 2.9 at 12 months (Table 17, Appendix B). The changes over time are statistically significant ( $p < 0.001$ ).<sup>6</sup>

Mean days of any substance use by drug of choice (e.g., days of any substance use for those who primarily used methamphetamine, cannabis or alcohol) are shown in Figure 7. The pattern for all three substances is similar, marked by a significant reduction in days of use between first presentation and admission, with days of use remaining low at 3, 6, 9 and

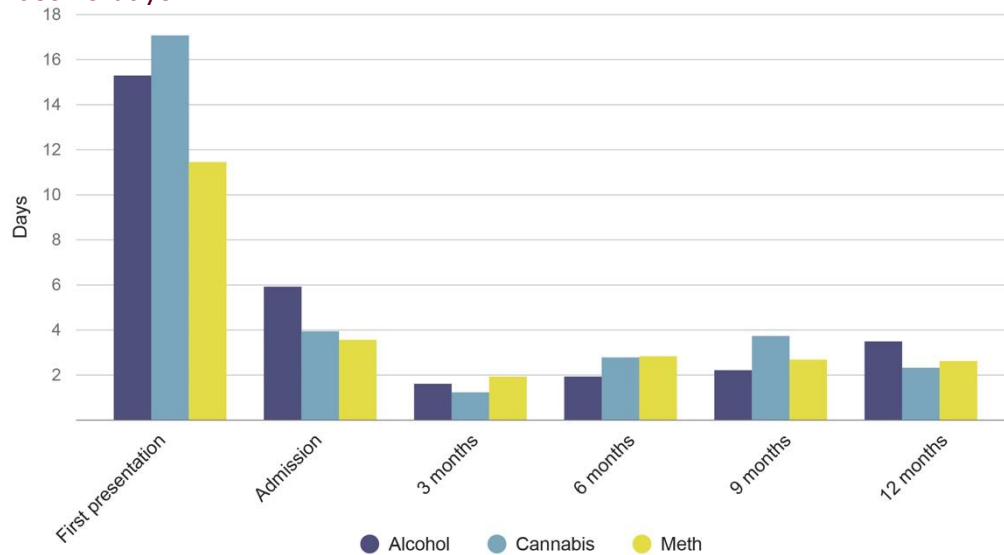
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<sup>5</sup> Higher Ground also administers the ADOM tool at 6 weeks post-discharge. However, the current research focuses on 3-month and subsequent quarterly follow up data.

<sup>6</sup> Statistical analysis using a generalised linear model provides 99.9% confidence that mean days of substance use reduced across the six time points overall.

12 months after discharge. The changes over time are statistically significant ( $p < 0.001$ ).

Figure 7: ADOM – Mean days of any substance use by drug of choice, in last 28 days



Comparing client subgroups by exit type, statistically significant differences were found between WSA and other exit types (Figure 8) – providing further evidence that the programme is most effective for those who complete it.

Figure 8: ADOM – Mean days of any substance use in last 28 days by exit type

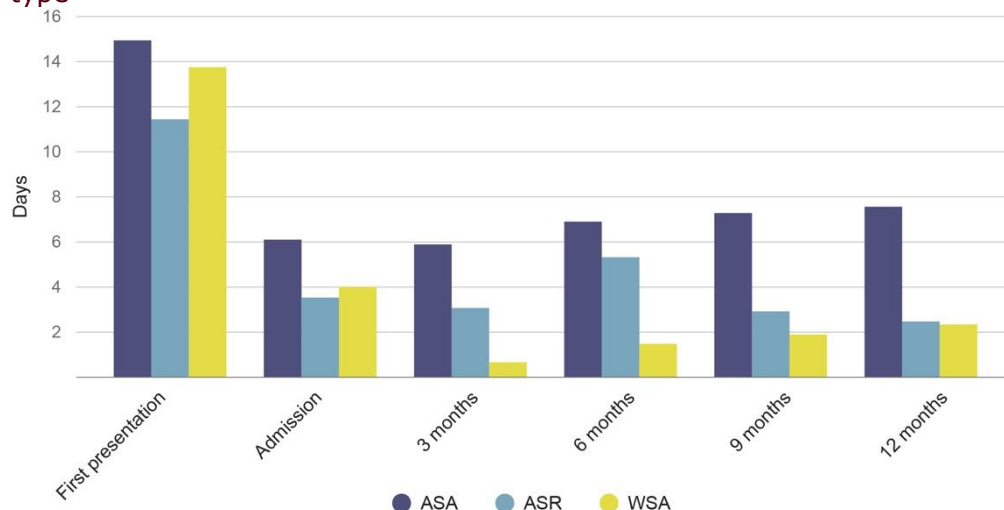


Figure 9 compares rates of *abstinence* from any substances (i.e., the percentage of respondents who indicated zero days of substance use in the past 28 days for all substances in the ADOM questionnaire). Rates of abstinence improved markedly from first presentation to admission, and from admission to post-discharge follow up. The increase in abstinence is

largely sustained for 12 months post discharge. The change in abstinence rates is statistically significant. However, there were no significant differences between the first and second three-year periods in the analysis – i.e., the pattern of increased abstinence is similar to that seen in earlier research (King & Stevenson, 2016).<sup>7</sup>

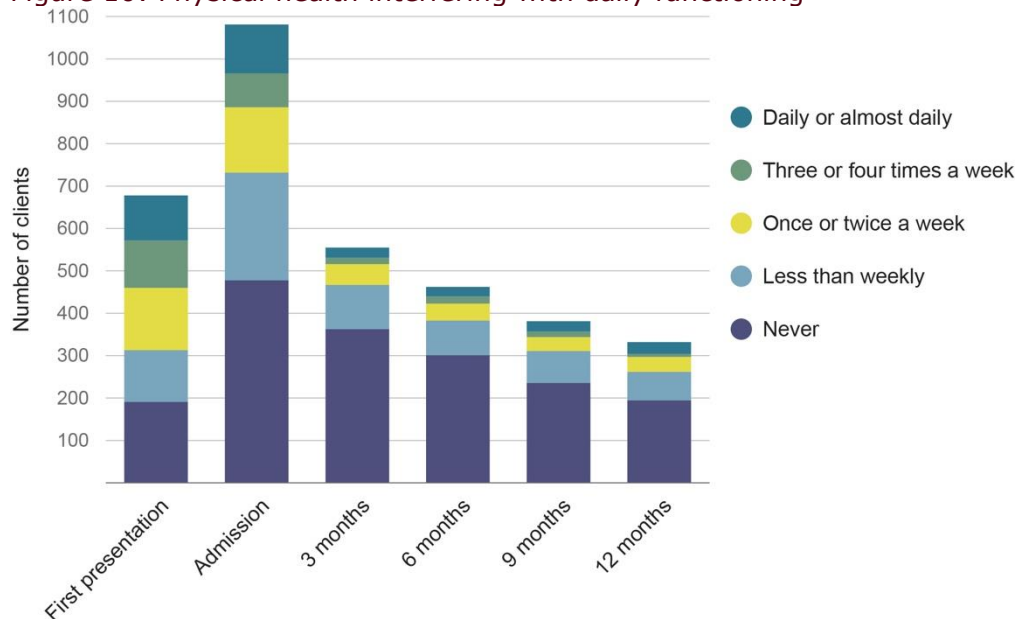
Figure 9: ADOM – Abstinence from any substances in last 28 days



ADOM Question 12 asks, **“In the past four weeks, how often has your physical health interfered with your day-to-day functioning?”**. As Figure 10 shows, the proportion of people with physical health problems reduced from first presentation to admission, further reduced by 3-month follow up, and the reduction was sustained for 12 months post exit. Physical health problems remained an issue once a week or more for around one fifth of those followed up.

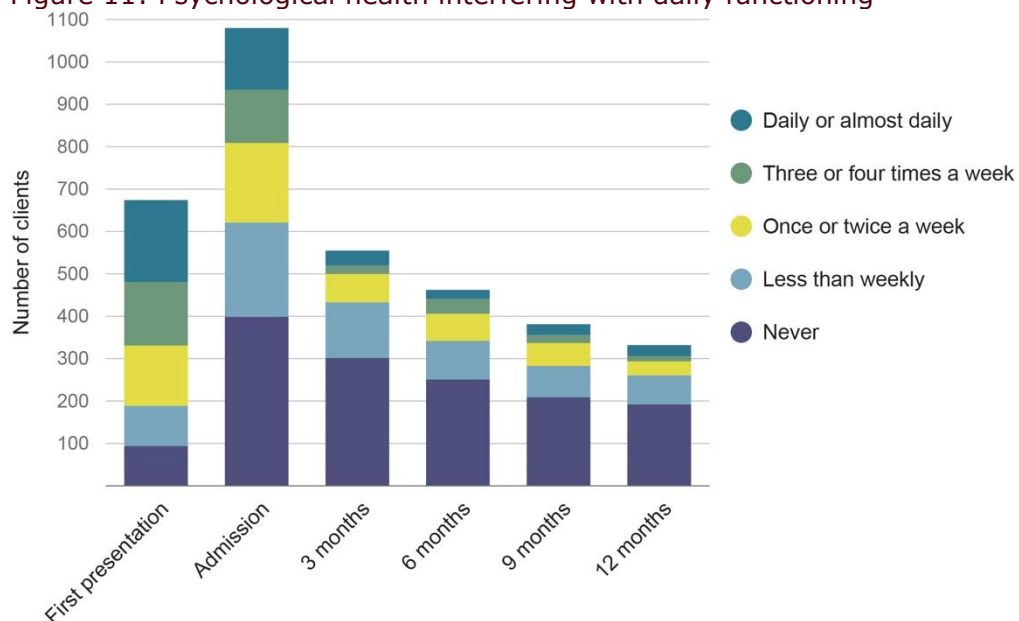
<sup>7</sup> Generalised linear mixed model (binomial logit): AR1 Rho,  $Z=24.980$ ,  $p<.001$ ;  $F=3.323(1,1188)$ ,  $p=.069$

Figure 10: Physical health interfering with daily functioning



ADOM Question 13 asks, **"In the past four weeks, how often has your psychological or mental health interfered with your day-to-day functioning?"**. Figure 11 suggests a general improvement in psychological/ mental health which was sustained in the 12 months post exit. Psychological or mental health problems remained an issue once a week or more for about one fifth of those followed up.

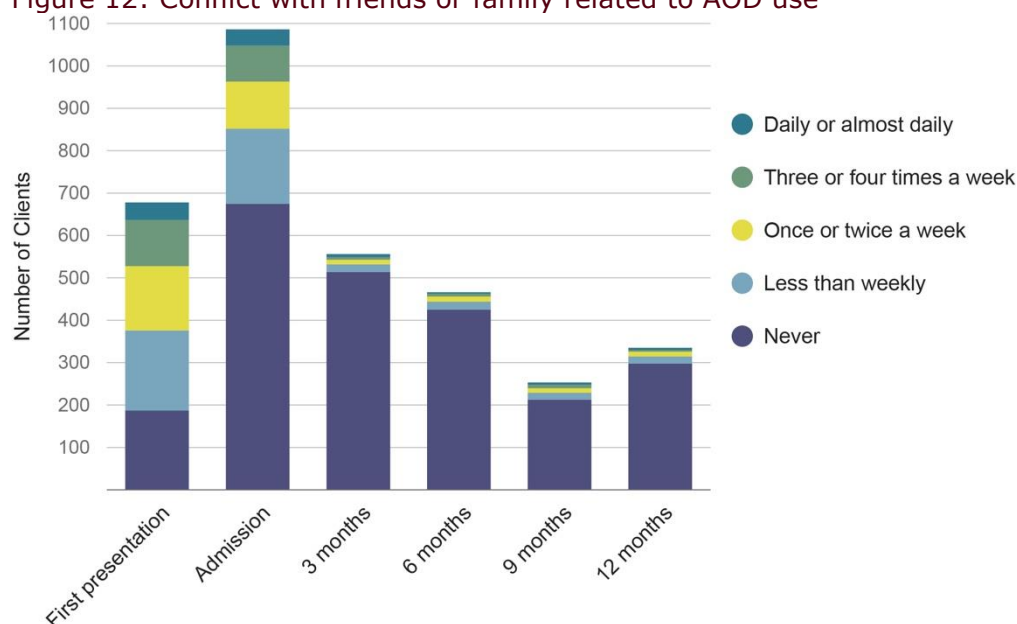
Figure 11: Psychological health interfering with daily functioning



ADOM Question 14 asks, **"In the past four weeks, how often has your alcohol or drug use led to conflict with friends or family members?"**. This question was only asked where people indicated that

they had relapsed, i.e., used alcohol or drugs in the past four weeks. Figure 12 indicates that conflict over AOD use was a significant issue for many prior to entering Higher Ground, but where subsequent use had occurred, this had not led to conflict for the vast majority of clients followed up after exiting Higher Ground.

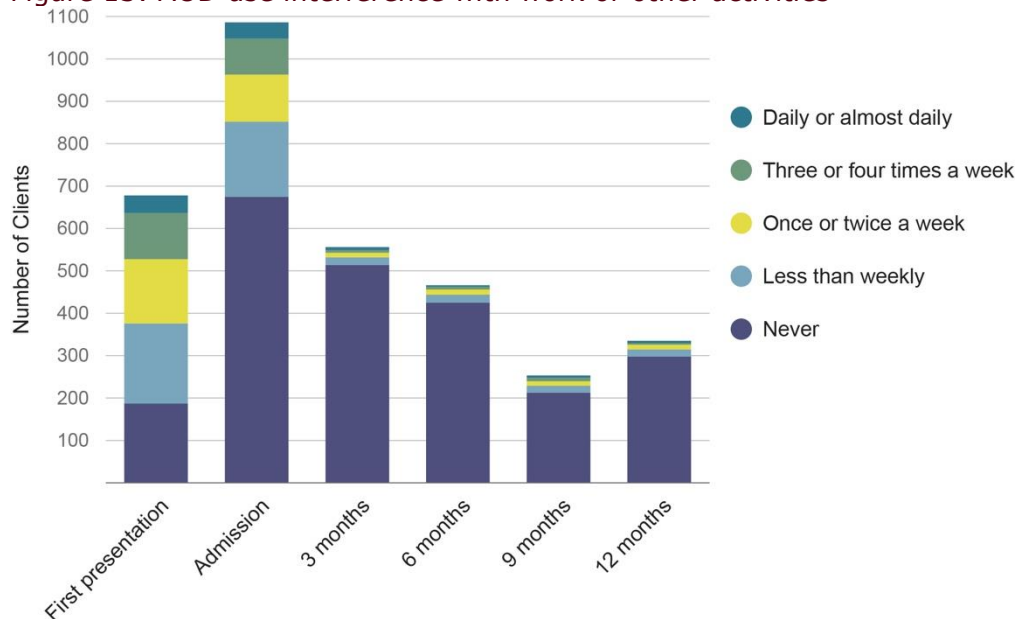
**Figure 12: Conflict with friends or family related to AOD use**



ADOM Question 15 asks, **“In the past four weeks, how often has your alcohol or drug use interfered with your work or other activities? (include social, recreational, parenting/caregiving, study or other personal activities)”**. This question was only asked where people indicated that they had relapsed, i.e., used alcohol or drugs in the past four weeks. Figure 13 indicates that AOD use interfered with work or other activities for the majority of clients prior to entering Higher Ground, but had rarely done so in the 12 months since exiting for those followed up.

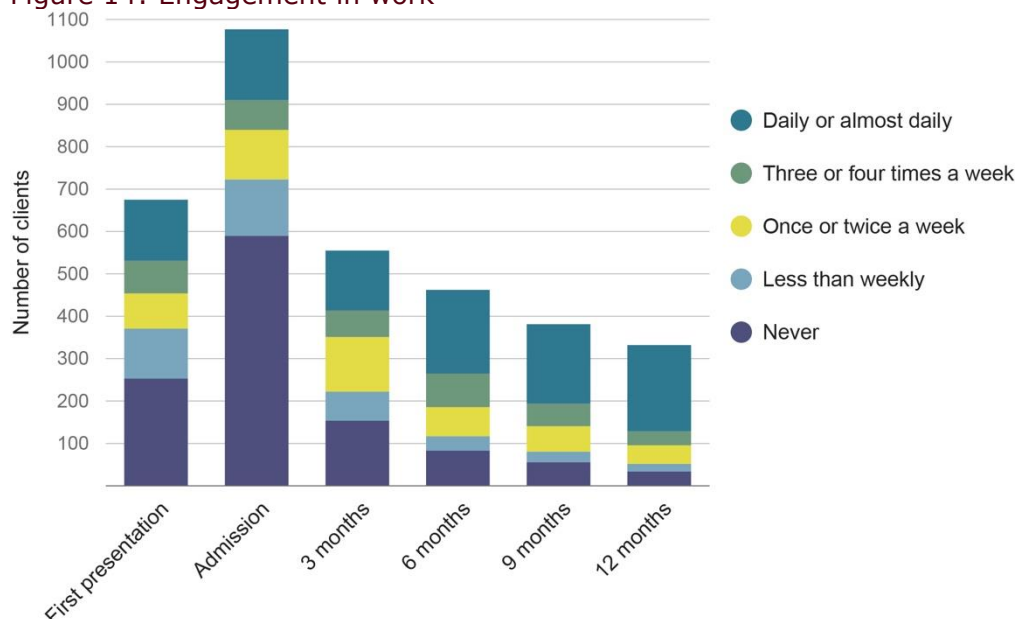


Figure 13: AOD use interference with work or other activities



ADOM Question 16 asks, **“In the past four weeks, how often have you engaged in paid employment, voluntary work, study, parenting or other caregiving activities?”**. On a proportionate basis, rates of engagement in these activities were higher at each successive follow up period (Figure 14). However, in absolute terms the number of people who were engaged in regular work or other activities remained more even throughout.

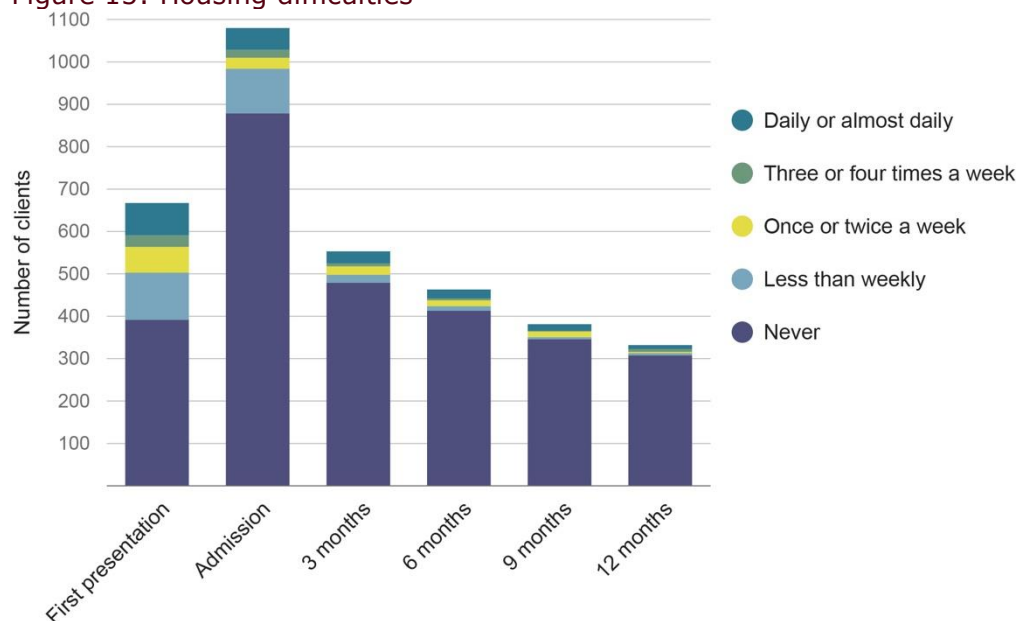
Figure 14: Engagement in work



ADOM Question 17 asks, **“In the past four weeks, how often have you had difficulties with housing or finding somewhere stable to**

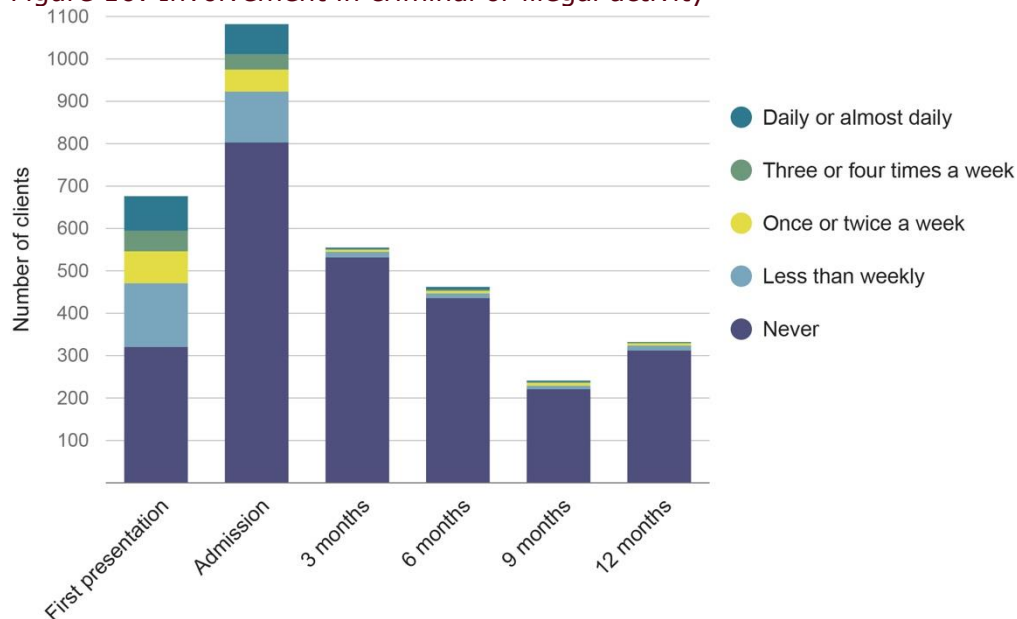
**live?”**. Figure 15 shows that accommodation was an issue once a week or more for around one quarter of residents prior to entering Higher Ground, but housing arrangements tended to improve after exiting for the vast majority of those followed up.

