



office of crime statistics and research

TEN YEARS OF THE SOUTH AUSTRALIAN POLICE DRUG DIVERSION INITIATIVE

DATA ANALYSIS REPORT

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Executive Summary

Introduction

The beginning of September 2011 marked ten years of PDDI operation, and presents a timely opportunity to analyse the data collected by the Drug Diversion Line over the whole ten year period.

This briefing paper provides a summary of this data analysis. Its objectives are to determine:

- The number and profile of individuals diverted under the PDDI;
- Whether the number and/or profile of those diverted has changed over time, and if so, how it has changed;
- The proportion of diverted individuals that comply with their diversion, and the profile of individuals that are less likely to comply; and,
- The level of recidivism, time between first and subsequent diversions, and the profile of those that are more likely to re-offend within the context of the PDDI.

In order to analyse trends over time, the data analysis sometimes splits the data into the following three equal time periods:

- 1 September 2001 to 31 December 2004
- 1 January 2005 to 30 April 2008
- 1 May 2008 to 31 August 2011

Methodology

This data analysis utilised a quantitative methodology incorporating statistical techniques such as chi-square analysis and survival analysis.

Results

Throughput

- 13,627 individuals have been diverted a total of 19,717 times between the inception of the PDDI on 1 September 2001, and 31 August 2011.
- The number of diversions has increased steadily over the ten year period, with a maximum of 3,002 diversions in 2010.
- The number of diversions occurring in metropolitan areas has increased over time (from 1,093 in 2002 to 2,511 in 2010), while the number of regional diversions has only increased marginally since the beginning of the Initiative (from 378 in 2002 to 487 in 2010).
- The number of diversions per capita in metropolitan areas has also increased relative to the number of diversions in regional areas. In 2002 there were 9.80 diversions per 10,000 people in metropolitan areas, and in 2010 this increased to 20.87, whereas in regional areas there were 9.38 diversions per 10,000 people in 2002 with only a small increase to 11.12 in 2010.

Profile

- Males accounted for 79% of all diversions while females accounted for only 21%. Of the 13,627 individuals diverted, males also accounted for 79%, and females 21%. These proportions remained stable over the entire ten year period.
- The average age at time of diversion over the ten year period was 25.6, the youngest individual diverted was 10 and the oldest was 75. The average age at time of diversion for youth is 15.6 and the average age for adults is 31.3. Ninety-five percent of people diverted are aged below 45 at the time of their diversion.
- Age at time of diversion has increased significantly over time. The proportion of youth diversions has decreased from 71% in 2001 to just 23% in 2010. The number of youth diversions has remained stable, while there has been a very large increase in the number of adult diversions, from 132 in 2001 to 3,218 in 2010.
- Females are slightly older than males at the time of their diversion, with an average age at time of diversion of 26.1 compared to 24.8.
- Individuals that identify as ATSI account for 7% of all diversions and 7% of all individuals diverted, though they account for only 2% of the South Australian population.
- Diverted ATSI individuals were significantly more likely than expected to be female (29% female), when compared with non-ATSI individuals (20% female).
- Individuals that identified as ATSI were also significantly younger at the time of their first diversion than non-ATSI individuals, with a mean age of 21.4 compared with 24.5.

Drug Type

- Amphetamines were the most common drug diverted for over the ten year period (47%), followed by cannabis (27%), and drug equipment (20%). Only 2% of all diversions involved detection of more than one drug.
- The majority of youth diversions were for cannabis (70%), and the majority of adult diversions were for amphetamines (75%, though note that adults are not diverted for cannabis offences).
- There was a large increase in the number of amphetamine diversions for adults over time (from 1,541 in the first time period to 4,495 in the most recent period). There was also a very large increase in the number of drug equipment diversions for adults (from 19 in the first time period to 1,587 in the most recent period), probably at least in part due to a change to the *Controlled Substances Act 1984* in October 2008, which introduced a new offence specific for 'possession of prescribed equipment'.
- When compared to male youth, female youth are significantly more likely than expected to be diverted for amphetamines (5% of female youth diversions) and opioids (1% of female youth diversions), and less likely than expected to be diverted for cannabis (66% of female youth diversions).
- When compared to male adults, female adults are significantly more likely than expected to be diverted for drug equipment (18% of female adult diversions), and less likely than expected to be diverted for cocaine (0% of female adult diversions).

Compliance

- The overall compliance rate over ten years of PDDI operation was 81% (n=15,466). Compliance levels have dropped slightly over time, from 84% in the first time period to 80% in the most recent period.
- The minimum number of days taken to comply was zero and the maximum was 1,221. Of all diversions that were complied with, 50% were complied with within 12 days.
- Levels of compliance within five days of diversion were significantly higher in the first time period (42%) than in the second (14%) and third (15%) time periods. This is possibly due to increase in the number of diversions over time, or to the increasing number of adult diversions, given that youth take significantly less time to comply than adults (with a mean number of days taken to comply for youth of 17, compared with a mean of 36 for adults).
- Females, adults and individuals who identify as ATSI and those that are diverted for amphetamines and opioids are less likely than expected to comply with their diversion. Conversely, males, youth and non-ATSI individuals are more likely than expected to comply.
- The relationship between ATSI status and compliance was not accounted for by the fact that ATSI individuals are more likely to be female, because both ATSI males and ATSI females had significantly lower levels of compliance than non-ATSI males and females. However, it may in part be explained by the fact that ATSI individuals are more likely to be diverted for opioid use.
- Individuals are also more likely to comply with their first diversion (83% compliance), than with their second (73% compliance), or subsequent diversions.

Recidivism

- Around one quarter of the 13,627 individuals diverted over the course of the PDDI have been diverted more than once. Fifteen percent were diverted twice, 5% were diverted three times and 4% were diverted four or more times. The maximum number of diversions one person received was 32.
- The mean number of days between a first and second detection under the PDDI was 588, the minimum was zero and the maximum was 3,455. Second and third diversions most commonly occurred between 101 and 500 days after the previous diversion.
- Individuals who comply with their diversion are significantly less likely than expected to re-offend (23% re-offending rate), while those who do not comply are significantly more likely than expected to re-offend (32% re-offending rate).
- Individuals aged between 25 and 44 at the time of their first diversion, those who identify as ATSI, and those who are first diverted for opioids are more likely than expected to re-offend. On the other hand, individuals aged between 18 and 24 at the time of their first diversion, and those who were first diverted for hallucinogens are less likely than expected to re-offend. The relationship between ATSI status and recidivism may be partially accounted for by the fact that ATSI adults are more likely to be diverted for opioids.
- Survival analysis was used to determine differences between groups in survival time (i.e., proportion surviving without re-offending). Females survived longer than males, non-ATSI individuals survived longer than those that identified as ATSI, those who were diverted for cannabis and amphetamines survived longer than those diverted for

drug equipment, and those who complied with their assessment appointment survived longer than those who didn't.

Discussion

Overall, the number of diversions has continued to increase steadily over the ten year period. This is primarily due to an increase in adult diversions and diversions in metropolitan areas. Youth diversions and regional diversions have remained relatively stable over the ten years of PDDI operation. There is no clear explanation as to why adult and metropolitan diversions have increased so markedly, and further investigation may be warranted in this area.

The proportion of male and ATSI diversions and individuals diverted remains relatively high. Though the analysis showed that ATSI individuals are less likely to comply with their diversions, more likely to re-offend, and take less time to re-offend, the relationships between ATSI status and compliance and ATSI status and recidivism are complex and there may be interactions with other variables. In particular, the fact that ATSI adults are more likely to be diverted for opioid use may interact with their compliance and recidivism rates. Nevertheless, this may still highlight a need for further analysis in this area.

Compliance with diversions is high, but tends to decrease as number of diversions per individual increases, suggesting a potential need to re-visit the idea of capping the number of diversions an individual receives.

Some support was provided for the utility of the assessment appointment in reducing drug use, because compliance with the appointment was associated with reduced re-offending and increased time to re-offend for those that do re-offend.

Introduction

The South Australian Police Drug Diversion Initiative (PDDI) commenced in September 2001 as part of the National Illicit Drug Strategy. The aims of the PDDI are to:

- Provide people with early incentives to address their drug use, in many cases before incurring a criminal record;
- Increase the number of illicit drug users diverted into drug education, assessment and treatment; and
- Reduce the number of people appearing before the courts for use or possession of small quantities of illicit drugs.

Data analyses examining PDDI throughput, the profile of individuals diverted and their compliance with diversions has been carried out periodically throughout the course of the Initiative, first for the period from 1 September 2001 to 31 August 2005¹, and then later for the period from 1 September 2005 to 31 December 2008².