**Figure 15: Housing difficulties**



ADOM Question 18 asks, **“In the past four weeks, apart from using illicit substances, how often have you been involved in any criminal or illegal activity (e.g., driving a motor vehicle under the influence of alcohol or drugs or supplying an illicit substance to another person)?”**. Figure 16 shows about one third of Higher Ground residents were involved in some criminal or illegal activity once a week or more prior to entering, but that the rate of offending was nearly zero among those followed up post exit.

Figure 16: Involvement in criminal or illegal activity



The positive changes observed in substance use, lifestyle and wellbeing are consistent with feedback from Higher Ground clients who have participated in qualitative research in the past (Moss & King, 2016). In particular, interviewees talked about adopting healthier lifestyles and having better sleeping patterns and self-care, as a result of Higher Ground. Further, they talked about gaining a better understanding of mental wellbeing and causes of unwellness, having less conflict in life, being able to take responsibility for and/or manage own mental wellbeing, and knowing when and how to reach out for help. These types of changes are likely contributing factors to physical and psychological or mental health interfering less with clients' day-to-day functioning, and their sustaining of positive outcomes post-discharge.

Although Moss and King (2016) did not look at substance use or abstinence directly through their qualitative research, feedback from clients indicated that certain aspects of the programme such as the therapy groups and on-on-one counselling, as well as the tools and strategies learnt through these had been instrumental in their recovery. For many, anger and addiction was intrinsically linked – hence, learning to manage frustration and anger was key to their sobriety.

*Just being able to find a way of letting it [anger] out instead of bottling it up... that's what would lead to binges. It was good to get strategies and tools to be able to manage my moods. (Participant #25, p.17)*

## PTSD scores

The PCL-5 is a 20-item self-report measure that assesses the 20 DSM-5 symptoms of post-traumatic stress disorder (PTSD). It can be scored in different ways including a total symptom severity score, cluster severity scores or diagnostically using cut-points, though the latter have not yet been validated (Weathers et al, n.d.).

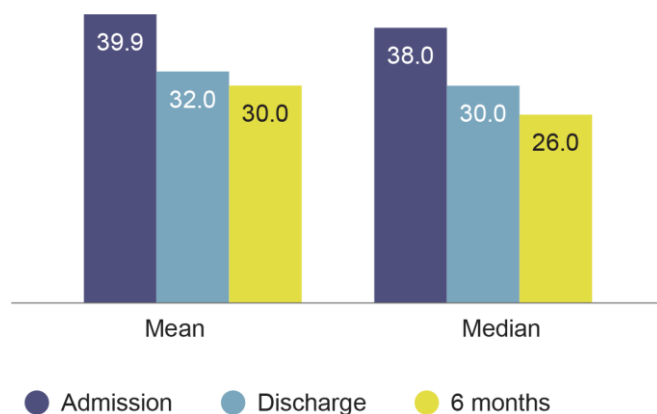
A total symptom severity score, ranging from 0-80, can be obtained by summing the scores for each of the 20 items. A score of 44 or more is indicative of PTSD (cited in Raymont, 2014).

Higher Ground has administered the PCL-5 instrument on admission and on discharge since 2009. From 2015, use of the instrument at 6-month follow up was introduced.

### *Average PTSD scores at admission, discharge and six month follow up*

Mean and median PTSD scores are shown in Figure 17. The results show a reduction in the mean and median PTSD scores from admission to discharge and a further reduction by 6-month follow up. The mean differences are statistically significant ( $p < 0.001$ ).<sup>8</sup>

Figure 17: Mean and median PTSD scores over time



### *Change in PTSD score*

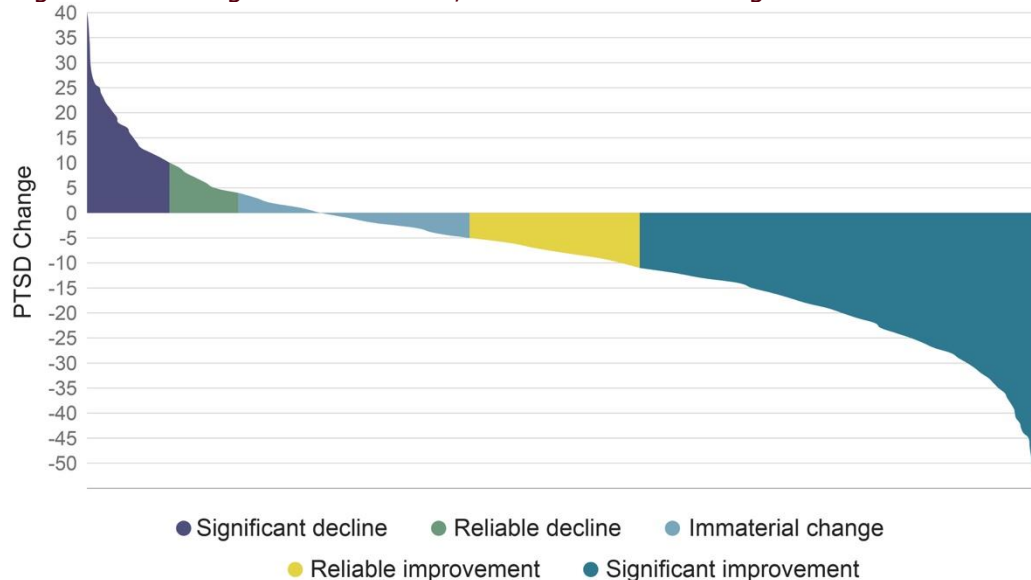
Figure 18 shows individual changes in clients' PTSD scores between admission and discharge, ranked from highest to lowest. Evidence for the PCL for DSM-IV suggested that a 5-10 point change represented a reliable change (i.e., change not due to chance; indicating that a client has responded to treatment) and a 10-20 point change represents clinically significant change (Weathers et al, n.d.).

<sup>8</sup> Paired samples t-test, mean difference=8.33 (SD=14.46),  $t(n=760)=15.902$ ,  $p < 0.001$ .

Overall, 42% of clients showed a clinically significant improvement and a further 18% showed a reliable improvement in their PTSD scores below the threshold of clinical significance. The remaining 40% were predominantly minor changes as well as a few scores that worsened.

It is important to note that this graph may under-represent the full improvement for Higher Ground residents as it only shows the shift in PTSD score from admission to discharge. Pre-admission intervention means PTSD scores may have already undergone some reduction before the admission assessments are done. Moreover, PTSD symptoms may continue to decrease with continuing care. Recent changes to the research programme show further improvements in PTSD symptoms between discharge and 6-month follow up.

Figure 18: Change in PTSD score, admission to discharge



### Subgroup analysis

Sub-group analysis was conducted for clients who had a PTSD score of 44 or more on entry, suggested as an appropriate cut point to indicate a 'high PTSD score' in civilian substance abuse residential programmes (NCPTSD, 2010). Overall, 47% of clients had high PTSD scores on entry, reducing to 22% at discharge, and 14% at six months follow up (Table 35, Appendix B).

Of those who had a PTSD score of 44 or more on entry, two-thirds (65%) had scores under 44 on discharge (Figure 19). At six months follow up, the number of residents with scores below the cut point had increased to 75%, indicating substantial improvements for residents who presented with PTSD on admission. This suggests that the programme and continuing care have a positive influence on PTSD symptoms.

Figure 19: Change in PTSD score for those with high scores on admission

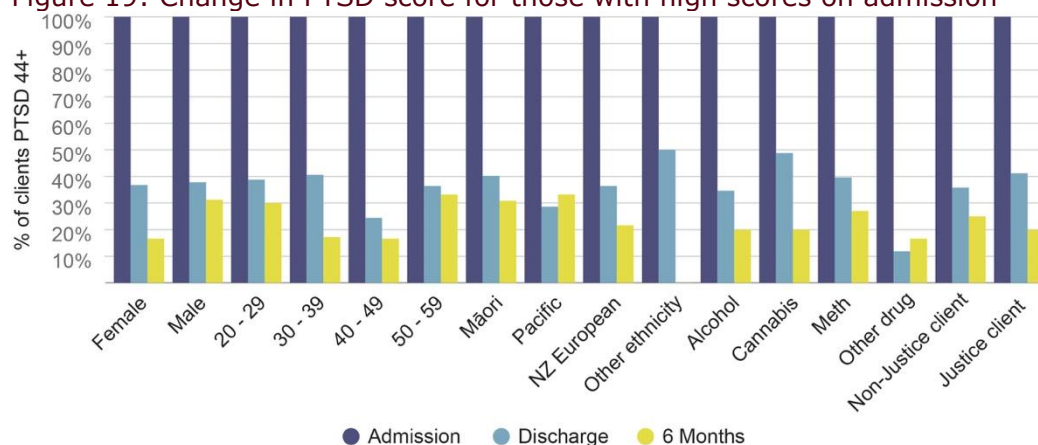
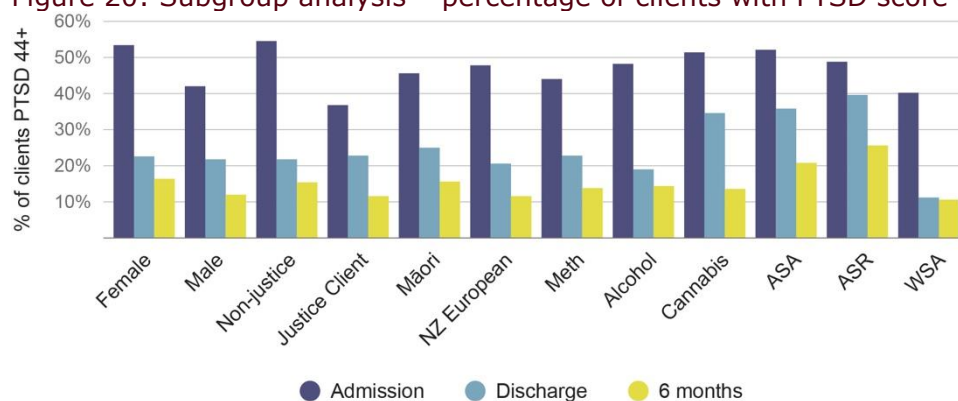


Figure 20 shows the proportion of clients with a PTSD score of 44 or more in subgroups with significant numbers of clients. The main finding is that improvements in PTSD scores are seen across all major subgroups. Some differences between subgroups are also apparent. In particular, those who exited WSA experienced significantly greater reductions than those who exited ASA.<sup>9</sup> No other exit types were significantly different. In addition, females had significantly greater reductions than males,<sup>10</sup> and non-Justice referred clients experienced significantly greater reductions than Justice referred clients.<sup>11</sup> Further detail is available in Table 35, Appendix B.

Figure 20: Subgroup analysis – percentage of clients with PTSD score 44+



## DASS comparison scores

The Depression, Anxiety and Stress Scale (DASS-21) is a 21-item questionnaire, which includes three self-report scales to measure the negative emotional states of depression, anxiety and stress. Scores for each emotional state are calculated by summing the relevant item scores.

<sup>9</sup> Repeated measures ANOVA,  $F(4,1206)=23.985$ ,  $p<0.001$ . Scheffe post-hoc test showed WSA decreased significantly more than ASA ( $p<0.001$ ).

<sup>10</sup> Repeated measures ANOVA,  $F(1,840)=13.158$ ,  $p<0.001$ .

<sup>11</sup> Repeated measures ANOVA,  $F(1,908)=27.474$ ,  $p<0.001$ .



Scores are interpreted using the cut-points set out in Table 3 (ACPD MH, n.d).

Table 3: Cut-points for DASS scale

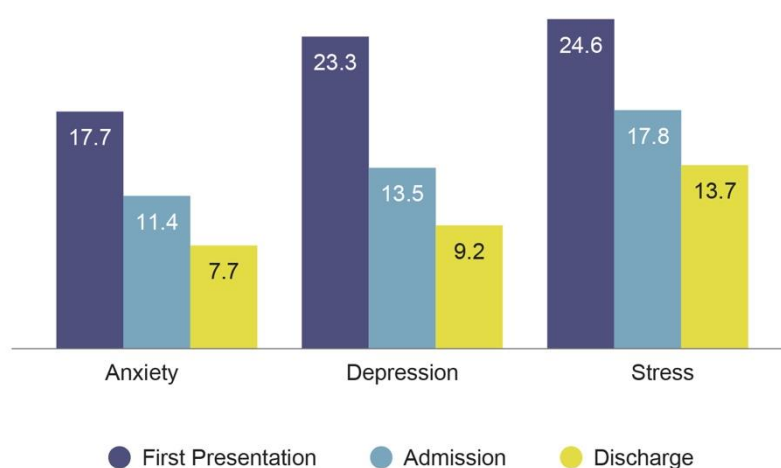
	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely severe	28+	20+	34+

Source: Lovibond & Lovibond, 1995, cited in ACPD MH, n.d.

### Mean DASS scores

Figure 21 compares mean DASS scores on first presentation, admission and discharge. *On average*, clients on first presentation had DASS scores consistent with moderate symptoms of stress, and severe symptoms of depression and anxiety. With pre-admission work these had already begun to reduce by the time of the admission assessment. On all three scores, clients' assessed emotional states had reduced to the normal to mild range by discharge. Changes in mean DASS score were significant at the 0.001 level for depression, anxiety and stress (paired samples t-tests).

Figure 21: Mean DASS comparison scores



Findings from previous qualitative research with Higher Ground clients are consistent with the reductions in psychological symptoms observed in the data. Many clients interviewed considered changes in mental health symptoms (e.g., no longer living in shame and guilt, gaining a sense of self worth, being free of anxiety and depression) to be the *most significant* change that had resulted from their participation in the TC programme (Moss & King, 2016).

*...getting the connectivity and sociability, I went in with anxiety disorder and had no intimate human connection, [the TC] helped break down these barriers. (Participant #12, p.29)*

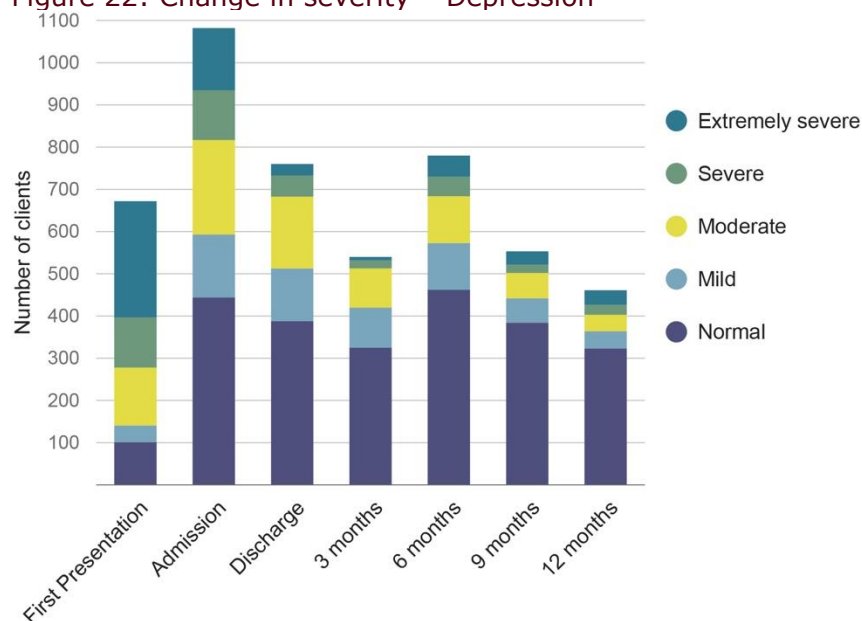
*Probably the most significant blessing [...] realising that all mental health issues were self-inflicted through drug abuse... that was incredibly empowering. (Participant #17, p.35)*

### Changes in level of severity over time

The following three graphs show improvements in DASS scores for depression (Figure 22), anxiety (Figure 23) and stress (Figure 24).

The graphs show that the majority of clients had DASS scores consistent with severe or extremely severe depression, anxiety and stress on first presentation. With preadmission work these symptoms had reduced to the normal-moderate range for many by the time they were admitted into Higher Ground. At discharge, the majority of those who were assessed were in the normal to mild range. For those able to be followed up post exit, symptoms remained in the normal to mild range.<sup>12</sup>

Figure 22: Change in severity – Depression



<sup>12</sup> Around two thirds of clients who participate in follow up research are people who completed the TC programme and were discharged with staff approval (WSA). These clients had greater success rates in general as well as being more likely to engage in continuing care. The follow up data suggests that when people complete the TC programme and engage in continuing care, the programme is effective.

Figure 23: Change in severity – Anxiety

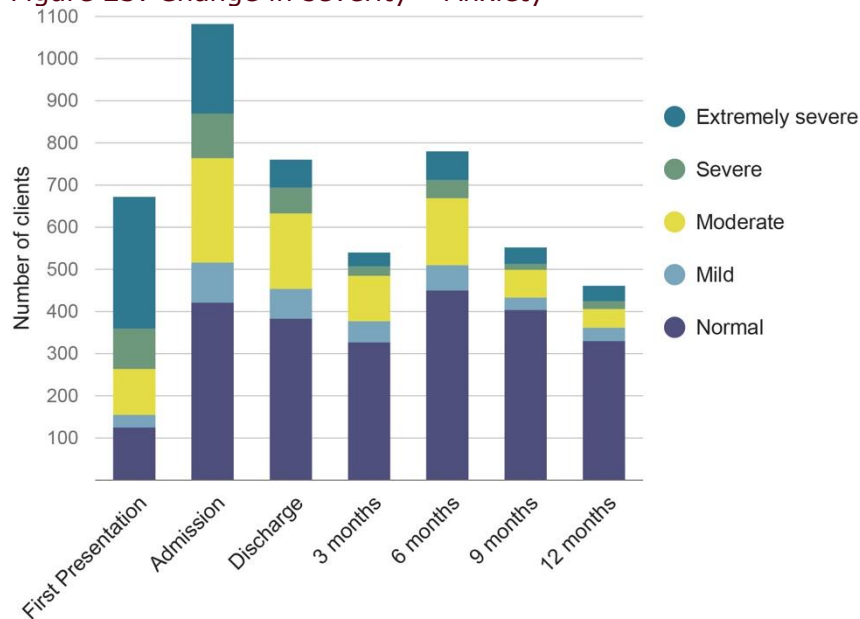
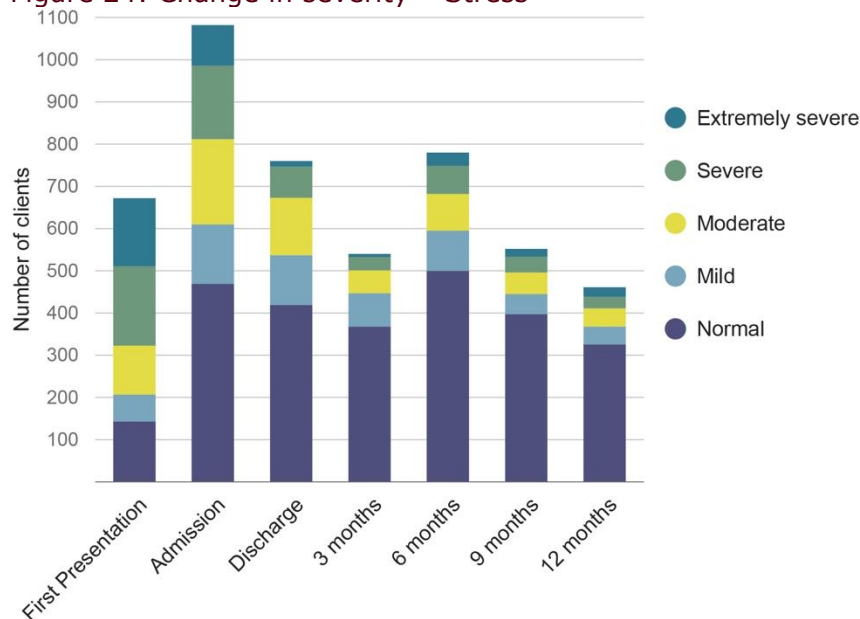


Figure 24: Change in severity – Stress



### Subgroup analysis

For clients who had severe or extremely severe depression, anxiety or stress on entry, over 60% had normal, mild to moderate symptoms at discharge:

- 265 clients had severe or extremely severe depression at entry, and 96 (36%) of those remained within this range on discharge
- 318 clients had severe or extremely severe anxiety at entry, and 111 (35%) remained of those within this range on discharge

- 270 clients had severe or extremely severe stress at entry, and 98 (36%) of those remained within this range on discharge.