The beginning of September 2011 marked ten years of PDDI operation in South Australia, and presents a timely opportunity to revisit the data analysis, to provide an update to previous findings and to identify any long term trends that may have emerged over the course of the PDDI.

The objectives of this data analysis are to determine:

- the number and profile of individuals diverted under the PDDI;
- whether the number and/or profile of those diverted has changed over time, and if so, how it has changed;
- the proportion of diverted individuals that comply with their diversion, and the profile of individuals that are less likely to comply; and
- the level of recidivism, time between first and subsequent diversions, and the profile of those that are more likely to re-offend within the context of the PDDI.

This briefing paper presents the results of data analyses undertaken for the whole ten year period, from 1 September 2001 to 31 August 2011. In order to examine trends in the PDDI data over time, some analyses split the data into the following equal time periods, each of three years and four months duration:

- 1 September 2001 to 31 December 2004
- 1 January 2005 to 30 April 2008
- 1 May 2008 to 31 August 2011

It is hoped that this analysis will be useful in providing data-based insights that can be used to inform continuous improvement of the Initiative.

¹ See O'Brien (2008) *Police Drug Diversion Initiative Final Evaluation Report*. South Australia: Office of Crime Statistics and Research.

² See Ransom (2009). *Police Drug Diversion Initiative: Profile, Throughput and Compliance, September 2001 - December 2008*. South Australia: Office of Crime Statistics and Research.

Methodology

This report utilises a quantitative, statistical methodology to analyse the data collected by the Drug Diversion Line (DDL) over the ten years of PDDI operation. Where an analysis finds a statistically significant result, this means that the result can be generalised to PDDI diversions in general, and is not just a result of random variation in the data collected.

Chi-square analyses are most commonly used in this report to determine the factors that are related to diversions, and to compliance and recidivism levels. In the context of this report, the chi-square statistic (indicated by the symbol: χ^2) is used to calculate an expected frequency of diverted individuals that should fall into a particular group with an actual, observed frequency of individuals. Where there is a significant difference between the expected and the observed frequency, this indicates a relationship between the grouping variable and the number of diversions (or the number of PDDI recidivists or compliers). For example, it may be found that males are significantly more likely to be diverted than expected, indicating that there is a relationship between gender (the grouping variable) and the number of diversions that occur.

Survival analysis is used in the recidivism section of this report to determine the proportion of individuals that 'survived' without being diverted again, at given points in time following their initial PDDI appointment. It can also be used to look at differences in the survival time for different groups. For example, a survival analysis might find a significant difference between males and females, and that 100 days after their first diversion appointment, 50% of males had been re-diverted, but only 20% of females had been re-diverted. This would indicate a relationship between gender and time to re-offend, and suggest that the PDDI is more effective in prolonging time to reoffend for females.

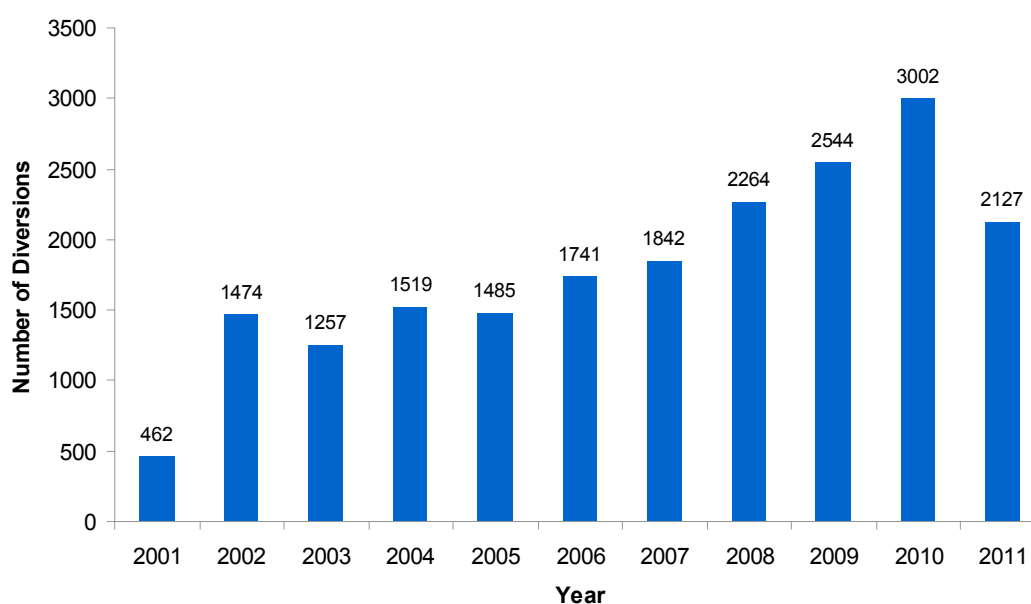
Two tests of significance are used in the survival analyses presented here. The first, the Log-rank test of equality, weights the survival data to the end of the survival curve. Therefore a significant Log-rank test indicates that the differences in the final survival rate between two groups are significant. The Wilcoxin statistic, on the other hand, weights the data closer to the beginning. A significant Wilcoxin statistic indicates whether the initial survival experience between groups is different, even in the final survival rate is not.

Results

1. Throughput

From the inception of the Police Drug Diversion Initiative (PDDI) in South Australia on 1 September 2001 to 31 August 2011, 13,627 individuals were diverted a total of 19,717 times. As shown in the graph below, the number of diversions has steadily increased each year since 2005, with a total of 3,002 diversions in 2010.

Figure 1: Number of diversions per year³



As mentioned in the introduction, some of the data analysis in the remainder of this report focuses on three specific time periods of PDDI operation. The number of diversions for each of these periods for both youth and adults is displayed in the following table. The most recent time period from 1 May 2008 to 31 August 2011 saw a large increase in diversions, particularly adult diversions.

Table 1: Number of youth and adult diversions per time period

Time Period	Number of Youth Diversions	Number of Adult Diversions	Total Number of Diversions
1 September 2001 - 31 December 2004	2852	1860	4712
1 January 2005 - 30 April 2008	2141	3542	5683
1 May 2008 - 31 August 2011	2744	6578	9322

³ Note that the 2011 data does not represent a full year of diversions. Data to the end of August 2011 is included in this report.

Figure 2 shows the number of diversions per quarter. No significant quarterly trends are evident. However for seven of the years that the PDDI has been in operation (2002, 2004, 2005, 2006, 2007, 2008 and 2010), slightly more diversions occurred in the third quarter (1 July to 30 September). Figures 3 and 4 show the number of youth and adult diversions per quarter.