The following three graphs show changes in mean scores for depression (Figure 25), anxiety (Figure 26) and stress (Figure 27) respectively, for key client subgroups. The main finding is that improvements in DASS scores are seen over time, from first presentation to 12 months follow up, across all major subgroups. Some differences between subgroups are also apparent as detailed in Tables 37-39 (Appendix B).

Figure 25: Subgroup analysis – Depression

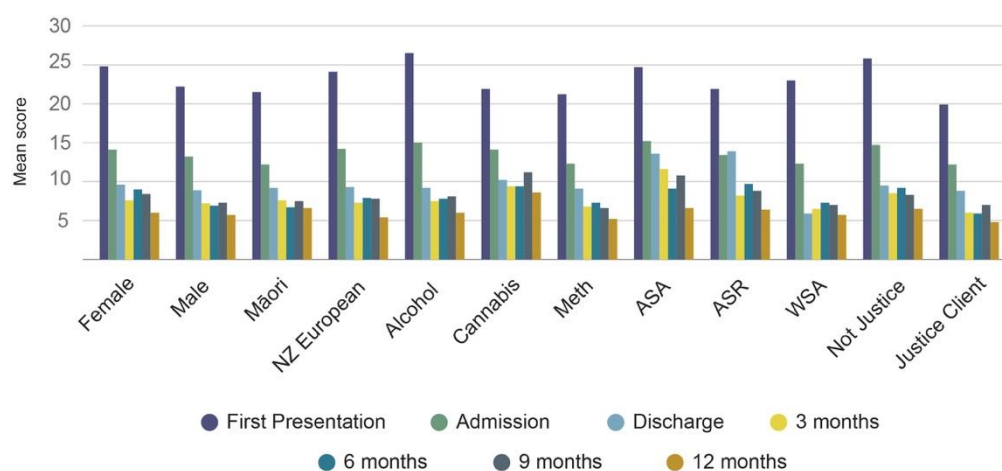


Figure 26: Subgroup analysis – Anxiety

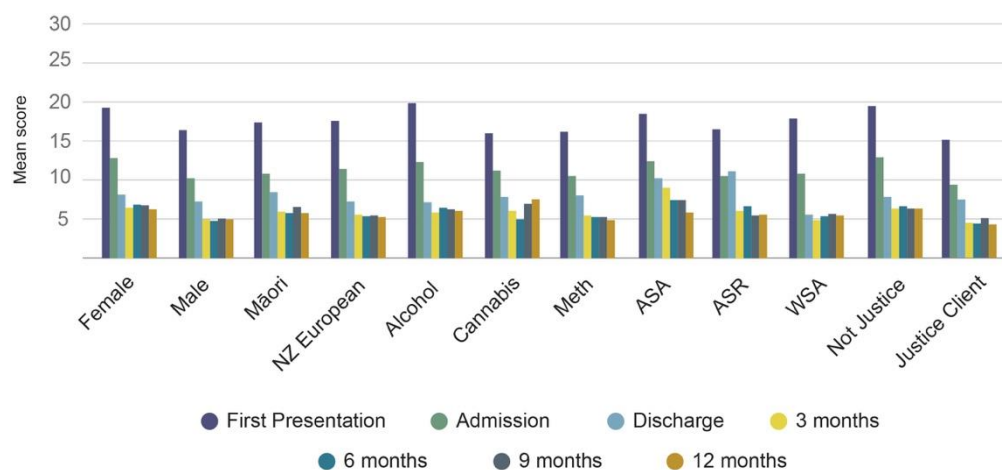
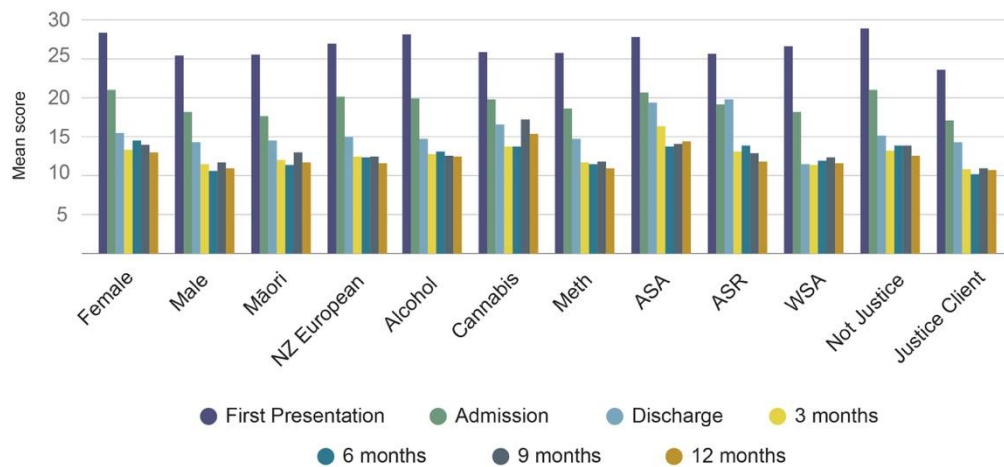


Figure 27: Subgroup analysis – Stress



### Maudsley physical health symptoms

The Maudsley Addiction Profile (MAP) – short form, is a brief, multidimensional instrument designed for assessing treatment outcomes for people with AOD problems.

The 'health risk symptoms' section of the MAP tool consists of 12 items as shown in Table 4. In line with analysis conducted previously (Raymont, 2013; King & Stevenson, 2016) scores were totalled for each individual (for a maximum score of 48) and a mean score was calculated for preadmission, admission and quarterly follow up periods.

Figure 28 shows the reduction in physical health symptoms between preadmission and admission, admission and discharge, and the subsequent levelling off around a mean score of 7. This pattern is broadly coherent with the improvement seen in the ADOM physical health question discussed earlier.

The reduction in physical health symptoms is consistent with findings from qualitative research with Higher Ground clients (Moss & King, 2016), which indicate that the TC programme has a positive impact on how clients view and care for their physical health.

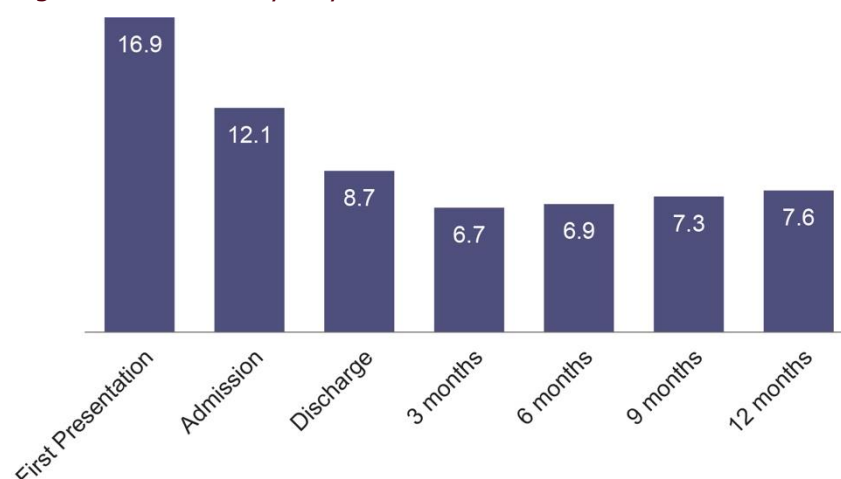
*...having that extended period of time in there where you eat three meals a day and exercise a couple of times a week and you learn to value your body and take care of it after all that damage, that was cemented for me in there in a way it hasn't been before so I can sort of fall back on a lot of the things and patterns I learnt in there. (Participant #2, p.30)*

Table 4: Maudsley Addiction Profile – Health Risk Symptoms section

How often have you experienced the following physical health symptoms in the last 4 weeks?

	Never (0)	Rarely (1)	Sometimes (2)	Often (3)	Always (4)
a. Poor appetite	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Tiredness/fatigue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Nausea (feeling sick)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Stomach pains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Difficulty breathing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Chest pains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. joint/bone pains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Muscle pains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Numbness/tingling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Tremors/shakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Skin problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
l. Teeth problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 28: Maudsley Physical Health – mean score



## Client Assessment Inventory

The Therapeutic Community Client Assessment Inventory (CAI) is a self-completed instrument developed from a comprehensive theory of TC treatment and recovery, measuring client self-report of progress along 14 domains of behaviour, attitude and cognitive change (Kressel & De Leon, 1997) as shown in Table 5. It is administered at admission, 42 days, 90 days and discharge.

Table 5: Client Assessment Inventory

	Strongly disagree	Disagree	Between disagree/ agree	Agree	Strongly Agree
1. My behavior and attitude show that I am a mature person	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
2. I regularly meet my obligations and responsibilities	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
3. I strive to live with positive values and principles (honesty)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
4. I still have the attitudes and behaviors associated with the drug/criminal lifestyle	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
5. I often present an image rather than my true self	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
6. My job function helps me learn about myself and is a valuable part of treatment	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
7. I get along with and interact well (mix well socially with people	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
8. Overall, I have good awareness, judgment, decision-making and problem solving skills	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
9. I'm able to identify my feelings and express them in an appropriate way	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
10. I feel good about who I am (my self-esteem is high)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
11. I understand and accept the program rules, philosophy and structure	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
12. I enthusiastically participate in program activities	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
13. I feel an investment, attachment and ownership in the program	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5
14. My behavior and attitude set a good example for other members of the community	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5

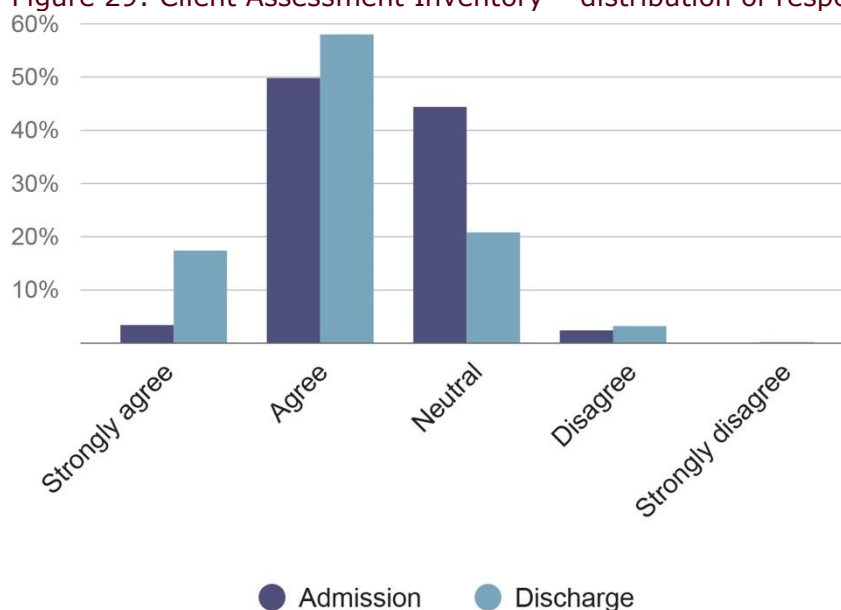
Most of the questions are posed in such a way that a high score indicates a positive response (e.g., for Q1, a score of 5 indicates that the respondent strongly agrees with the statement, "My behaviour and attitude show that I am a mature person". However, for two of the questions (Q4 and Q5), a high score indicates a negative response. Scores were therefore reversed for questions 4 and 5 (so that 1=5, 2=4, and so on). Scores were then averaged for each individual and the distribution of responses was examined (Figure 29).

This analysis shows an overall improvement in the CAI from admission to discharge, with a statistically significant increase in mean score from 3.54 to 3.89 ( $t(748)=-9.949$ ,  $p<0.001$ ). In terms of the distribution of scores, the main shift has occurred from 'neutral' to 'agree' and 'strongly agree'.

The greatest improvements were seen for questions 2, 9 and 10, as detailed in Table 45, Appendix B. The responses to questions 11 and 14, however, showed a decrease in score. Further, the responses to question 4 showed an increase in score in contrast to the expected decrease for this question. As the CIA is a self-completed questionnaire, these anomalous responses could indicate acquiescence biases (propensity to agree with questionnaire items independent of their content) or that some clients misunderstood the questions.



Figure 29: Client Assessment Inventory – distribution of responses



The overall improvement in CAI is consistent with previous qualitative research (Moss & King, 2016) where key benefits of the programme, identified by the interviewees, centred on personal growth (e.g., in terms improved behaviour, being more honest and true to self, increased self-esteem), ability to open up and trust people again, making meaningful connections, and being given the opportunity to give back and support others.

Having responsibilities and job functions within the community, and expectations increase over time (e.g., in terms of responsibilities, autonomy, self-examination), were aspects of the TC programme considered to have been particularly beneficial to recovery. Being acknowledged for personal growth propelled clients forward and motivated them to uphold a high(er) standard. Meanwhile, learning to be a role model, and having people look up to them nurtured their self-esteem. These aspects of the TC also taught clients to take responsibility and be accountable (Ibid).

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### Spiritual Assessment

Adapted from the Higher Power Relationship Scale (HPRS), the instrument used by Higher Ground comprises 17 self-rated items to assess the strength of clients' beliefs in a higher power, as shown in Table 6.

Table 6: Spiritual assessment questions

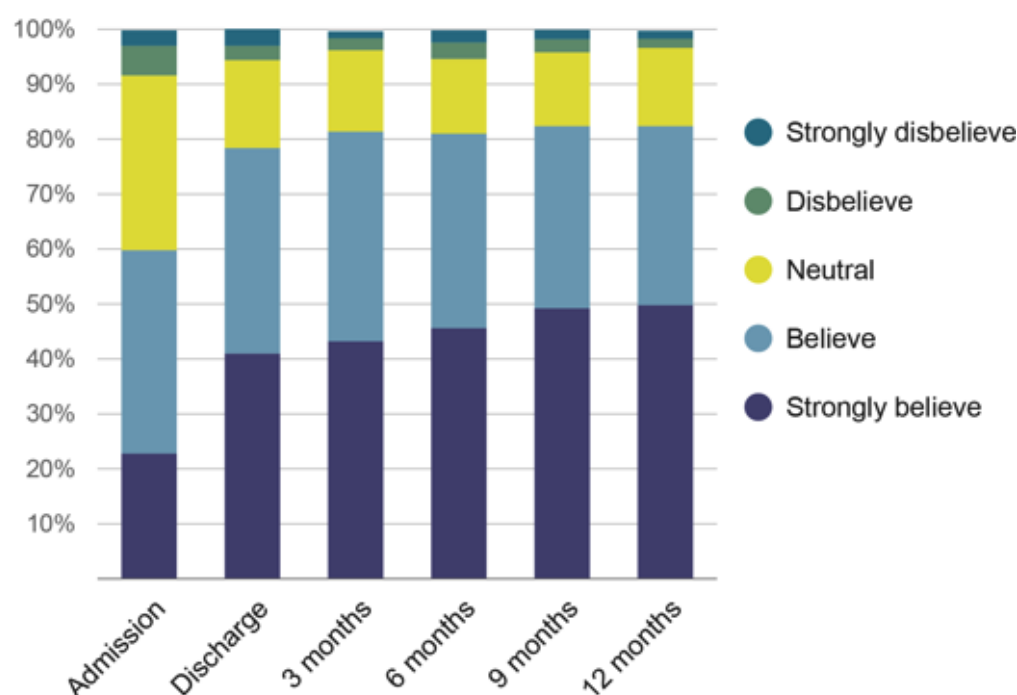
Read each statement carefully and tick the box that best describes your beliefs

My Higher Power...	Strongly disbelieve 1	Disbelieve 2	Neutral 3	Believe 4	Strongly believe 5
Loves me no matter what	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Forgives me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is always with me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is present in all my situations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is powerful in my life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Performs miracles in my life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is my friend	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knows everything	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is merciful to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Protects me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Cares about me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Works through me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Listens to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Guides me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Helps me to feel safe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gives me hope	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gives me strength	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Responses were summed for each individual and the mean and distribution of responses was examined. A statistically significant shift in mean score was seen from 3.77 on admission to 4.11 on discharge ( $t(751)=-8.873$ ,  $p<0.001$ ).

Figure 30 shows the distribution of responses. A shift in modal responses occurred from neutral/believe toward believe/strongly believe, which was sustained over time.

Figure 30: Spiritual Assessment – distribution of responses



Findings from qualitative research with Higher Ground clients (Moss & King, 2016) were consistent with these shifts in responses. Many interviewees felt more open to the concept of spirituality and/or were more accepting of, believed in, or felt closer to a higher power than prior to their participation in the TC programme. Findings also indicated that the opportunity to explore spirituality from a cultural perspective, in addition to (or for some, instead of) a religious one, helped connect clients with a higher power.<sup>13</sup> Cultural practices such as doing a mihi (introductory speech), haka (cultural dance) and waita (singing) were considered spiritually uplifting.

*Doing the haka... I feel like I can feel my ancestors while doing it – it strengthened my spirituality. (Participant #13, p.31)*

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## New research tools

Higher Ground introduced new research tools in 2015; the PID-5-BF assessment, the EAT-26,<sup>14</sup> the SHI, and qualitative questions at three months follow up. Results from these tools have been examined for Period 2 only of this review (i.e., the most recent three-year period), and are included in the following sections.

<sup>13</sup> Spirituality is explored from a holistic perspective at Higher Ground.

<sup>14</sup> EAT-26 was administered at admission only prior to 2015. Since 2015, the tool has been administered at time of discharge also.

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### Personality inventory – change in scores

The Personality Inventory for DSM-5 – Brief Form (PID-5-BF) – Adult (Krueger, Derringer, Markon, Watson & Skodol 2013) is a 25-item self-rated personality trait assessment scale for adults aged 18 and older. It is an “emergent measure” for research and clinical evaluation, developed to be administered at initial patient interview and to monitor treatment progress.<sup>15</sup>

The PID-5-BF assesses five personality trait domains including negative affect, detachment, antagonism, disinhibition and psychoticism, with each trait domain consisting of five items. Each item on the PID-5-BF asks the individual to rate how well the item describes him or her generally.