Figure 2: Number of diversions per quarter

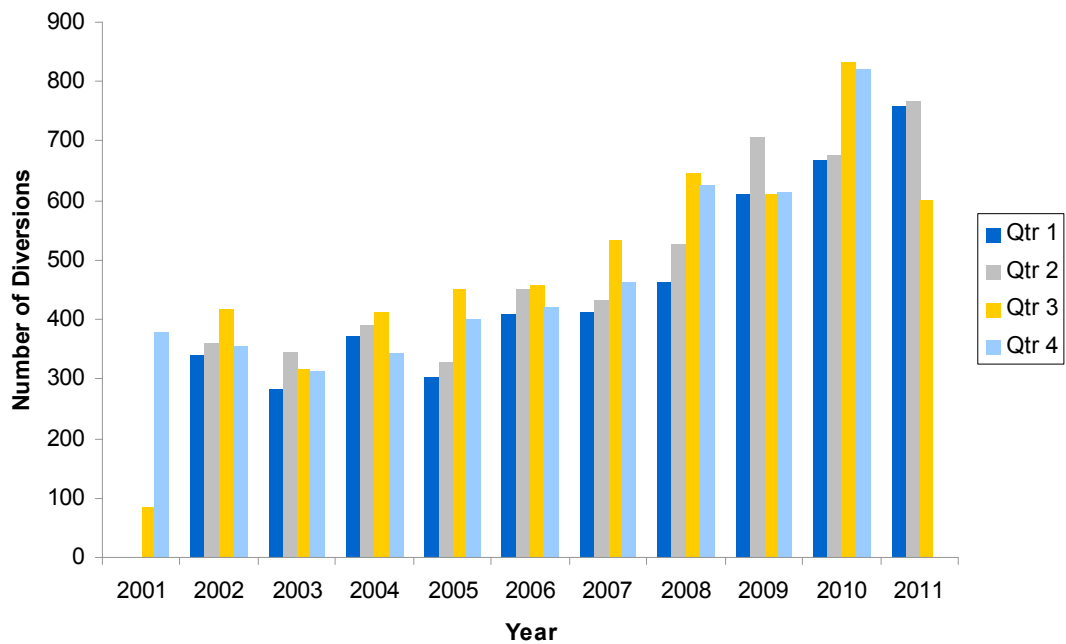


Figure 3: Number of youth diversions per quarter

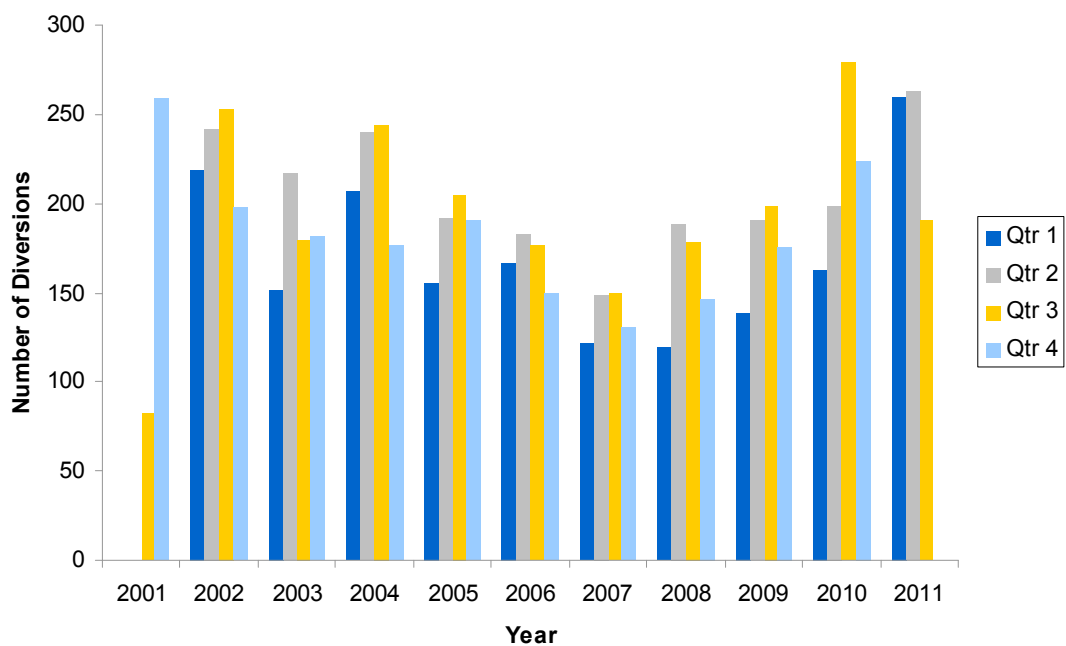
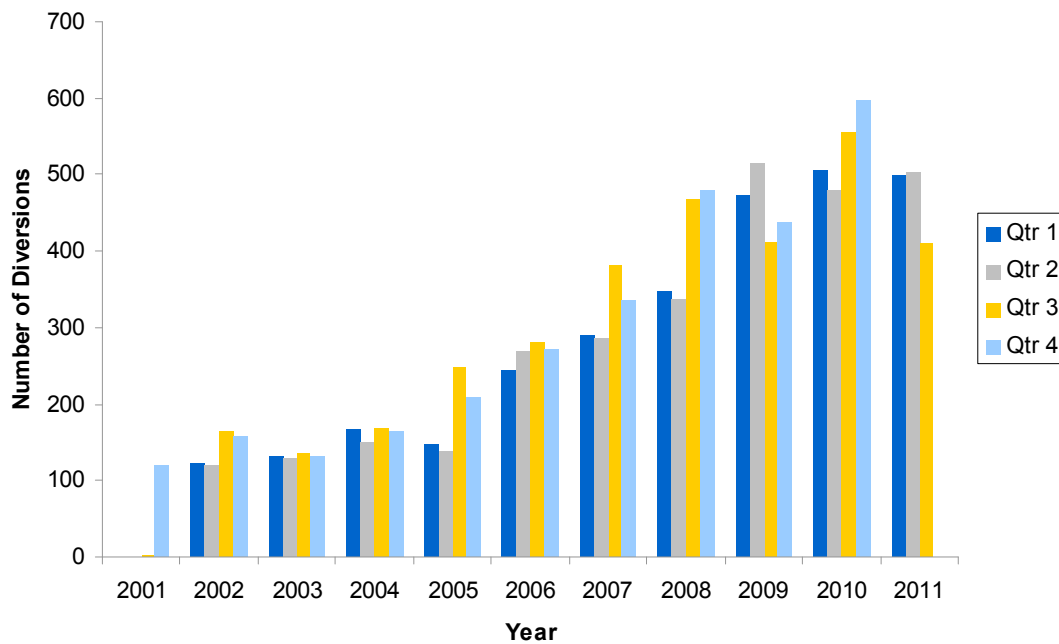


Figure 4: Number of adult diversions per quarter



Location of diversions

Throughout ten years of PDDI operation, 79% (n=15,480) of diversions have occurred in metropolitan areas and the remaining 21% (n=4,226) have occurred in regional areas. As shown in Figure 5, the number of regional diversions has remained relatively stable over time, while the number of metropolitan diversions has continued to increase since 2005, with a maximum of 2,511 metropolitan diversions in 2010.