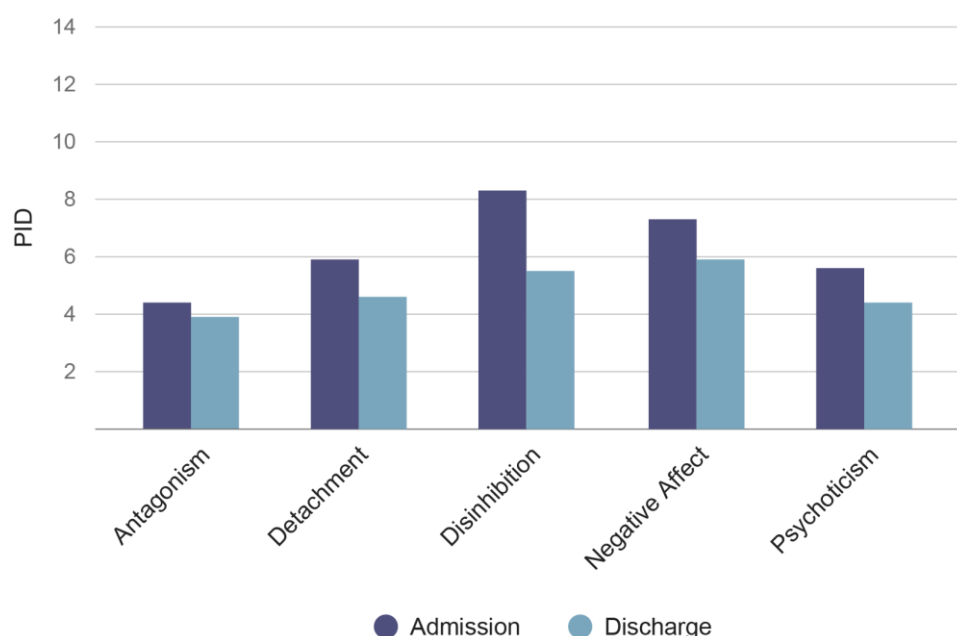
Each item on the PID-5-BF is rated on a 4-point scale (i.e., 0=very false or often false; 1=sometimes or somewhat false; 2=sometimes or somewhat true; 3=very true or often true). The overall measure has a range of scores from 0 to 75 and each trait domain ranges in score from 0 to 15. The average total scores are calculated by dividing the overall score by the total number of items in the measure or domain (i.e., 25 overall and 5 per domain). Higher scores indicate greater dysfunction. For example, if all the items within the “negative affect” domain are rated as being “sometimes or somewhat true” then the average domain score would be  $10/5 = 2$ , indicating moderate negative affect.

Responses recorded in Higher Ground data were summed for each individual and the mean scores examined. Statistically significant shifts in mean score between admission and discharge were seen overall (31.6 to 25.5), and for four of the broader trait domains: detachment (5.9 to 4.6); disinhibition (8.3 to 5.5); negative affect (7.3 to 5.9); and psychoticism (5.6 to 4.4). Changes in mean scores across all trait domains are illustrated in Figure 31. Additional detail is included in Table 53, Appendix B.

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<sup>15</sup> Instrument available at:  
[https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjeI92g98HhAhWn-GEKHY7gCRAQFjAAegQIAxAC&url=https%3A%2F%2Fwww.psychiatry.org%2FFile%2520Library%2FPsychiatrists%2FPractice%2FDSM%2FAPA\\_DSM5\\_The-Personality-Inventory-For-DSM-5-Brief-Form-Adult.pdf&usq=AOvVaw0Vtqd5JHlhUCz9praj4tAe](https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=2ahUKEwjeI92g98HhAhWn-GEKHY7gCRAQFjAAegQIAxAC&url=https%3A%2F%2Fwww.psychiatry.org%2FFile%2520Library%2FPsychiatrists%2FPractice%2FDSM%2FAPA_DSM5_The-Personality-Inventory-For-DSM-5-Brief-Form-Adult.pdf&usq=AOvVaw0Vtqd5JHlhUCz9praj4tAe)

Figure 31: Personality inventory - mean scores



### Eating Attitudes Test

The EAT-26 (Garner et al., 1982) is a 26-item questionnaire designed to identify abnormal eating habits and concerns about weight derived from a 40-item original inventory (Garner and Garfinkel, 1979). To complete the EAT-26, participants rate their agreement with statements about weight and food (e.g., 'I am terrified of being overweight', 'I feel that food controls my life', 'I enjoy trying rich new foods').

Participants rate the intensity of attitudes from six possible options (Never, Rarely, Sometimes, Often, Very Often, and Always). The first three responses are scored zero, with the other three responses being scored 1, 2, and 3 respectively. A score greater than 20 is considered to be an indicator of a possible eating disorder problem, and it is recommended that individuals who score 20 or more should seek clinical support.

Previously, Higher Ground administered the EAT-26 only at admission, for screening purposes. Since 2015 the tool has also been used at discharge, providing the opportunity to assess whether people's eating attitudes changed while in the Higher Ground programme.

The analysis of responses (Tables 54-55, Appendix B) shows that the proportion of Higher Ground clients with a score of 20 or more on admission was 5%. At the time of discharge, this had reduced to 3%. The analysis shows a shift in mean score from 5.7 to 4.9. Reductions were not statistically significant.

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### Self-harm inventory

The SHI is a one-page, 22-item, yes/no, self-report questionnaire that explores respondents' histories of self-harm. Each item in the inventory is preceded by the phrase, "Have you ever intentionally, or on purpose..." Examples of individual items include, "cut yourself, burned yourself, hit yourself, scratched yourself, prevented wounds from healing, overdosed, abused prescription medication, attempted suicide." The SHI total score is the sum of "yes" responses, with a maximum possible score of 22 (Sansone & Sansone, 2010). There is good evidence to support the internal consistency of the scale (Sansone et al, 1998; Latimer et al, 2008).

Analysis of responses (Table 56, Appendix B) shows that the majority of Higher Ground clients did *not* have self-harm issues at admission. The proportion of those who did (including those with self-harm issues, concerns, suicidality likely and suicidal acting out/pervasive self-harm) reduced from 15% on admission to 3% at one year follow up post discharge.

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### Qualitative questions

This section provides results from the analysis of five qualitative questions asked at three months follow up. Just under one quarter of those admitted to Higher Ground since 2012 (about 300) responded to these questions.

The first question seeks information on support received in the period since leaving the TC: *Since leaving Higher Ground, have you received help from drug treatment services or other support to help you stay off drugs/alcohol?* The analysis indicates that many of the clients followed up had received help from drug treatment services or other support (from Higher Ground or another provider) to help them stay off drugs/alcohol since leaving Higher Ground (Table 57, Appendix B). Of these, the majority (66% of those who answered the question) had received help from both residential (overnight stay) and community (not overnight) services (including Higher Ground continuing care and 12-step meetings). Many had received help from community support only (24%), and some from residential support only (5%). A few had not received help from either of these two options (5%).

The second question was specifically for those who had answered 'yes' to using any substance in the last 28 days in the ADOM questionnaire, and asked: *Did you ask for help? If yes, from who?* To date, the numbers of people answering this question have been too small to draw definitive conclusions: a total of nine had asked for help from community services, whereas seven had not asked for help from either community or residential services (Table 58, Appendix B).

Thirdly, clients were asked: *What is the most significant change in your life as a result of the help you received from Higher Ground?* Answers centred on: education about addiction, self and behaviour (34%); spiritual principles, emotional and mental health (27%); staying abstinent (18%); and relationships (e.g., with friends, family and/or community) (17%) (Table 59, Appendix B). These changes are consistent with previous qualitative research where the most significant changes for interviewees were found to centre on physical, mental, spiritual and family wellbeing (Moss & King, 2016).

*The way I act and react is completely different – the biggest thing is understanding what’s in and out of my control, I go to that on a daily basis.* (Participant #5, p.35)

*I had had no education about what alcoholism was, so to be given substantial facts about the diseases of addiction was a bit of a turnaround for me – quite life changing.* (Participant #3, p.24)

The fourth question asked: *If you had not come to Higher Ground, what do you think your life would be like now?* One third (33%) believed it would be “worse, bad, awful, and/or terrible”. One fifth (21%) thought they may no longer be alive. Further, other respondents’ answers centred on aspects such as jail/crime, using, drinking and relapsing, and feeling sad, lonely and/or without purpose (Table 60, Appendix B). Similar responses have been heard in previous qualitative research (Moss & King 2016).

*What I learnt in there has saved my life. Not only that, but it has given me a better life and made me a better person.* (Participant #9, p.11)

The final and fifth question asked: *How important was the 12-step programme to your recovery?* For the majority of respondents, the 12-step programme was considered ‘very important’ (69%) or ‘somewhat important’ (26%). A few considered it ‘not important’ (4%) or ‘detrimental’ (1%) (Table 61, Appendix B). Previous qualitative research also indicated that Higher Ground clients value the 12-step programme. Moss and King (2016) found that the steps helped clients (during and *after* their stay at Higher Ground) take inventory of their own challenges, get out of a ‘victim-blaming’ attitude and encouraged accountable and honest behaviour. The steps and the fellowship helped many transition back into the community and provided the continuity of support needed to stay abstinent.

The qualitative research noted that the real value of the steps and the fellowship was often not recognised until after graduation – because until it became an integral part of aftercare and ongoing recovery, it was difficult for many clients to grasp their relevance.



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## Discussion

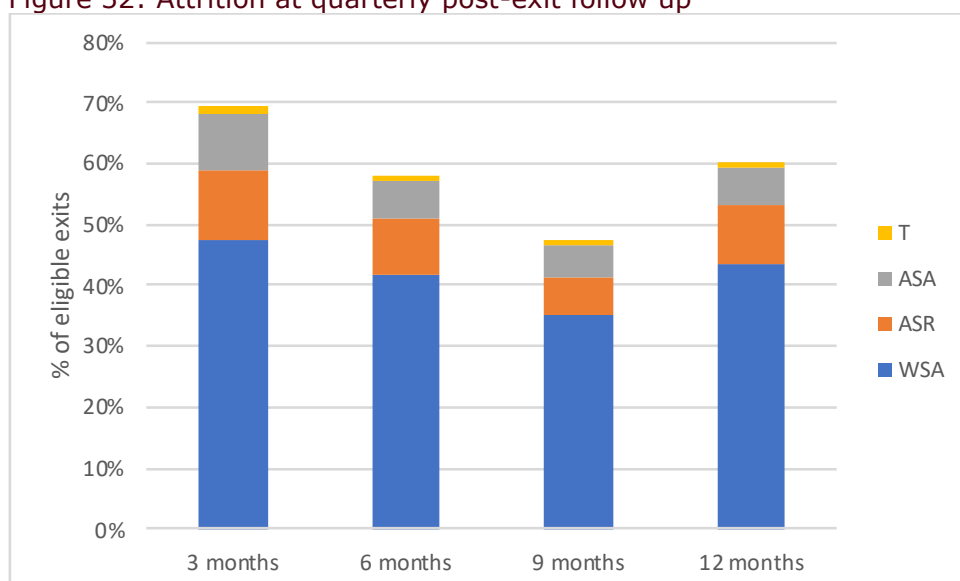
Overall the analysis shows clinically and statistically significant improvements in average days of substance use, PTSD scores, depression, anxiety, and stress scores, personality inventory scores, and positive trends in physical health, daily functioning, spirituality and social indicators. These positive trends are seen for all major client subgroups, and are broadly consistent with those seen in previous analysis of Higher Ground outcome data (Raymont, 2012; Raymont, 2013; Raymont et al., 2013; King, 2014; King & Stevenson 2016). Findings from qualitative research with Higher Ground clients indicated that these types of positive outcomes were intrinsically linked to the way in which the programme is structured and delivered (Moss & King, 2016).

While all client groups showed improvements on average, clients who completed the TC programme and exited with staff approval (WSA) showed greater improvements at discharge than those who exited early at staff request (ASR) or against staff advice (ASA). This is consistent with previous research at Higher Ground (Ibid.), as well as internationally (Bell et al, 1996; De Leon, 2010; Inciardi et al, 2004; Welsh, 2007; Welsh & McGrain, 2008) and indeed contributes part of the evidence that suggests TCs are effective (De Leon, 2010).

People who complete the TC programme are more likely to participate in follow up research than those who do not complete. While 42% of all exits were WSA in the six-year period of the analysis, 58% of those who participated in follow up research were WSA (Figure 34). There is a strong possibility that those with the greatest life challenges were also the most challenging to follow up. Therefore this pattern of attrition limits the generalisability of post-discharge results to the Higher Ground client group as a whole. Nevertheless, the data indicates that when clients complete the TC programme and engage in continuing care, the programme is effective.

Figure 32 shows that of those clients eligible for follow up, 69% were successfully followed up and interviewed at 3 months, with this proportion falling to 58% at 6 months, 48% at 9 months, and increasing to 60% at 12 months. The 3, 6, and 9-month follow up rates are similar to those seen in previous analysis of post-discharge data (King, 2015). However, the rate of 12-month follow up is substantially improved (from a figure of 47% reported in 2015), possibly reflecting a push by Higher Ground over the past three years to improve follow up participation rates. Anecdotally, clients often refer to the movie pass that Higher Ground introduced in 2016 for those who complete the quarterly research, suggesting this encourages participation.

Figure 32: Attrition at quarterly post-exit follow up



The possibility of response biases also needs to be acknowledged – e.g., social desirability (responding to items based on social acceptability rather than true feelings) or acquiescence biases (yea- and nay-saying; propensity to agree with questionnaire items independent of their content) (Podsakoff et al., 2003). The latter bias may be relevant to the anomalous response noted in one of the questions in the CAI. However, it has been documented that people vary widely with regard to response biases, and attempts to remove such biases statistically have been found to decrease the validity of personality scores (McCrae and Costa, 1983, cited in Johnson, 2014).

As acknowledged in the literature, a key challenge in TC outcome research is determining whether changes observed in participants over time are attributable to the TC and not to other factors. Experimental or quasi-experimental study designs (with the use of a control group, preferably with randomisation or failing that with statistical matching of cases and controls) are not feasible in this context for practical, ethical and cost reasons. For example, it is not known what other interventions people access during the 12 months after discharge.

The design of this research therefore limits the conclusions that can be drawn about causality. Although the participants of the Higher Ground TC programme have shown significant and lasting improvements over time, factors other than the intervention could conceivably explain these improvements. Examples include:

- Regression to the mean or ceiling effects (people with high scores at pre-test are statistically likely to move toward more moderate scores at post-test with or without treatment, not necessarily indicating recovery).

- History (e.g., interventions prior to entering Higher Ground, such as crisis or detox services, may also contribute to outcomes).
- Maturation (effects related to natural changes that people might experience with the passage of time; some people may experience spontaneous remission even if they do not receive treatment).

The Bradford Hill Criteria for causal inference<sup>16</sup> offer a set of nine viewpoints for assessing a possible causal relationship between an incidence and a consequence, five of which are relevant here. These viewpoints cannot provide indisputable evidence to support a causal inference but provide a framework for weighing the evidence for or against a possible interpretation of cause and effect. The Bradford Hill Criteria have been used extensively in epidemiology. De Leon (2010) has argued that the totality of research on TCs is consistent with these causation criteria.

The following table sets out the five relevant criteria and summarises their use in making causal inferences from the data presented above.

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<sup>16</sup> See: <http://www.who.int/bulletin/volumes/83/10/792.pdf>

Table 7: Bradford Hill Criteria

Relevant Bradford Hill Criteria	Description	Observation of Higher Ground data
Strength	Association does not prove causation. However, large clinically significant improvements, in combination with other viewpoints, can lend support to a causal interpretation.	Clinically and statistically significant positive shifts are seen in days of AOD use, and mean PTSD, depression, anxiety, and stress scores, as well as clear positive trends in physical health, daily functioning, and social indicators.
Consistency	Similar results across multiple cohorts/years lends support to a causal interpretation.	Positive shifts are seen across multiple indicators and across all major client subgroups. The results are also broadly consistent with those seen in previous research at Higher Ground for earlier cohorts of clients (Raymont, 2012; Raymont, 2013; Raymont et al., 2013; King, 2014; King & Stevenson, 2016; Moss & King, 2016).
Temporality	Causes come before effects. A causal interpretation requires that improvements in clinical indicators occur after treatment starts. Expect to see improvement from first presentation to admission, and from admission to discharge, then levelling off or decay of effects in follow up data.	The expected temporal sequence of improvements is seen from first presentation to admission, and from admission to discharge. Positive outcomes are sustained for 12 months post-discharge, among those who could be followed up.
Coherence	If the outcomes are consistent with published evidence from stronger study designs about the effectiveness of other TCs, this also helps to strengthen our causal interpretation.	Results at Higher Ground are consistent with those seen in published studies of similar programmes (e.g., systematic review by Vanderplasschen et al, 2014).
Dose-response gradient	If people who receive more intensive or more sustained treatment consistently show stronger effects, this lends support to a causal interpretation.	People who complete the TC programme and exit with staff approval (WSA) show stronger improvements than those who exit early at staff request (ASR) or against staff advice (ASA). Note, however, that this may indicate pre-existing differences between these subgroups and not necessarily a dose-response gradient.

Taken together, these considerations indicate that the trends observed in the data are consistent with an interpretation that Higher Ground has contributed to the outcomes of its clients. This does not show, however, that the full effect is attributable to Higher Ground; for example, the literature review (Appendix A) notes that some proportion of people with addiction, PTSD or depression may experience spontaneous remission, with the prevalence of spontaneous remission being lower among those with more severe symptoms.

### 3 Return on Investment

Few studies have been conducted on the cost-effectiveness of TC programmes. Yates (2010) undertook a literature search and analysis of cost-related studies, which compared the expenditure, and benefits of residential and non-residential treatments for addiction. Most studies supported the view that treatment interventions save society money overall. Most also recognised that the population seen by drug-free TCs was “more damaged” than those presenting to other modalities, but few studies weighted their findings for this difference.

The following analysis explores the potential return on investment (ROI) associated with outcomes for clients of Higher Ground, based on the results of the outcome study. It should be regarded as an exploratory scenario analysis and not a definitive valuation.

A key challenge in estimating return on investment from Higher Ground’s TC programme is that the financial investment in the programme is relatively straightforward to quantify, whereas the outcomes are more difficult to value in monetary terms. Examples of outcomes with potential monetisable value include:

- Public and private economic benefits (e.g., people who recover from AOD addiction are able to participate more meaningfully in employment, training and education, and this contributes to improving economic productivity as well as their own incomes).
- Reduced costs to taxpayers (e.g., those who successfully complete the programme and remain abstinent or minimise AOD related harm may consume fewer health care resources, less Police time, etc).
- Wider benefits for society (e.g., reduced AOD dependency may lead to reduced social costs related to crime, drug production, road crashes, as well as positive parenting and reduced risk to children).

Reduced burden of AOD-related harm on society, and increased productivity, cannot directly be attributed to Higher Ground using available data but can be estimated through scenario analysis.

For example, the *New Zealand Drug Harm Index 2016* (McFadden, 2016), a report for the Ministry of Health, estimated average social costs of \$33,800 per dependent user per year. These costs included: costs of personal harm (e.g., physical, psychological and wealth); costs of community harm (e.g., costs of crime, injury, harm to family and friends, and reduced tax base); and intervention costs (health, education, and law enforcement).

There are reasons to suggest that the social costs would be higher than this average figure for people who use Higher Ground's services. The two primary drugs of choice among Higher Ground's clients were methamphetamine (approximately 60% of clients in recent years), alcohol (approximately 20%), and cannabis (approximately 15%). The *Drug Harm Index* report estimated average social costs of \$116,600 per year for dependent users of amphetamine-type stimulants. The report did not provide an estimate for alcohol-related harm, but cited research suggesting the harms of alcohol to society exceed those of any other substances, and that alcohol ranks fourth, behind heroin, crack, and methamphetamine, in terms of harm to the individual (Nutt et al., 2010).<sup>17</sup> The cost per year for dependent users of cannabinoids was estimated to be \$29,100.

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### Return on Investment from Higher Ground client outcomes

ADOM data for substance use, physical and psychological health, relationships, accommodation, work and criminal offending, show that the majority of clients who participated in follow up research were minimising harm from AOD use and sustained this for 12 months post discharge.

As noted earlier, the majority of those who were followed up at 12 months were those who completed the programme with staff approval (WSA). If the results are generally representative of all WSAs, then approximately 60-70 clients each year may be able to sustain a lifestyle free from AOD-related harm after leaving Higher Ground.

The potential benefit associated with minimising harm for Higher Ground clients has been estimated at \$81,600 per person per year. This is a weighted average of the *Drug Harm Index* estimates for amphetamine-type stimulants (60% of clients at \$116,600) and other substances (40% of clients based on the cost for cannabinoids of \$29,100, which may be on the conservative side as a proxy for social costs of alcohol).

The Higher Ground programme is funded at an average bed day rate of \$163, with an average length of stay of 125 days per WSA. The average cost of a stay at Higher Ground is therefore estimated at \$20,360 per WSA.

Therefore, on average, each individual who completes the programme would reach a break-even point, where benefits equal costs, after 91 days of abstinence. For those remaining abstinent one year after completing the programme, benefits would exceed costs by a ratio of 4:1. For people

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<sup>17</sup> Nutt D, King L & Phillips L (2010). Development of a rational scale to assess the harm of drugs of potential misuse, *The Lancet*, 369, 9566, 1047-1053.

remaining substance-free for longer than 12 months, further benefits would accrue.

Calculating the return on investment for the programme overall is more complex, for at least two reasons. First, the total cost of the programme includes not only those who complete WSA, but those who exit the programme early for various reasons and are correspondingly less likely to remain substance-free in follow up research. Second, Higher Ground aims to equip people to live a life free from alcohol and drugs for the long term, whereas follow-up research only tracks outcomes for the first year. Usually return on investment should be calculated taking into account the benefits across multiple years.

Nevertheless, available evidence suggests the programme as a whole returns a positive return on investment within the one-year period covered by follow-up data. The programme operates on bed funding of approximately \$3 million per year. At an average benefit of \$81,600 per person per year, the programme will break even if 38 people remain free from drug and alcohol-related harm for 12 months after leaving the programme. Current evidence suggests the actual figure is closer to 60-70 people per year.

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## Discussion

This analysis suggests that the Higher Ground programme creates more value than it consumes. These results indicate that the service is worth funding on efficiency grounds.

It is important not to lose sight of the real value of Higher Ground: transformations in the lives of people with addiction issues, their families and associated benefits to the wider community. Money is only one way of representing real value.

Available evidence from outcome monitoring data indicates that Higher Ground not only returns a positive return on investment but is also valuable in other ways. It is effective in meeting identified needs and achieving outcomes with its clients, and reducing health inequalities. Results also indicate the programme has cultural and spiritual value.

On all of these dimensions, results indicate the programme is worthwhile and valuable.



## 4 Evaluative conclusions

Overall, clients of Higher Ground over the past three years have experienced clinically relevant and statistically significant recovery from AOD use and associated reductions in assessed symptoms of PTSD, depression, anxiety and stress. Associated with these changes, people have also experienced subjective improvements in physical health, daily functioning, work, housing, relationships and spirituality.

The observed changes were sustained for 12 months post discharge. The outcomes meet Bradford Hill Criteria for causal inference of strength, consistency, temporality, coherence, and dose-response gradient.

When evaluated against the agreed performance criteria (Table 2), the outcomes at discharge and post-discharge meet most of the criteria for “highly effective” and all of the criteria for “effective”, as follows.

### *Programme completion*

Overall, 42% of clients completed the programme with staff approval (WSA) and 3% transferred to another service. Therefore 45% of clients are regarded as having completed the TC programme. This meets the threshold for “effective” in the performance criteria.

### *Clinically significant shifts in PTSD and DASS scores between admission and discharge*

Clients who had a high PTSD score of 44 or more on entry experienced improvements to the extent that 65% had PTSD scores of under 44 on discharge.

Clients who had severe or extremely severe depression scores experienced improvements to the extent that 64% had moved into the normal-mild-moderate range on discharge.

Clients who had severe or extremely severe anxiety scores experienced improvements to the extent that 65% had moved into the normal-mild-moderate range on discharge.

Clients who had severe or extremely severe stress scores experienced improvements to the extent that 64% had moved into the normal-mild-moderate range on discharge.

These results exceed the criteria for “highly effective”. Furthermore, the shift from admission to discharge may under-represent the full extent of changes achieved, as DASS scores were higher at first presentation than admission, and lower at 12-month follow up than at discharge.

*Abstinence at 3 and 12 months post discharge*

Of those clients who were able to be followed up at 3 and 12 months, 83% and 75% respectively had been abstinent from any AOD use in the preceding 28 days. This exceeds the criteria for "highly effective".

*Conclusion*

Overall these results, when benchmarked against agreed criteria informed by international literature, indicate that Higher Ground is effective in working with its clients.

Furthermore, scenario analysis indicates that Higher Ground creates more value for society than it consumes and is therefore worth funding on return on investment grounds.

## Appendix A: Evidence for TCs – international context

A rapid review of the literature on therapeutic communities (TCs) indicates that while there is good evidence *that* TCs work, little research has been conducted to establish *why* and *how* they work (De Leon, 2000; Pearce & Pickard, 2012).

Moreover, comparing results of different programmes is problematic because TCs vary, treatment approaches vary, and the chronic and relapsing nature of MA dependence means individual recovery pathways vary (Bahr et al, 2012; De Leon, 2010; McKetin et al, 2010). There is a wide diversity of TCs and not one “best” model. In a TC context, emergent evidence may be informed by practice as much as practice is informed by evidence.

ATCA (2002) notes that evidence-based practice has tended to focus more on treatment content than on the TC itself. Evidence-based practice has been defined as “conscientious, explicit and judicious use of current best evidence in making decisions about individual patients” (Sackett et al 1996, cited in ATCA, 2002) and as an approach that “takes account of evidence at a population level as well as encompassing interventions concerned with the organisation and delivery of health care” (Silagy & Haines 1998, cited in ATCA, 2002).

A central tenet of evidence-based practice is that research evidence is a component of the decision making process, but is not the only component. Other aspects (clinical expertise, patient preference, needs, priorities and resources) are also important considerations (ATCA, 2002).

In order to identify “best” evidence, and use it judiciously, it is important to critically appraise research evidence, including quality (the methods used to minimise bias in study design), relevance (outcome measures used and applicability of results to other treatments, settings and patients) and strength (the magnitude, precision and reproducibility of the intervention effect (National Health and Medical Research Council, 1999, cited in ATCA, 2002).

Randomised controlled trials (RCTs), conducted with observers, treating personnel and participants blind to their group allocation, are widely considered to be the best way of achieving adequate control of bias. However, in the case of the TC approach to the treatment of illicit drug use, RCTs are problematic and the use of double-blind methods impossible, particularly for comparisons with other treatment approaches.

The use of random allocation is becoming more common to investigate particular aspects of the TC approach, or the effect of different adjunct treatments. Most evidence on the efficacy and effectiveness of therapeutic communities has come from follow-up studies such as the Drug Abuse

Treatment Outcome Study (DATOS) in the USA and the National Treatment Outcome Research Study (NTORS) in the UK (ATCA, 2002).

The literature highlights a number of methodological challenges that affect outcome measurements and definitive statements on the effectiveness of TCs (e.g., Bahr et al, 2012; De Leon, 2010; Rawlings, 1998; Smith et al, 2006; Welsh and Zajac, 2004; and, more generally, Ioadannis, 2005). Key examples of methodological challenges include:

- Difficulty isolating the effect of the TC from other factors (i.e., was it the TC that caused change or something else?)
- The problem of defining successful outcomes
- Problems of finding matched controls
- Self selection and attrition biases
- High drop out rates
- Problems of contacting ex-prisoners for follow up
- Behavioural outcomes and tools measured to use them vary widely across studies (e.g., definitions of recidivism vary)
- Generalisability of findings across different measures, sites and contexts is questionable
- Problems with assessing self-reported drug use and other data
- Examination of the effect of programme components in isolation rather than the interaction of the multiple components that comprise a TC
- Poor accounting for variations in treatment dosage as well as relationships between inmate characteristics, treatment processes, and outcomes in evaluations of TCs
- Potential bias in results from not including drop outs or treatment failures in evaluation of results (De Leon, 2010; Rawlings, 1998; Welsh, 2007; Wormith et al., 2007; Vanderplasschen et al., 2013).

In a 2006 Cochrane<sup>18</sup> review, Smith et al (p.2) concluded, "There is little evidence that TCs offer significant benefits in comparison with other residential treatment, or that one type of TC is better than another".

On the other hand, De Leon (2010), notes that the sheer number of outcome studies and "striking congruence" of their findings provide a

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<sup>18</sup> The Cochrane Collaboration is an independent, non-profit NGO that conducts systematic reviews of well-conducted RCTs of healthcare interventions. These reviews are published in the Cochrane Library, a key resource in evidence-based medicine.

compelling argument for the efficacy of the drug-free TC. De Leon (2010) argues that the totality of research is consistent with causality criteria of: i) strength of association; ii) dose-response relationship; iii) consistency of association; iv) temporally correct association; v) specificity of experimental evidence; and iv) coherence with existing knowledge.<sup>19</sup>

A recent review of the evidence for effectiveness of TCs, including 16 experimental studies conducted in North America and 14 observational studies conducted in Europe found that there is some evidence for effectiveness of TC treatment in terms of reduced substance use and criminal activity, while some studies also showed positive effects on employment, social functioning and general mental health (Vanderplasschen et al, 2014).

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### Intended outcomes of TCs

Although an explicit intervention logic for TCs was not found in the literature, rich descriptions of the intended functioning and rationale for TCs is expressed in books such as De Leon (2010) and the following progression of outcomes is implicit in the TC design and the existing body of research:

#### *Early 'process' changes – for example:*

- Learning how the TC works; establishing some trusting relationships with staff/peers
- Participation in the TC/other programme and acceptance of its norms

#### *Personal growth and development – for example:*

- Acceptance of responsibility for self, drug use, related behaviours, problems and solutions
- Acquisition of interpersonal skills and pro-social behaviours and attitudes
- Setting an example for other residents
- Growth in job roles and responsibilities (e.g., starting to facilitate groups)
- Elevated self-esteem

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<sup>19</sup> In this study we have used the Bradford Hill Criteria to inform causal inference in the analysis of Higher Ground data. <http://www.who.int/bulletin/volumes/83/10/792.pdf>

*Improved psychological functioning, attitudes and behaviour – for example:*

- Increased cognitive skills, emotional skills, insights into life problems and ability to reflect on and regulate one's own impulses, behaviours and attitudes
- Behaviour becoming more consistent with the values of right living (e.g., honesty, self-reliance, responsible concern, community responsibility, work ethic)
- Improved psychological wellbeing (e.g., reductions in dysphoria, anxiety, depression, hostility/anger, etc)

*Longer-term outcomes – for example:*

- Remaining alcohol and other drug free, and firmly committed to the recovery process
- Taking up education/training/work
- Reduced offending.

Underpinning these outcomes is the principle of change as a complex, multi-dimensional, non-linear process, involving the whole person (De Leon, 2000).

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## Effectiveness of TCs and adjunct therapies

The Higher Ground residential programme incorporates evidence-based models and practices that are supported by the literature.

Effective entry and induction into a TC involves structured and clear communication with new residents to ensure they learn the policies and procedures of the TC, programme philosophy and general stage plan; establish some trusting relationships in the community; and become oriented to the recovery process (De Leon, 2000).

Comprehensive assessment and treatment planning covers a range of relevant social, cultural, substance use, treatment, medical, familial and personal factors; is agreed in writing with the TC resident; identifies (and tracks) goals, is reviewed periodically, and links residents to appropriate aftercare and support (Ibid).

Daily structured routine is identified as an important feature of TCs (Goethals et al, 2011). Structured activities of the community facilitate learning self-structure for the individual, and in time management, planning, setting and meeting goals, and in general accountability (De Leon, 2000).

Evidence indicates that psychosocial approaches including cognitive behaviour therapy (CBT), structured relapse prevention and contingency management are among the most effective treatments for methamphetamine abuse and dependence (BJA, n.d.; Lee et al, 2007; Rawson et al, 2002) and for other addictions in TC contexts (Bahr et al, 2012; Friedman et al, 2006; McMurran, 2006).

Using a combination of interventions, such as motivational interviewing techniques in conjunction with CBT interventions seems to be more effective than interventions applied individually (Lee et al, 2007).

A meta-analysis of the effects of interventions for substance use disorders found that “the average patient undergoing psychosocial interventions achieves acute outcomes better than approximately 67% of the patients in control conditions” (Dutra et al., 2008).

Similarly, treatments together with 12-step programmes (e.g., Alcoholics Anonymous, Narcotics Anonymous) are found to have additive effects (Fiorentine et al, 2000; McMurran, 2006). These programmes are based on a set of guiding principles outlining a course of action for recovery from addiction and other behavioural problems. Work with alcohol and cocaine-dependent people indicated that involvement in 12-step self-help groups, both attending meetings and engaging in 12-step activities, was associated with reduced substance use and improved outcomes (Donovan & Wells, 2007).

The Matrix Model, which incorporates cognitive behavioral therapy, positive reinforcement, family involvement, 12-step programs, motivational interviews, and urine testing, has been shown to decrease MA and other drug use as well as improve psychosocial functioning and mental health when compared to various, more traditional counselling approaches (BJA, n.d.).

Effective exit from the TC is influenced by specific interventions before and after the exit event itself. The re-entry stage of the TC includes specific strategies to prepare residents for the transition. Following exit, aftercare services are an essential component of the TC model (De Leon, 2000; Goethals et al, 2011).

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## **TC duration**

According to the TC literature, there is no single ideal duration of treatment. Individual needs vary; not all residents need the same length of time to achieve TC treatment goals. The optimal length of time for full programme involvement must be consistent with TC goals of recovery and its developmental view of the change process. How long the individual must be involved in the programme depends on their phase of recovery,

although a minimum period of intensive involvement is required to assure internalisation of the TC teachings (De Leon, 2000).

TC theory asserts that duration of treatment is critically correlated with internalised learning. If individual changes are not internalised, recovery is incomplete. Premature dropout from treatment and relapse are more likely (De Leon, 2000). Recent studies validate that with time in treatment, clients develop more profound perceptions about the essence of the TC, which supports more meaningful involvement and better retention (Goethals et al., 2015).

Those who complete the planned duration of treatment reveal the best outcomes (e.g., Anglin & Hser, 1990; De Leon, 1984; De Leon, Jainchil & Wexler, 1982; Hubbard et al, 1997; Simpson, 1979; cited in De Leon, 2000). However, research also indicates that some of those who drop out of treatment early still benefit and go on to experience post-treatment success (Aslan, 2015).

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### **Completion rates for TC programmes**

Positive outcomes following treatment relate to successfully completing the goals of all TC programme stages, not simply meeting the planned duration of treatment (Coombs, 1981; Toumbourou, Hamilton & Fallon, 1998; cited in De Leon, 2000).

A review of international literature on TCs by Vanderplasschen et al (2014) indicates that completion rates have varied between 9-75%, with midpoint completion rates around 30% (Guydish et al, 1998; Nemes et al, 1999; Nuttbrock et al, 1998; McCusker et al, 1997; McCusker et al, 1996; Coombs, 1981; Ravndal and Vaglum, 1998; Ogborne and Melotte, 1977).

These studies predominantly covered 12-month TC programmes but included a few 3 and 6 month programmes as well as some that were longer than 12 months. Completion rates were highest in the short-term programmes. The two highest completion rates (56% and 75%) were for 3-month TCs (McCusker et al, 1996; Coombs, 1981).

More recent studies of programmes ranging from 1-12 months in length report completion rates of about 30-50% (Aslan, 2015; Šefránek & Mioviský, 2017, Gómez –Restrepo et al., 2017; Harley, Pit, Rees & Thomas 2018).

Researchers are increasingly investigating the factors that influence retention in a TC. A range have been identified, including neurocognitive and personality traits, executive functioning, state of existing relationships, identification with the TC, financial situation/stressors, type of substance use and age (Lyvers et al., 2018; Vergara-Moragues et al., 2017; Harley et al., 2018).



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## Abstinence post-exit from TC programmes

A recent evaluation of the Salvation Army's Bridge Programme by the University of Otago (Patterson et al, 2015) notes that treatment outcomes in AOD programmes are measured primarily in terms of changes in substance use behaviour, including reduction or cessation of that behaviour. Examples of outcome measures include days of use per month, days abstinent, days of non-hazardous use, substance use severity, and biological markers of substance use (Ibid).

TC literature reviewed by Vanderplasschen et al (2014) indicates abstinence rates of between 16-85% at 3-6 months follow up, with midpoint abstinence rates of around 70% (Nuttbrock et al, 1998; Martin et al, 1999; Nielsen et al, 1996; Greenwood et al, 2001; McCusker et al, 1995; Hartmann et al, 1997). Similarly, a Magor-Blatch et al. (2014) review of the literature report abstinence rates at three months post discharge at 63% (Van Stelle, Blumer and Moberg, 2004).

At 12 months follow up, both reviews report, abstinence rates ranged from 25-73%, with midpoint abstinence rates around 50% (Sullivan et al, 2007; Greenwood et al, 2001; Bale et al, 1980; Coombs, 1981; McCusker et al, 1995; Van Stelle and Moberg, 2004). In a more longitudinal study of TCs in Iran, Sadin et al. (2013) report abstinence of 87% at one year follow up; 58% at four years and 22% at six years.

Aslan (2018), based on a review of prison based TC literature published between 2007 and 2017, positions TCs as superior to other forms of drug treatment in reducing relapse amongst addicts who offend.

In general, the longer individuals remain in treatment, the more likely their recovery and rehabilitative goals are achieved (Bell et al, 1996; De Leon, 2010; Inciardi et al, 2004; Welsh, 2007; Welsh & McGrain, 2008). This implies that abstinence rates following completion of shorter programme durations might be expected to lie at the lower end of the range.

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## TC impacts on psychological symptoms

A number of studies have found that TCs are effective in reducing psychological symptoms including depression, anxiety and stress, among others (Prendergast et al, 2004; Guydish et al, 1999; French et al, 1999; Nuttbrock et al, 1998; all cited in Vanderplasschen et al, 2014). However, the range of assessment tools used in these studies did not offer directly comparable or transferrable benchmarks for Higher Ground.

One study that *did* use the DASS-21, as does Higher Ground, showed a reduction in psychological symptoms, with clinically significant shifts and mean DASS scores in the normal to *mild* range following completed

treatment. Non-completers (i.e., ASR, ASA) had a similar improved trajectory, but slightly less prominent than completers (Harley et al, 2018).

Studies of other interventions that included DASS scores generally showed mean DASS scores in the normal to moderate range following treatment, with midpoints in the high-normal to low-mild range (Blatch, 2013; Crawford and Henry, 2003; Lovibond and Lovibond, 1995; Nicholas et al, 2008; all cited in Blatch et al, 2013).

A meta-analysis by Van Dam et al. (2012) looked at relative effectiveness of treatments for PTSD. Many of the studies reviewed were not controlled trials. Only a few RCTs were included and none of these used the PCL. No rates for the relative success of treatments vs controls are reported, though the overall finding was that treatment for PTSD is better than 'treatment-as-usual'.

A small study by Perryman, Dingle and Clark (2016) employed a repeated measures design that looked at PTSD at a pre- and post-timepoint through the PCL questionnaire. Two samples were used in the study; one to investigate change in PTSD during the course of treatment (sample one; N=22), and change in PTSD after conclusion of treatment (sample two; N=19 – with follow-up of up to seven months). 64% and 74% of the first and second sample respectively met the PCL diagnostic threshold (44).

The researchers found that PTSD symptomatology (PTSS), irrespective of PTSD specific treatment, significantly decreased in individuals during the course of treatment, and continued to decline post-treatment. Clinically meaningful change and reliable change applied to 45% and 13% respectively of participants from the first sample, and 47% and 11% respectively for the second sample. These scores fall within the realm of medium effect size. DASS scores in this study indicated that stress and anxiety correlated with PTSS at post-testing. No correlation was found between depression scores and PTSS.

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## **Other outcomes**

Patterson et al (2015) note that a wide range of 'consequential factors' are commonly associated with substance use (e.g., physical and mental health, criminality, employment status, social conflict, quality of life, and morbidity), and effective substance use programmes should also address these factors. However, there is no consensus on which outcomes should be measured or how they should be measured. A wide range of psychometric tools are in use for tracking many of these outcomes, and this is a factor limiting comparability of results across studies. Šefránek & Mioviský (2017) however, in their study of treatment outcomes found a

reduction in Maudsley physical health mean scores of about 2-3 points between admission and discharge.

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## Spontaneous remission

Alcohol and other drug dependency is a remitting-relapsing disorder. Therefore it is important to measure outcomes at several points in time, including post-treatment follow up (Patterson et al, 2015).

Even in the absence of treatment, some people may experience remission from substance dependency. Understanding rates of spontaneous remission helps to understand what changes might have occurred in the TC population if they had not been involved in the TC.

A quantitative review of substance abuse literature estimated the general prevalence of spontaneous remission from alcohol, tobacco and other drugs at 26.2% in follow ups averaging five years, with a range of 4%-56% depending on follow up period and the definition of spontaneous remission employed (Walters, 2000).

Rates of spontaneous recovery from PTSD vary across studies and appear to be affected by contextual factors such as the study population and the nature and number of traumatic events experienced. A longitudinal, observational study found 52% of those observed (aged 14-24) experienced a natural recovery during 34-50 month follow up (Perkonig et al., 2005). Another found that prevalence of PTSD symptoms reduced from 30% to 11% when measured 1 month and 20 months after an earthquake in Turkey (Karamustafalioglu, 2006).

Rates of spontaneous recovery for depression are also context-dependent. A meta analysis of spontaneous recovery from depression among control groups (waitlist and observational cohort studies) across 19 studies describing remission at up to 2 years follow up showed that 23% of cases of untreated depression remitted within 3 months and 32% within 6 months. Overall, the review suggested that 53% of untreated major depression would remit spontaneously in a given year (Whiteford et al., 2013). Remission rates may depend upon severity, with lower rates of spontaneous remission for more severe depression. None of the studies reviewed used the DASS scale.

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## Appendix B – Data Analysis Tables

### Client characteristics

Table 8: Gender

	<b>2012-2013</b>	<b>2013-2014</b>	<b>2014-2015</b>	<b>2015-2016</b>	<b>2016-2017</b>	<b>2017-2018</b>
Female	46.3% (82)	37.7% (71)	42.2% (74)	38.5% (67)	36.9% (68)	39.5% (83)
Male	53.6% (95)	61.1% (115)	57.1% (100)	60.9% (106)	61.4% (113)	60% (126)
Trans-gender	0% (0)	1% (2)	0.5% (1)	0.5% (1)	1.6% (3)	0.4% (1)

Table 9: Ethnicity

<b>% (n)</b>	<b>2012-2013</b>	<b>2013-2014</b>	<b>2014-2015</b>	<b>2015-2016</b>	<b>2016-2017</b>	<b>2017-2018</b>
Maori	25.9% (46)	27.4% (50)	29.8% (51)	32.5% (55)	31.6% (56)	34.6% (71)
Pacific	3.9% (7)	4.3% (8)	6.4% (11)	8.2% (14)	2.8% (5)	4.8% (10)
NZ European	68.3% (121)	68.1% (124)	63.7% (109)	59.1% (100)	65.5% (116)	60.4% (124)
Other	1.6% (3)	3.2% (6)	2.3% (4)	2.9% (5)	3.9% (7)	2.4% (5)

Table 10: Age group

	<b>2012-2013</b>	<b>2013-2014</b>	<b>2014-2015</b>	<b>2015-2016</b>	<b>2016-2017</b>	<b>2017-2018</b>
10-19	2.2% (4)	2.2% (3)	0.7% (1)	2.2% (3)	1.4% (2)	0.6% (1)
20-29	32.7% (58)	55.2% (74)	53.3% (71)	42.9% (58)	45.3% (63)	39.4% (62)
30-39	36.7% (65)	42.5% (57)	45.8% (61)	54.8% (74)	53.2% (74)	59.8% (94)
40-49	20.9% (37)	32% (43)	18% (24)	19.2% (26)	25.1% (35)	21.6% (34)
50-59	6.7% (12)	5.2% (7)	12% (16)	8.1% (11)	5.7% (8)	11.4% (18)
60+	0.5% (1)	2.9% (4)	1.5% (2)	1.4% (2)	0.7% (1)	0.6% (1)

Table 11: Mean age on admission and standard deviation (SD)

	<b>2012-2013</b>	<b>2013-2014</b>	<b>2014-2015</b>	<b>2015-2016</b>	<b>2016-2017</b>	<b>2017-2018</b>
Age on admission (SD)	34 (9.6)	34 (10)	33.8 (10)	34.2 (9.5)	33.7 (8.7)	35 (9.1)

Table 12: Drug of Choice

<b>2012 to 2018</b>	<b>Meth</b>	<b>Can</b>	<b>Alc</b>	<b>Opi</b>	<b>Benz</b>	<b>Other</b>
All	627	115	341	29	2	19
Male	379	83	182	17	1	12
Female	241	32	158	12	1	7
Transgender	7	0	1	0	0	0
Māori	191	41	97	7	0	3
Pacific	34	6	14	0	1	1
European	3	2	2	0	0	0
Other	386	63	223	21	1	14
Teens	2	6	4	2	0	0
20s	254	52	77	7	0	1
30s	265	37	115	9	2	12
40s	89	14	85	8	0	6
50s	15	5	52	1	0	0
60+	1	0	8	2	0	0
Period 1 (Jul '12 – Jun '15)	263	58	195	17	0	7
Period 2 (Jul '15 – Jun '18)	364	57	146	12	2	12

Table 13: Highest qualification

	<b>2012-2013</b>	<b>2013-2014</b>	<b>2014-2015</b>	<b>2015-2016</b>	<b>2016-2017</b>	<b>2017-2018</b>
None/Unknown	20.3% (36)	69.5% (121)	68.9% (100)	68% (102)	59.6% (96)	59.4% (107)
Secondary	67.7% (120)	24.1% (42)	20% (29)	20.6% (31)	20.4% (33)	24.4% (44)
Technical	1.1% (2)	6.3% (11)	11% (16)	11.3% (17)	19.8% (32)	16.1% (29)
Tertiary	10.7% (19)	8% (14)	20.6% (30)	16% (24)	14.2% (23)	16.6% (30)

Table 14: Justice-referred clients (2012-2018)

Group	Justice client
All	501
Male	374
Female	123
Māori	164
Pacific	37
European	284
Other	14
Teens	7
20s	189
30s	188
40s	84
50s	30
60+	3
Period 1 (Jul '12 – Jun '15)	249
Period 2 (Jul '15 – Jun '18)	252

Table 15: Counts by discharge type (2012-2018)

Group	WSA	ASA	ASR	T
All	202	138	130	17
All	320	282	29	477
Male	184	188	11	272
Female	135	92	18	200
Māori	99	93	6	131
Pacific	12	20	2	21
European	201	158	20	315
Other	8	11	1	10
Teens	3	4	3	4
20s	109	111	8	158
30s	124	115	8	178
40s	58	43	6	92
50s	22	8	4	38
60+	4	0	0	7
Justice Client	118	169	11	203
Non-Justice Client	202	113	18	274
Period 1 (Jul '12 – Jun '15)	149	139	17	235
Period 2 (Jul '15 – Jun '18)	171	143	12	242

Table 16: Length of stay (2012-2018)

Group	N	Mean LOS (days)	SD of LOS
All	1108	79.74	47.66
Male	445	82.29	46.93
Female	655	77.79	48.09
Transgender	8	98.13	47.43
Māori	329	76.82	48.00
Pacific	55	69.20	49.87
European	694	82.02	47.39
Other	30	78.40	43.89
Teens	14	68.57	51.22
20s	386	77.70	47.68
30s	425	79.36	47.63
40s	199	80.72	48.04
50s	72	90.62	45.95
60+*	11	96.36	43.45
ASA	320	33.07	30.34
ASR	282	58.17	34.47
T	29	55.38	41.16
WSA	477	125.29	3.18
Non-Justice client	607	81.27	47.44
Justice client	501	77.89	47.91
Period 1 (Jul '12 – Jun '15)	540	80.79	47.38
Period 2 (Jul '15 – Jun '18)	568	78.75	47.95

\*Results for some subgroups are not generalisable due to small numbers



## ADOM and abstinence post-discharge

Table 17: ADOM – mean days of *any* substance use in last 28 days

Group	First presentation	Admission	3 months	6 months	9 months	12 months	Significant Change over time by Independent Variable (GLM)
All	13.5 (686)	4.47 (1082)	1.75 (556)	2.64 (464)	2.68 (381)	2.86 (332)	F(5,2986)=138.643, p<.001
Male	12.53	4.21	1.47	2.27	2.4	2.78	F(5,2784)=.761, p=.578
Female	14.79	4.84	2.15	3.14	3.06	2.99	
Māori	11.34	3.49	1.28	1.61	1.37	1.83	F(15,2704)=1.123, p=.329
Pacific	11.2	5.04	1.65	3.54	0.8	1.45	
European	14.5	4.92	1.87	2.82	3.12	3.25	
Other	12.56	3.57	3.06	6.91	7.29	3.14	
Teens	18	2.5	0.43	0.33	1.8	3	
20s	14.04	3.97	2.04	3.49	3.24	2.89	F(25,3463)=1.974, p=.003
30s	13.16	5.02	1.78	2.68	2.61	2.9	
40s	12.24	4.57	1.83	2.11	2.64	2.61	
50s	13.6	4.24	0.65	0.97	1.58	4	
60+*	18.63	2.6	0	0	0	0	
Methamphetamine	11.41	3.56	1.93	2.83	2.68	2.62	F(20,1820)=3.518, p<.001
Cannabis	17.07	3.94	1.23	2.78	3.73	2.32	
Alcohol	15.29	5.92	1.61	1.93	2.21	3.49	
Opioids	15.75	5.61	0.72	4.53	5.36	1.82	
Other	15.17	8.75	2.8	5.78	0.17	3.5	
ASA	14.88	6.1	5.89	6.9	7.28	7.56	F(15,1870)=2.486, p=.001.
ASR	11.44	3.53	3.07	5.32	2.92	2.47	
T*	13.94	3.9	0.91	0.29	4.67	0.33	
WSA	13.8	3.97	0.66	1.48	1.89	2.34	
Justice client	9.78	3.59	1.33	2.18	2.09	1.94	
Non-Justice	16.19	5.18	2.06	2.98	3.1	3.5	F(5,2951)=11.2, p<.001
Period 1 (Jul '12 – Jun '15)	14.08	5.92	1.87	2.62	2.82	2.71	
Period 2 (Jul '15 – Jun '18)	12.87	3.13	1.59	2.68	2.46	3.1	

\*Results for some subgroups are not generalisable due to small numbers

Table 18: ADOM – mean days of substance use by drug of choice

<b>Drug of Choice</b>	<b>First presentation</b>	<b>Admission</b>	<b>3 months</b>	<b>6 months</b>	<b>9 months</b>	<b>12 months</b>
Alcohol	1.38	0.56	0.23	0.34	0.39	0.35
Cannabis	0.89	0.34	0.13	0.2	0.21	0.18
Amphetamine-type stimulants	1.17	0.44	0.17	0.2	0.21	0.19
Opioids	0.24	0.08	0.02	0.03	0.06	0.02
Sedatives/ tranquilisers	0.38	0.22	0.07	0.08	0.07	0.09
Any other drugs	2.07	0.79	0.4	0.49	0.58	0.67
Injected	0.29	0.11	0.04	0.1	0.08	0.03

Table 19: ADOM – Abstinence from *any* substances in last 28 days

Group	First presentation	Admission	3 months	6 months	9 months	12 months
All	23%	54%	83%	76%	74%	75%
Male	26%	56%	84%	78%	75%	74%
Female	17%	52%	83%	74%	71%	77%
Māori	30%	58%	88%	84%	80%	81%
Pacific*	24%	60%	85%	77%	90%	82%
European	19%	52%	82%	75%	71%	73%
Other*	25%	63%	75%	36%	57%	71%
Teens*	11%	71%	86%	83%	40%	50%
20s	22%	54%	80%	71%	71%	75%
30s	21%	53%	83%	76%	74%	74%
40s	29%	54%	84%	79%	74%	78%
50s*	26%	64%	98%	88%	81%	77%
60+*	0%	60%	100%	100%	100%	100%
Methamphetamine	30%	60%	82%	74%	74%	75%
Cannabis	17%	57%	79%	76%	68%	74%
Alcohol	14%	47%	86%	80%	77%	75%
Opioids*	10%	46%	94%	73%	57%	91%
Other*	17%	25%	90%	67%	83%	83%
WSA	24%	60%	92%	83%	79%	80%
ASA	15%	45%	53%	49%	42%	47%
ASR	29%	56%	73%	62%	71%	71%
T*	18%	62%	82%	86%	83%	83%
Justice client	39%	62%	87%	78%	80%	82%
Non-Justice	11%	49%	81%	74%	69%	71%
Period 1 (Jul '12 – Jun '15)	19%	44%	84%	78%	77%	76%
Period 2 (Jul '15 – Jun '18)	26%	64%	83%	74%	69%	73%

\* Results for some subgroups are not generalisable due to small numbers

Table 20: ADOM Q12 – Physical health – mean score

Group	First presentation	Admission	3 months	6 months	9 months	12 months
All	1.7	1.2	0.6	0.7	0.7	0.8
Male	1.5	1	0.5	0.5	0.7	0.8
Female	2	1.4	0.8	0.8	0.8	0.8
Māori	1.5	1.1	0.6	0.5	0.6	0.7
Pacific	1.6	1.1	0.5	1.2	0.3	0.3
European	1.8	1.2	0.7	0.7	0.7	0.9
Other	1.9	0.8	0.5	1	1.7	1.6
Teens	2.4	1.1	0.6	0	0	1.5
20s	1.6	1.1	0.6	0.6	0.6	0.7
30s	1.7	1.2	0.6	0.5	0.7	0.8
40s	1.9	1.3	0.6	0.9	1	1
50s	1.8	1.3	1	0.8	1	1.1
60+*	2.5	0.8	1.1	1.1	1	0.9
Methamphetamine	1.6	1	0.6	0.6	0.7	0.7
Cannabis	1.2	1	0.6	0.5	1.1	1
Alcohol	2.1	1.5	0.6	0.8	0.7	1
Opiates*	1.5	1.8	0.8	0.5	1	0.9
Other	2.5	2.1	0.9	0.4	0.5	1
WSA	1.7	1.2	0.6	0.6	0.7	0.8
ASA	1.9	1.3	0.9	0.8	0.6	0.6
ASR	1.6	1.1	0.6	0.7	0.8	0.9
T	2.1	1.2	0.3	0.4	0.8	0.7
Justice client	1.3	0.9	0.5	0.5	0.7	0.6
Non-Justice	2	1.4	0.7	0.8	0.8	0.9
Period 1 (Jul '12 – Jun '15)	1.8	1.2	0.7	0.7	0.7	0.9
Period 2 (Jul '15 – Jun '18)	1.6	1.1	0.5	0.6	0.8	0.7

\*Results for some subgroups are not generalisable due to small numbers

Table 21: ADOM Q12 – Physical health – distribution of scores

Frequency of occurrence	First presentation	Admission	3 months	6 months	9 months	12 months
N	353	519	248	194	140	111
Never (0)	28%	44%	65%	65%	62%	59%
Less than weekly (1)	18%	23%	19%	18%	20%	20%
Once or twice a week (2)	22%	14%	9%	9%	9%	11%
3-4 times a week (3)	17%	7%	3%	4%	3%	2%
Daily or almost daily (4)	16%	11%	4%	5%	6%	8%

Table 22: ADOM Q13 – Mental health – mean score

Group	First presentation	Admission	3 months	6 months	9 months	12 months
All	2.4	1.4	0.8	0.9	0.9	0.8
Male	2.2	1.2	0.7	0.7	0.8	0.8
Female	2.6	1.8	1	1.1	1.1	0.9
Māori	2.2	1.4	0.8	0.8	0.8	0.8
Pacific	2.4	1.2	0.8	1.5	0.4	0.5
European	2.4	1.5	0.8	0.9	0.9	0.8
Other	2.4	1.1	1.3	1.2	1.4	1.9
Teens	3	1.6	1	0.5	1.2	1
20s	2.5	1.4	0.8	0.9	0.8	0.7
30s	2.3	1.5	0.8	0.8	0.8	0.9
40s	2.3	1.4	0.8	0.9	1	0.8
50s	2.4	1.5	1	1.1	1.2	1.2
60+*	2.9	1.2	0.6	0.4	0.6	0.3
Methamphetamine	2.2	1.3	0.7	0.8	0.8	0.7
Cannabis	2.3	1.4	1	1	0.9	0.9
Alcohol	2.6	1.7	1	0.9	0.9	1
Opiates	2.4	1.7	0.9	1.1	1.5	0.8
Other	2.8	2	1.1	1	0.3	0.8
WSA	2.4	1.4	0.7	0.9	0.8	0.8
ASA	2.5	1.6	1.5	1.1	1.2	1.1
ASR	2.2	1.3	0.9	0.9	1	0.7
T	2.6	1.9	0.6	0.4	1.7	0.7
Justice client	1.9	1	0.6	0.6	0.6	0.5
Non-Justice	2.7	1.8	1	1.1	1.1	1.1
Period 1 (Jul '12 – Jun '15)	2.4	1.5	0.9	0.9	0.9	0.8
Period 2 (Jul '15 – Jun '18)	2.4	1.4	0.8	0.8	0.9	0.9

\*Results for some subgroups are not generalisable due to small numbers

Table 23: ADOM Q13 – Mental health – distribution of scores

Frequency of occurrence	First presentation	Admission	3 months	6 months	9 months	12 months
N	674	1080	555	462	381	332
Never (0)	13.95%	36.94%	54.41%	54.33%	54.86%	57.83%
Less than weekly (1)	14.09%	20.56%	23.60%	19.70%	19.42%	20.78%
Once or twice a week (2)	21.07%	17.41%	12.07%	13.85%	14.17%	9.94%
3-4 times a week (3)	22.26%	11.57%	3.60%	7.58%	4.99%	3.61%
Daily or almost daily (4)	28.64%	13.52%	6.31%	4.55%	6.56%	7.83%

Table 24: ADOM Q14 – Conflict – mean score

Group	First presentation	Admission	3 months	6 months	9 months	12 months
All	1.9	1	0.2	0.2	0.3	0.2
Male	1.7	0.9	0.1	0.1	0.3	0.2
Female	2.1	1.1	0.3	0.3	0.3	0.3
Māori	1.7	1	0.2	0.1	0.2	0.1
Pacific	1.6	0.8	0.3	0.5	0	0
European	2	1	0.2	0.2	0.4	0.3
Other	1.9	1.1	0.4	0.4	0.5	0.6
Teens	2.7	1.1	0	0	0.3	0.8
20s	2.1	1	0.4	0.3	0.2	0.2
30s	1.8	1	0.2	0.2	0.5	0.3
40s	1.7	0.9	0.1	0.1	0.2	0.2
50s	1.3	0.8	0	0.1	0.2	0.1
60+*	2.5	1	0	0	0	0
Methamphetamine	1.8	0.9	0.2	0.2	0.4	0.2
Cannabis	1.9	0.9	0.3	0.2	0.1	0.2
Alcohol	1.9	1.1	0.1	0.2	0.2	0.3
Opiates	1.9	0.8	0.1	0.1	0.7	0
Other	2	1.8	0.7	0	0	0.7
WSA	1.7	0.8	0.1	0.1	0.3	0.2
ASA	2.1	1.2	0.5	0.3	0.6	0.5
ASR	1.9	1	0.2	0.5	0.3	0.2
T	1.9	1.4	0	0.1	0	0
Justice client	1.6	0.9	0.2	0.2	0.3	0.2
Non-Justice	2.1	1.1	0.2	0.2	0.3	0.3
Period 1 (Jul '12 – Jun '15)	2	1.1	0.2	0.2	0.4	0.2
Period 2 (Jul '15 – Jun '18)	1.8	0.9	0.2	0.3	0.3	0.3

\*Results for some subgroups are not generalisable due to small numbers

Table 25: ADOM Q14 – Conflict – distribution of scores

Frequency of occurrence	First presentation	Admission	3 months	6 months	9 months	12 months
<b>N</b>	674	1079	307	463	241	332
Never (0)	18.55%	52.73%	91.53%	88.77%	85.06%	87.65%
Less than weekly (1)	21.51%	18.81%	2.93%	5.62%	5.81%	6.02%
Once or twice a week (2)	29.23%	13.44%	1.95%	3.24%	4.15%	3.31%
3-4 times a week (3)	15.13%	6.77%	1.30%	1.30%	2.90%	1.51%
Daily or almost daily (4)	15.58%	8.25%	2.28%	1.08%	2.07%	1.51%

Table 26: ADOM Q15 – Interfered – mean score

Group	First presentation	Admission	3 months	6 months	9 months	12 months
All	2.1	1	0.2	0.3	0.3	0.3
Male	2	0.9	0.1	0.2	0.2	0.3
Female	2.3	1.1	0.3	0.3	0.4	0.2
Māori	1.9	0.9	0.2	0.1	0.2	0.3
Pacific	1.6	0.9	0.2	0.4	0	0
European	2.2	1	0.2	0.3	0.3	0.3
Other	2.1	1	0.5	1	1	0.6
Teens	2.3	0.7	0	0	0.2	1
20s	2.2	1	0.3	0.3	0.3	0.2
30s	2.1	1	0.2	0.3	0.3	0.3
40s	2.1	1	0.2	0.2	0.2	0.5
50s	2	0.9	0.1	0.3	0.4	0.2
60+*	2.4	1	0	0	0	0
Methamphetamine	2	0.9	0.2	0.3	0.4	0.2
Cannabis	2	0.9	0.1	0.1	0.1	0.3
Alcohol	2.3	1.2	0.1	0.2	0.2	0.4
Opiates	2.5	1.4	0.2	0.5	0.7	0.1
Other	2.3	1.8	0.4	0.2	0	0.7
WSA	2.1	0.9	0.1	0.2	0.2	0.3
ASA	2.3	1.2	0.7	0.6	0.7	0.7
ASR	2	0.9	0.3	0.4	0.3	0.2
T	2.1	1.1	0	0	0	0
Justice client	1.8	0.8	0.2	0.2	0.2	0.2
Non-Justice	2.4	1.1	0.2	0.3	0.3	0.4
Period 1 (Jul '12 – Jun '15)	2.3	1.2	0.2	0.2	0.3	0.2
Period 2 (Jul '15 – Jun '18)	2	0.8	0.2	0.3	0.3	0.4

\*Results for some subgroups are not generalisable due to small numbers

Table 27: ADOM Q15 – Interfered – distribution of scores

Frequency of occurrence	First presentation	Admission	3 months	6 months	9 months	12 months
<b>N</b>	676	1080	555	463	381	332
Never (0)	21.60%	60.00%	91.35%	88.98%	87.93%	88.86%
Less than weekly (1)	15.98%	12.22%	2.16%	3.02%	4.72%	3.31%
Once or twice a week (2)	18.05%	8.70%	3.42%	3.89%	1.84%	1.81%
3-4 times a week (3)	17.01%	6.20%	1.26%	1.73%	1.57%	1.20%
Daily or almost daily (4)	27.37%	12.87%	1.80%	2.38%	3.94%	4.82%



Table 28: ADOM Q16 – Work – mean score

Group	First presentation	Admission	3 months	6 months	9 months	12 months
All	1.6	1.2	1.9	2.6	2.8	3.1
Male	1.6	1.1	2	2.6	2.7	3.1
Female	1.6	1.2	1.9	2.5	2.8	3.1
Māori	1.6	1.2	2.2	2.8	2.8	3.2
Pacific	0.7	1	2.4	2.9	3.6	3.1
European	1.7	1.1	1.8	2.5	2.7	3
Other	1.5	1.2	1.7	2.5	2.1	3.9
Teens	2.2	0.9	0.4	2.2	1	3.3
20s	1.6	1.1	2	2.6	3.1	3.3
30s	1.7	1.2	2.1	2.8	2.8	3.1
40s	1.6	1.1	1.8	2.4	2.5	2.8
50	1.2	1	1.5	2	2.2	2.8
60+*	1.6	1	1.5	2	2	1.7
Methamphetamine	1.5	1.2	2	2.7	2.9	3.2
Cannabis	1.8	1.2	2	2.7	2.7	2.8
Alcohol	1.7	1.1	1.9	2.5	2.6	2.9
Opiates	2.2	1	0.9	1.6	2.3	3.4
Other	1.8	1.4	2.7	3	3	3.2
WSA	1.7	1.1	1.9	2.7	2.8	3.1
ASA	1.5	1.1	2.2	2.4	2.5	2.7
ASR	1.5	1.2	2.1	2.2	2.8	2.9
T	1.6	1.2	1.5	2.7	2.5	3
Justice client	1.4	1.2	1.9	2.6	2.8	3.1
Non-Justice	1.8	1.1	2	2.6	2.8	3
Period 1 (Jul '12 – Jun '15)	1.7	1.3	1.9	2.5	2.7	3.1
Period 2 (Jul '15 – Jun '18)	1.5	1	2	2.7	2.8	3.1

\*Results for some subgroups are not generalisable due to small numbers

Table 29: ADOM Q16 – Work – distribution of scores

Frequency of occurrence	First presentation	Admission	3 months	6 months	9 months	12 months
<b>N</b>	<b>352</b>	<b>519</b>	<b>248</b>	<b>194</b>	<b>140</b>	<b>111</b>
Never (0)	37%	55%	28%	18%	15%	10%
Less than weekly (1)	17%	12%	12%	7%	7%	5%
Once or twice a week (2)	12%	11%	23%	15%	16%	13%
3-4 times a week (3)	11%	6%	11%	17%	14%	10%
Daily or almost daily (4)	21%	15%	25%	43%	49%	61%

Table 30: ADOM Q17 – Housing – mean score

Group	First presentation	Admission	3 months	6 months	9 months	12 months
All	0.9	0.4	0.4	0.3	0.3	0.2
Male	0.9	0.4	0.3	0.2	0.2	0.2
Female	1	0.4	0.5	0.4	0.3	0.3
Māori	0.9	0.4	0.4	0.4	0.3	0.2
Pacific	0.8	0.4	0.4	0.3	0	0
European	1	0.4	0.3	0.3	0.2	0.2
Other	0.4	0.3	0.1	0.2	0	0.4
Teens	1.8	0.6	0.7	0	0	1
20s	1	0.4	0.4	0.3	0.2	0.2
30s	0.9	0.4	0.3	0.3	0.3	0.2
40s	0.8	0.3	0.3	0.3	0.3	0.2
50s	0.5	0.2	0.3	0.3	0.1	0.3
60+*	0.1	0.5	0.5	0.3	0	0
Methamphetamine	1	0.4	0.4	0.3	0.3	0.2
Cannabis	0.7	0.2	0.5	0.1	0.2	0.2
Alcohol	0.9	0.4	0.3	0.3	0.2	0.2
Opiates	0.2	0.5	0	0	0.3	0.4
Other	0.6	0.3	0.3	0.8	0.3	1
WSA	0.8	0.3	0.3	0.3	0.3	0.2
ASA	1	0.5	0.3	0.2	0.3	0.5
ASR	1.1	0.4	0.4	0.5	0.2	0.1
T	0.9	0.6	0.9	0	0	0
Justice client	0.9	0.4	0.3	0.3	0.3	0.2
Non-Justice	1	0.4	0.4	0.3	0.3	0.2
Period 1 (Jul '12 – Jun '15)	0.9	0.5	0.4	0.3	0.2	0.2
Period 2 (Jul '15 – Jun '18)	1	0.3	0.3	0.2	0.3	0.2

\*Results for some subgroups are not generalisable due to small numbers

Table 31: ADOM Q17 – Housing – distribution of scores

Frequency of occurrence	First presentation	Admission	3 months	6 months	9 months	12 months
<b>N</b>	667	1080	553	463	381	332
Never (0)	58.77%	81.39%	86.62%	89.20%	90.81%	92.77%
Less than weekly (1)	16.64%	9.72%	3.44%	2.38%	1.31%	1.51%
Once or twice a week (2)	9.15%	2.41%	3.62%	3.02%	3.41%	0.90%
3-4 times a week (3)	4.05%	1.76%	1.27%	0.86%	0.52%	2.11%
Daily or almost daily (4)	11.39%	4.72%	5.06%	4.54%	3.94%	2.71%

Table 32: ADOM Q18 – Crime – mean score

Group	First presentation	Admission	3 months	6 months	9 months	12 months
All	1.1	0.6	0.1	0.1	0.2	0.1
Male	1.1	0.6	0.1	0.1	0.2	0.1
Female	1.2	0.5	0.1	0.2	0.2	0.1
Māori	1.1	0.5	0.1	0.1	0.2	0.1
Pacific	0.9	0.5	0	0.3	0	0.1
European	1.2	0.6	0.1	0.1	0.2	0.1
Other	0.7	0.7	0	0.4	0.3	0
Teens	0.7	0.1	0	0	0	0
20s	1.4	0.7	0.1	0.2	0.2	0.1
30s	1.1	0.6	0	0.1	0.2	0.1
40s	1	0.5	0	0.1	0.1	0.1
50s	0.7	0.4	0.2	0.2	0.1	0.2
60+*	0.4	0.3	0	0	0	0
Methamphetamine	1.4	0.6	0.1	0.1	0.3	0.1
Cannabis	1.1	0.5	0.1	0.1	0	0
Alcohol	0.9	0.5	0.1	0.1	0	0.1
Opiates	0.7	0.6	0	0.3	0.2	0
Other	1.1	1	0	0	0	0
WSA	1	0.4	0.1	0.1	0.2	0.1
ASA	1.2	0.7	0.1	0.3	0.1	0.4
ASR	1.3	0.7	0.1	0.3	0.3	0
T	1.2	0.5	0	0	0	0
Justice client	1.1	0.6	0.1	0.1	0.2	0.1
Non-Justice	1.2	0.6	0.1	0.1	0.1	0.1
Period 1 (Jul '12 – Jun '15)	1.1	0.7	0.1	0.1	0.1	0.1
Period 2 (Jul '15 – Jun '18)	1.2	0.4	0.1	0.2	0.2	0.1

\*Results for some subgroups are not generalisable due to small numbers

Table 33: ADOM Q18 – Crime – distribution of scores

Frequency of occurrence	First presentation	Admission	3 months	6 months	9 months	12 months
<b>N</b>	676	1082	555	462	241	332
Never (0)	47.49%	74.21%	95.86%	94.37%	91.70%	93.98%
Less than weekly (1)	22.19%	11.09%	2.34%	2.38%	3.32%	3.61%
Once or twice a week (2)	11.09%	4.81%	0.90%	1.30%	2.90%	1.81%
3-4 times a week (3)	7.25%	3.33%	0.36%	0.65%	0.83%	0.00%
Daily or almost daily (4)	11.98%	6.56%	0.54%	1.30%	1.24%	0.60%

## PTSD scores

Table 34: PTSD scores at admission and discharge

PTSD score	Admission	Discharge	6 Months
N	1072	770	266
Mean	42.9	33.9	30.3
SD	14.8	13.8	13.3
Median	42	30	26

Admission and Discharge data: Mean Difference=8.33(SD=14.46),  $t(n=760)=15.902$ ,  $p<.001$

Table 35: Clients with PTSD score of 44 or higher

Group	Admission	Discharge	6 Months	Within-subject change by Independent Variable (GLM)
All	501 (46.7%)	171 (22.2%)	37 (13.9%)	AR1 Rho, Z=9.765, $p<.001$ . Significant change over time.
Male+	268 (42.1%)	97 (21.8%)	18 (12%)	F(2,1477)=2.131, $p=.119$ .
Female+	233 (53.4%)	74 (22.6%)	19 (16.3%)	
Māori	145 (45.5%)	57 (25%)	10 (15.6%)	F(3,1268)=1.163, $p=.322$
Pacific	22 (42.3%)	7 (25.9%)	4 (44.4%)	
European	326 (47.9%)	104 (20.6%)	22 (11.6%)	
Other	10 (33.3%)	5 (27.7%)	1 (16.6%)	
Teens	10 (71.4%)	6 (50%)	1 (33.3%)	F(5,1194)=.795, $p=.553$
20s	191 (51.2%)	66 (25.1%)	16 (17.7%)	
30s	186 (44.7%)	68 (22.5%)	13 (12.8%)	
40s	81 (41.3%)	22 (16%)	4 (8.3%)	
50s*	32 (45.7%)	11 (20%)	3 (13%)	
60 and over*	3 (30%)	0 (0%)	0 (0%)	F(4,919)=4.076, $p=.003$ .
Methamphetamine+	260 (43.9%)	92 (22.9%)	23 (13.9%)	
Cannabis+	57 (51.3%)	28 (34.5%)	3 (13.6%)	
Alcohol	159 (48.1%)	50 (19%)	10 (14.4%)	
Opioids	13 (46.4%)	2 (8.6%)	1 (16.6%)	
Other	14 (70%)	1 (10%)	0 (0%)	F(3,1027)=11.092, $p<.001$ .
ASA	161 (52.1%)	61 (35.8%)	5 (20.8%)	
ASR	135 (48.9%)	56 (39.7%)	11 (25.5%)	
T	19 (65.5%)	5 (50%)	0 (0%)	
WSA	188 (40.3%)	51 (11.1%)	21 (10.5%)	F(1,908)=27.474, $p<.001$ .
Justice client+	179 (36.8%)	74 (22.8%)	14 (11.6%)	
Non-Justice+	324 (54.5%)	99 (21.8%)	23 (15.5%)	F(1,892)=21.801, $p<.001$ .
Period 1 (Jul '12 – Jun '15)	240 (46.3%)	68 (17.6%)	10 (12.8%)	
Period 2 (Jul '15 – Jun '18)	263 (46.7%)	105 (26.8%)	27 (14.2%)	

+ Statistically significant differences between subgroups

\*Results for some subgroups are not generalisable due to small numbers

## DASS comparison scores

Table 36: Mean DASS scores

Mean DASS scores	First present-ation	Admission	Significant change between presentation & Admission	Admission	Discharge	Significant change between Admission & Discharge
N	668		df=667	764		df=763
DASS D (depression)	23.29	14.19	t=19.657, p<.001	13.03	9.18	t=8.919, p<.001
DASS A (anxiety)	17.74	11.56	t=16.562, p<.001	11.27	7.71	t=10.255, p<.001
DASS S (stress)	24.63	18.14	t=15.380, p=.001	17.53	13.64	t=9.652, p<.001

All changes in mean DASS score were significant at the  $p=.001$  level (paired samples t-test).

Table 37: Mean DASS Score for Depression

Group	First presentation	Admission	Discharge	3 Months	6 Months	9 Months	12 Months	Significant Change over time by Independent Variable (GLM)
All	23.3	13.5	9.2	7.4	7.9	7.8	5.8	
Male	22.2	13.2	8.9	7.2	6.9	7.3	5.7	F(2,1563)=.084, p=.084
Female	24.8	14.1	9.6	7.6	9	8.4	6	
Māori	21.5	12.2	9.2	7.6	6.7	7.5	6.6	F(6,1541)=.843, p=.537
Pacific	23.3	13	8.5	8.6	14.5	3.6	5.6	
European	24.1	14.2	9.3	7.3	7.9	7.8	5.4	
Other	21.3	13.2	8.4	6.6	9.0	14.3	9.7	
Teens	25	16.9	15	9.4	7.3	16.4	8.0	F(10,1856)=1.826, p=.052
20s	22.3	13.3	9.7	7.7	7.9	6.0	5.0	
30s	23.9	13.7	9.2	7.4	7.5	8.4	6.9	
40s	22.9	13.6	8.2	7.2	8.7	8.5	5.6	
50s	25.8	14.1	8.3	6.6	7.5	9.2	4.2	
60	28.3	9.4	7.2	4.3	4.3	4.0	4.6	
Meth+	21.2	12.3	9.1	6.8	7.3	6.6	5.2	F(8,1384)=6.072, p<.001
Cannabis+	21.9	14.1	10.2	9.4	9.4	11.2	8.6	
Alcohol	26.5	15	9.2	7.5	7.8	8.1	6	
Opioids+	22.1	14.6	8	8.4	11.6	13.7	4	
Other	30.6	21.6	4.9	13.3	10.9	4.5	6.8	
WSA+	23.1	12.3	5.9	6.5	7.3	7	5.7	F(6,1519)=12.460, p<.001.
ASA+	24.7	15.2	13.6	11.6	9.1	10.8	6.6	
ASR+	21.9	13.4	13.9	8.2	9.7	8.8	6.4	
T	26.4	17.4	15.8	4.7	4.6	11	2.3	
Justice client	19.9	12.2	8.8	6	5.9	7	4.8	F(2,1532)=16.162, p<.001
Non-Justice	25.8	14.7	9.5	8.5	9.2	8.3	6.5	
Period 1 (Jul '12 – Jun '15)	24	14.4	9.1	7.7	7.7	7.8	5.0	F(2,1554)=4.045, p=.018
Period 2 (Jul '15 – Jun '18)	22.6	12.7	9.3	7.0	7.9	7.7	7.1	

+Statistically significant differences between subgroups

\*Results for some subgroups are not generalisable due to small numbers

Table 38: Mean DASS Score for Anxiety

Group	First presentation	Admission	Discharge	3 Months	6 Months	9 Months	12 Months	Significant Change over time by Independent Variable (GLM)
All	17.7	11.4	7.7	5.6	5.8	5.9	5.6	
Male	16.5	10.3	7.3	5	4.8	5.1	5	F(2,1497)=3.475, p=.031
Female	19.4	12.9	8.2	6.5	6.9	6.8	6.3	
Māori	17.5	10.9	8.5	6	5.8	6.6	5.8	F(6,2108)=1.112, p=.352
Pacific	19.9	11.2	7.4	4	10.9	2.8	5.5	
European	17.7	11.5	7.3	5.6	5.4	5.5	5.3	
Other	18.4	12.9	9.9	4.0	9.4	13.4	10.0	
Teens	21.5	13.1	12.5	4.0	5.0	8.8	6.0	F(10,1569)=1.152, p=.319
20s	17.3	11.7	8	6.0	5.6	5.1	5.0	
30s	18	11.7	8.1	6.3	5.8	6.0	5.9	
40s	17.3	10.6	6.8	4.3	5.8	6.0	5.9	
50s	19.3	10.1	5.9	4.8	5.7	8.4	5.5	
60+	17	6.4	4	2.0	3.7	2.3	3.4	
Meth	16.3	10.6	8.1	5.5	5.3	5.3	4.9	F(8,1340)=5.297, p<.001
Cannabis	16.1	11.3	7.9	6.1	5	7	7.6	
Alcohol	20	12.4	7.2	5.9	6.5	6.3	6.1	
Opioids	17.1	11.4	6.7	4.6	7.1	8	4.5	
Other	23.3	15.8	4.9	3.8	7.4	2.5	3.6	
WSA+	17.9	10.8	5.6	4.9	5.4	5.7	5.5	F(6,1684)=10.770, p<.001.
ASA	18.6	12.5	10.3	9.1	7.5	7.5	5.9	
ASR+	16.6	10.6	11.2	6.1	6.7	5.5	5.6	
T+	17	14.6	12.6	2	1.4	5.7	2.3	
Justice client	15.2	9.4	7.5	4.5	4.4	5.1	4.3	F(2,1509)=16.652, p<.001
Non-Justice	19.6	13	7.9	6.4	6.7	6.4	6.4	
Period 1 (Jul '12 – Jun '15)	18.2	11.8	7.2	6.0	5.6	6.2	5.8	F(2,1554)=5.021, p=.007
Period 2 (Jul '15 – Jun '18)	17.2	10.9	8.2	5.1	5.9	5.3	5.1	

\*Results for some subgroups are not generalisable due to small numbers

Table 39: Mean DASS Score for Stress

Group	First presentation	Admission	Discharge	3 Months	6 Months	9 Months	12 Months	Significant Change over time by Independent Variable (GLM)
All	24.6	17.9	13.7	11.3	11.4	11.8	11.0	
Male	23.5	16.8	13.2	10.6	9.8	10.8	10.1	F(2,1582)=2.281, p=.103
Female	26.2	19.4	14.3	12.3	13.4	12.9	12	
Māori	23.6	16.3	13.4	11.1	10.5	12	10.8	F(6,1737)=.926, p=.475
Pacific	26.6	17.2	12.6	10.2	18.6	11.8	10.7	
European	24.9	18.6	13.8	11.5	11.4	11.5	10.7	
Other	24	17.3	13.6	8.4	12.6	15.4	18.6	
Teens	28.5	17.9	18.8	12.3	10.0	20.0	9.0	F(10,1121)=1.402, p=.174
20s	24.4	18.5	14.8	12.3	11.7	12.1	10.8	
30s	25	18	13.5	11.4	11.5	11.0	11.4	
40s	24.2	17.2	11.9	10.3	11.7	12.3	10.7	
50s	25.1	15.7	12.4	9.2	9.6	12.0	11.5	
60	22.5	11.6	12.6	6.5	8.3	5.7	5.7	
Meth+	23.8	17.2	13.6	10.8	10.6	10.9	10.1	F(8,1628)=3.441, p<.001
Cannabis+	23.9	18.3	15.3	12.7	12.7	15.9	14.2	
Alcohol+	26	18.4	13.6	11.8	12.1	11.6	11.5	
Opioids+	21.6	17.3	12.4	10.6	13.3	13.3	9.1	
Other+	30.4	23.4	9.3	13.3	15.4	9	10.8	
WSA+	24.5	16.8	10.6	10.5	11	11.4	10.7	F(6,1202)=13.287, p<.001
ASA+	25.7	19.1	17.9	15.1	12.7	13	13.3	
ASR+	23.7	17.7	18.3	12.1	12.8	11.9	10.9	
T	24.6	20.6	17.4	7.5	7.4	11.7	7.7	
Justice client	21.8	15.8	13.2	10	9.4	10.1	9.9	F(2,1519)=11.246, p<.001
Non-Justice	26.7	19.4	14	12.2	12.8	12.8	11.6	
Period 1 (Jul '12 – Jun '15)	24.5	18.7	13.5	11.7	11.5	11.8	10.5	F(2,1567)=5.321, p=.005
Period 2 (Jul '15 – Jun '18)	24.8	17	13.9	10.7	11.3	11.5	11.7	

+Statistically significant differences between subgroups

\*Results for some subgroups are not generalisable due to small numbers



Table 40: Distribution of depression scores

Severity	First presentation	Admission	Discharge	3 month	6 month	9 month	12 month
Extremely severe 28+	46.8% (275)	19.6% (147)	10.8% (50)	9.3% (31)	11.7% (34)	11.5% (29)	7.7% (16)
Severe 21-27	20.2% (119)	15.7% (118)	9.9% (46)	6% (20)	8.2% (24)	7.1% (18)	5.3% (11)
Moderate 14-20	23.3% (137)	29.8% (224)	24% (111)	18% (60)	13.4% (39)	14.6% (37)	10.6% (22)
Mild 10-13	6.8% (40)	19.8% (149)	24% (111)	17.4% (58)	14.1% (41)	11.9% (30)	9.1% (19)
Normal 0-9	2.7% (16)	14.9% (112)	31.1% (144)	49.2% (164)	52.4% (152)	54.7% (138)	67.1% (139)

Table 41: Distribution of anxiety scores

	First presentation	Admission	Discharge	3 month	6 month	9 month	12 month
Extremely severe 20+	46.4% (312)	19.5% (212)	8.7% (68)	7% (39)	7.8% (36)	7.3% (28)	7.8% (26)
Severe 15-19	14.2% (96)	9.7% (106)	5.5% (43)	2.5% (14)	4.1% (19)	5.2% (20)	4.2% (14)
Moderate 10-14	16.2% (109)	22.9% (248)	20.3% (159)	11.9% (66)	9.5% (44)	10.7% (41)	9.3% (31)
Mild 8-9	4.4% (30)	8.7% (95)	7.6% (60)	5.2% (29)	6.9% (32)	6.8% (26)	6% (20)
Normal 0-7	18.6% (125)	38.9% (421)	57.6% (450)	73.1% (404)	71.5% (330)	69.7% (265)	72.4% (239)

Table 42: Distribution of stress scores

	First presentation	Admission	Discharge	3 month	6 month	9 month	12 month
Extremely severe 34+	23.9% (161)	8.8% (96)	3.9% (31)	3.2% (18)	4.7% (22)	3.6% (14)	3.9% (13)
Severe 26-33	27.9% (188)	16% (174)	8.5% (67)	6.8% (38)	6% (28)	9.2% (35)	6.9% (23)
Moderate 19-25	17.2% (116)	18.6% (202)	11.1% (87)	9.2% (51)	9.3% (43)	10.7% (41)	8.7% (29)
Mild 15-18	9.5% (64)	13% (141)	12.1% (95)	8.6% (48)	9.1% (42)	7.1% (27)	8.1% (27)
Normal 0-14	21.2% (143)	43.3% (469)	64.1% (500)	71.9% (397)	70.7% (326)	69.2% (263)	72.1% (238)

## Client Assessment Inventory (CAI)

Table 43: Client Assessment Inventory – mean score

Group	Admission	42 days	90 days	Discharge	Significant Change over time by Independent Variable (GLM)
All	48.8	53	57.3	53.8	F(1,883)=170.41, p<.001
Male	48.9	53.1	56.8	53.6	F(1,884)=.670, p=.413
Female	48.8	52.9	57.9	54.1	
Māori	49.5	53.3	57.4	53.4	
Pacific	49.2	52.3	54.7	54.1	
European	48.5	53	57.5	53.9	
Other	49	52.5	56.4	54.5	F(3,1252)=.758, p=.518
Teens	48.2	51	54.8	49.4	F(5,778)=1.516, p=.182
20s	47.7	51.9	56.2	52.4	
30s	49.2	53.4	58	53.7	
40s	49.8	53.9	57.5	55.7	
50s	50.3	54.3	57.7	56.7	
60+	51.3	55.3	61.6	56.5	
Meth	48.9	52.9	57.4	53.6	
Cannabis	48.8	52.6	56.7	52.4	F(4,1031)=2.803, p=.025
Alcohol	48.9	53.4	57.5	54.1	
Opioids	47.7	52	54.9	55.6	
Other	46.6	55.8	59.2	58.2	
WSA+	49.8	53.8	57.5	58.7	
ASA+	47.7	52.6	56.9	46.6	F(3,1029)=84.070, p<.001
ASR+	48.5	51.1	55.8	46.4	
T	48.2	53.7	58.1	51.4	
Justice client	49.2	53	57.3	53.6	
Non-Justice	48.6	53	57.3	53.9	F(1,871)=2.022, p=.155
Period 1 (Jul '12 – Jun '15)	50.1	51.2	.	.	F(1,879)=3.465, p=.063
Period 2 (Jul '15 – Jun '18)	48.6	53.1	57.3	54.2	

\*Results for some subgroups are not generalisable due to small numbers

Table 44: Client Assessment Inventory – distribution of scores

Distribution of scores (Mean score)	Admission	Discharge
Strongly agree	3.3% (36)	17.4% (135)
Agree	49.7% (534)	58.1% (450)
Neutral	44.3% (476)	20.9% (162)
Disagree	2.4% (26)	3.2% (25)
Strongly disagree	0% (1)	0.2% (2)

**Table 45: Client Assessment Inventory – analysis by question**

<b>% of clients who answered 'agree' or 'strongly agree'</b>	<b>Admission</b>	<b>Discharge</b>
1. My behaviour and attitude show that I am a mature person	53.5%	69.5%
2. I regularly meet my obligations and responsibilities	55.5%	76.1%
3. I strive to live with positive values and principles (honesty)	67.8%	81.0%
4. I still have the attitudes and behaviours associated with the drug/criminal lifestyle	49.3%	68.7%
5. I often present an image rather than my true self	33.0%	17.6%
6. My job function helps me learn about myself and is a valuable part of treatment	49.3%	68.3%
7. I get along with and interact well (mix well socially with people)	66.3%	76.6%
8. Overall, I have good awareness, judgment, decision-making and problem solving skills	61.4%	74.1%
9. I'm able to identify my feelings and express them in an appropriate way	34.2%	61.3%
10. I feel good about who I am (my self-esteem is high)	25.5%	54.2%
11. I understand and accept the program rules, philosophy and structure	84.7%	80.6%
12. I enthusiastically participate in program activities	66.4%	79.1%
13. I feel an investment, attachment and ownership in the program	66.0%	75.0%
14. My behaviour and attitude set a good example for other members of the community	30.5%	11.9%

## Maudsley physical health symptoms

Table 46: Maudsley physical health – mean score

Group	Pre-admission	Admission	Discharge	3 months	6 months	7 months	12 months
n	669	540	774	554	463	381	331
All	16.9	12.1	8.7	6.7	6.9	7.3	7.6
Male	15.6	10.8	8	5.9	6.2	6.6	7.4
Female	18.7	13.9	9.7	7.8	7.7	8.2	7.9
Māori	17	12.2	8.5	6.9	6.4	7.3	7.5
Pacific	17.7	10.9	9	5.7	9.5	5.3	4.8
European	16.8	12.2	8.7	6.6	6.9	7.2	7.7
Other	19.2	9	7.9	7.4	8.9	12.3	11
Teens	17.5	11.1	10.8	4.6	4.5	7.4	11.5
20s	16.5	11.4	8.6	6.1	6.7	6.2	6.4
30s	17	12.3	8.2	7	6.6	7.3	7.3
40s	17.4	13	8.8	6.9	7.5	8.1	9
50s	18	12.6	11.1	7.2	8.3	9.8	11.1
60+*	15.2	8.2	8	7.5	6.7	7.3	7
Methamphetamine	15.6	10.9	8.1	6.1	6.4	7	6.7
Cannabis	15.5	11.7	9.2	7.5	7.4	7.4	7.8
Alcohol	19.2	13.9	9.6	7.3	7.7	7.5	9.2
Opiates	15.1	13	7	7	7.2	9.9	6.8
Other	20.3	15.2	6	7.5	4.9	3.8	7.5
WSA	17.2	11.6	8	6.4	6.8	7.3	7.6
ASA	17.8	13	9.6	8.3	7.2	7	8.6
ASR	15.3	11.3	9.6	6.9	7.1	7.5	7
T	17.5	14.6	9.8	3.5	5.3	4.3	5
Justice client	14.1	10.2	8.3	5.5	5.4	6.5	6.3
Non-Justice	18.9	13.5	8.9	7.6	7.9	7.8	8.6
Period 1 (Jul '12 – Jun '15)	17.3	12.2	8.5	7.2	7	7.5	7.7
Period 2 (Jul '15 – Jun '18)	16.5	12	8.8	6.1	6.7	7	7.5

\*Results for some subgroups are not generalisable due to small number

## Spiritual Assessment

Table 47: Higher Power index

Higher Power Index	Admission	Discharge
N	1077	771
Mean	63.1	69.4
SD	15.8	15.9
Median	64.0	69.0

Paired sample t-test:  $t(751) = -4.19$ ,  $p < .001$ , mean admission = 64.1 & discharge = 69.4

Table 48: Higher Power – mean score

Group	Admission	Discharge
All	63	69.3
Male	61.6	67.8
Female	65.1	71.4
Māori	65.4	72.3
Pacific	64.7	70.6
European	61.7	68.1
Other	66.3	66.4
Teens	60.4	61.8
20s	61.2	68.2
30s	63.5	70
40s	65	71.1
50s	65.3	70.2
60+	64.2	65.1
Methamphetamine	63.1	69.7
Cannabis	63.1	67.5
Alcohol	62.8	69.5
Opioids	67.8	69.2
Other	58.9	71.7
WSA	64.2	72.5
ASA	61.7	63.7
ASR	62.8	66.8
T	61.2	57.9
Justice client	61.8	69.7
Non-Justice	64.1	69.2
Period 1 (Jul '12 – Jun '15)	62.6	68.9
Period 2 (Jul '15 – Jun '18)	63.5	70

Table 49: Higher Power – distribution of scores

Response	Admission	Discharge	3 month	6 month	9 month	12-month follow up
Strongly disbelieve	2.8% (31)	2.9% (23)	1.2% (7)	2.1% (10)	1.8% (7)	1.5% (5)
Disbelieve	5.4% (59)	2.5% (20)	2.1% (12)	3% (14)	2.3% (9)	1.8% (6)
Neutral	31.7% (342)	16% (124)	14.8% (82)	13.6% (63)	13.4% (51)	14.2% (47)
Believe	37% (399)	37.3% (288)	38.2% (211)	35.4% (163)	33.1% (126)	32.7% (108)
Strongly believe	22.8% (246)	40.9% (316)	43.3% (239)	45.6% (210)	49.2% (187)	49.6% (164)

## Personality Inventory (PID-5)

Table 50: Personality Inventory (PID-5)

	Admission	Discharge
N <sup>26</sup>	563	389
Mean	31.6	25.7
SD	12.3	14.5
Median	32.0	25.0

Paired sample t-test:  $t(387)=7.324$ ,  $p<.001$ , mean admission=31 & discharge=25.7

Table 51: Personality Inventory (PID-5) – mean score

Group	Admission	Discharge
All	31.6	25.5
Male	30.6	24.9
Female	33.2	26.5
Māori	32.1	28
Pacific	31.5	29.5
European	31.5	24.1
Other	27.9	28.1
Teens	32.8	27.8
20s	32.4	26.6
30s	32.1	26
40s	30.7	25.4
50s	29.1	22.9
60+	9.3	5.3
Methamphetamine	31.7	26.7
Cannabis	31.2	27.4
Alcohol	30.9	23.9
Opioids	27.4	17
Other	41.6	28.5
WSA	29.8	20.6
ASA	33.2	30.9
ASR	32.7	36
T	33.1	37
Justice client	29.4	24.9
Non-Justice	33.4	26.3

Table 52: Personality Inventory (PID-5) – mean score per trait domain

Mean (SD)	Admission	Discharge	Paired samples t-test
n	563	410	409
PID Antagonism	4.4 (3)	3.9 (3.3)	$t=2.292$ , $p=.022$
PID Detachment	5.9 (3.2)	4.6 (3.3)	$t=5.664$ , $p<.001$
PID Disinhibition	8.3 (3.4)	5.5 (3.8)	$t=13.234$ , $p<.001$
PID Negative Affect	7.3 (3.5)	5.9 (3.8)	$t=7.139$ , $p<.001$
PID Psychoticism	5.6 (3.3)	4.4 (3.6)	$t=6.907$ , $p<.001$

<sup>26</sup> Prorated total score: scores calculated for Period 2 only, as only discharge scores were available for Period 1.

Table 53: Personal Inventory - severity codings (Period 2)

	Category	Admission	Discharge
Antagonism	Low	372	297
	Mild	136	71
	Significant	51	37
	High	4	5
Detachment	Low	264	247
	Mild	174	116
	Significant	113	40
	High	12	7
Disinhibition	Low	118	207
	Mild	167	107
	Significant	216	81
	High	62	15
Negative Affect	Low	162	195
	Mild	173	111
	Significant	195	87
	High	33	17
Psychoticism	Low	283	262
	Mild	168	83
	Significant	101	61
	High	11	4

## Eating Attitudes Test

Table 54: Eating Attitudes Test – admission vs discharge

	Admission	Discharge
n	1082	423
High Risk of Eating disorder (20+)	5.1%	3.3%
Paired Samples t-test n	408	
Mean EAT Score	.052	.034
	t=1.702, p=.090	

Table 55: Eating Attitudes Test - mean score

Group	Admission	Discharge
All	5.7	4.9
Male	4.4	3.9
Female	7.6	6.4
Māori	5.5	4.7
Pacific	6.6	6.6
European	5.7	5
Other	4.3	3.4
Teens	11.6	4.8
20s	6.5	5.1
30s	5.4	5.4
40s	4.7	4
50s	4.9	3.7
60+	2.2	2.3
Methamphetamine	5.6	5.1
Cannabis	5.2	4.4
Alcohol	5.9	4.6
Opioids	4.7	3.8
Other	8.3	9.3

WSA	5.4	4.8
ASA	5.9	4.9
ASR	5.7	5.3
T	6.4	4.5
Justice client	4.7	4.3
Non-Justice	6.5	5.4
Period 1 (Jul '12 – Jun '15)	6	6.4
Period 2 (Jul '15 – Jun '18)	5.3	4.8

## Self-Harm Inventory

Table 56: Self-Harm Inventory – admission versus one-year follow up<sup>27</sup>

		Admission	One Year Follow-up
n		1082	423
Three Month Risk	No self harm issues	85.3%	96.7%
	Self harm issues	6.9%	1.8%
	Self harm concerns	0.2%	0.0%
	Suicidality likely	1.2%	0.0%
	Suicidal acting out/ Pervasive self harm	6.4%	1.5%
Paired Samples t-test n		303	
Mean Ever Self Harm Score <sup>28</sup>	t=-1.297, p=.196	2139.5	4628.71
Mean 3 Month Self Harm Score	t=2.959, p=.003	165.71	19.22

## Qualitative questions

Table 57: Qualitative question 1 – help from services

Q1: Since leaving Higher Ground, have you received help from drug treatment services or other support to help you stay off drugs/alcohol? If yes, what organisations?			
	Community support	No	Total
Residential support	182	14	196
No	66	13	79
Total	248	27	275

Table 58: Qualitative question 2 – help sought when at risk of relapse

Q2: [If answered 'yes' to using anything in ADOM] Did you ask for help? If yes, from who?			
	Community support	No	Total
Residential support	0	2	2
No	9	7	16
Total	9	9	18

<sup>27</sup> Scores calculated for Period 2 only (2013-2014 n=19, 2014-2015 n=76)

<sup>28</sup> Of note is that the way in which the 'Ever Self-Harm Score' is calculated appears problematic, with non-significance increasing over the measurement period for those with measures at both admission and one year follow-up.



**Table 59: Qualitative question 3 – Significant change**

Q3: What is the most significant change in your life as a result of the help you received from Higher Ground?		
	Frequency	Percent
Education around addiction/self/behaviour	103	34%
Spiritual principles, emotional and mental health	83	27.4%
Abstinent	55	18.2%
Relationships - friends/family/community	50	16.5%
Other	6	2%
No crime	4	1.3%
None	2	0.7%
Total	303	100%

**Table 60: Qualitative question 4 – life without Higher Ground**

Q4: If you had not come to Higher Ground, what do you think your life would be like now?		
	Frequency	Percent
Dead	61	21%
Jail/crime	47	16%
Worse/bad/awful/terrible	98	33%
Using/drinking/relapsed	34	12%
Homeless	9	3%
No change/same/unsure	14	5%
Other	4	1%
Sad/lonely/no purpose	29	10%
Total	296	100%

**Table 61: Qualitative question 5 – importance of 12 step programme**

Q5: How important was the 12-step programme to your recovery?		
	Frequency	Percent
Detrimental	3	1%
Not important	12	4%
Somewhat important	77	25.9%
Very important	205	69%
Total	297	100%

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## Response rate

**Table 62: Response rate (2018)**

	Period	N at discharge	3 Months	6 Months	9 Months	12 Months
Total	1	386	80%	70%	60%	53%
	2	409	60%	47%	36%	67%
Female	1	172	83%	73%	63%	56%
	2	164	59%	49%	40%	66%

Male	1	214	77%	67%	58%	51%
	2	245	61%	45%	33%	68%
Maori	1	99	78%	66%	60%	49%
	2	135	47%	35%	30%	59%
Pacific	1	14	71%	50%	50%	43%
	2	16	63%	38%	19%	81%
NZ European	1	268	80%	73%	61%	56%
	2	251	67%	53%	40%	70%
Other	1	8	113%	50%	50%	38%
	2	11	64%	64%	27%	73%
Teens	1	8	50%	38%	25%	38%
	2	4	75%	75%	75%	50%
20-29	1	141	75%	65%	52%	47%
	2	129	60%	48%	35%	66%
30-39	1	130	82%	72%	66%	56%
	2	183	56%	43%	33%	66%
40-49	1	75	91%	81%	71%	64%
	2	66	59%	47%	36%	67%
50-59	1	28	75%	57%	50%	46%
	2	28	79%	57%	43%	79%
60+	1	7	71%	71%	71%	71%
	2	3	100%	67%	67%	100%
Alcohol	1	148	76%	68%	59%	51%
	2	120	53%	42%	33%	60%
Cannabis	1	46	63%	54%	54%	48%
	2	37	49%	43%	32%	70%
Meth	1	177	86%	75%	62%	56%
	2	239	64%	49%	36%	69%
Opiates	1	14	71%	64%	64%	57%
	2	10	80%	60%	50%	70%
Other	1	4	125%	100%	75%	75%
	2	7	71%	71%	43%	86%
ASA	1	78	51%	41%	35%	29%
	2	97	34%	20%	16%	28%
ASR	1	76	72%	57%	42%	32%
	2	72	51%	39%	26%	76%
T	1	8	125%	63%	63%	50%
	2	2	50%	100%	50%	100%
WSA	1	227	90%	84%	75%	69%
	2	242	73%	60%	46%	79%
Not Justice	1	224	77%	72%	62%	56%
	2	244	59%	44%	35%	67%
Justice Client	1	165	83%	67%	58%	50%
	2	169	61%	50%	37%	67%