Figure 5: Number of regional/metropolitan diversions per year

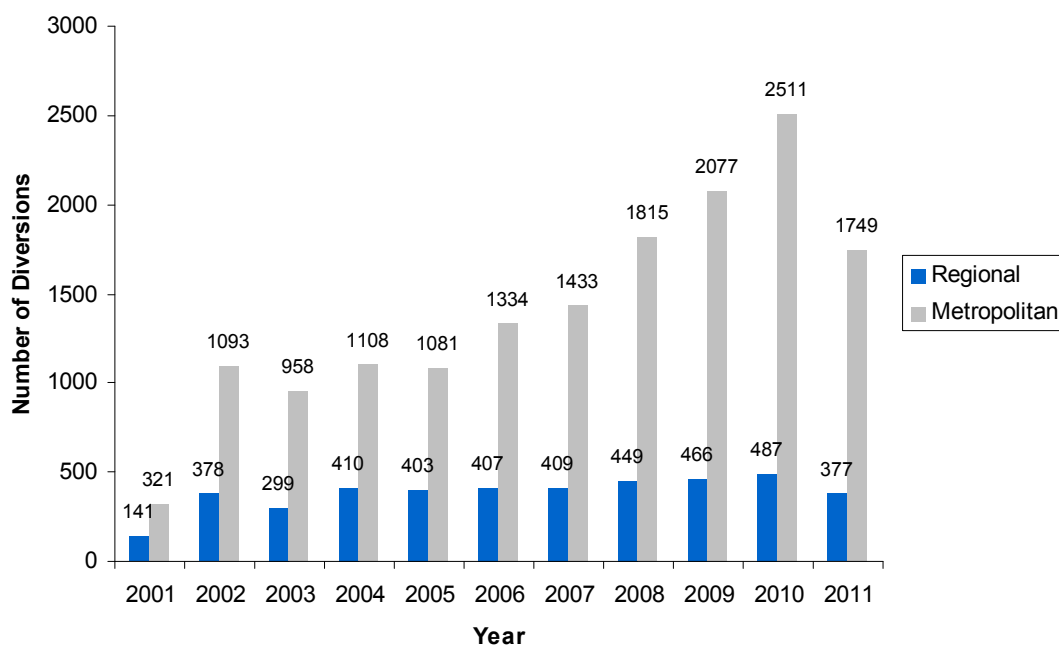


Table 2 shows the per 10,000 capita rate of diversions in metropolitan and regional areas for each full year of PDDI operation⁴. The rates are presented per 10,000 people of the total population in metropolitan and regional South Australia⁵. As shown, the number of diversions per capita in metropolitan areas has increased far more than the number per capita in regional areas, particularly from 2007 onwards.

Table 2: Number of diversions per 10,000 capita in metropolitan and regional areas

Full Year of PDDI operation	Number of metropolitan diversions per 10,000 of total population	Number of regional diversions per 10,000 of total population
2002	9.80	9.38
2003	8.52	7.35
2004	9.81	9.99
2005	9.33	10.19
2006	11.63	9.67
2007	12.10	10.29
2008	15.45	10.48
2009	17.47	10.72
2010	20.87	11.12

2. Profile

2.1 Gender

Males were responsible for 79% (n=15,553) of the 19,717 diversions that took place over the ten year period, and females were responsible for 21% (n=4,164). These proportions have not changed considerably over time. The maximum proportion of diversions accounted for by females was 23% (n=509) in 2008, and the minimum was 19% (n=277) in 2002.

The overall proportions of *individual* males and females that were diverted over the ten year period were identical to the proportions of diversions accounted for by males and females. Males accounted for 79% (n=10,795) of the 13,627 individuals diverted, and females accounted for 21% (n=2,832). As shown in Table 3, for each of the three time periods, males also represented 79% of individuals that had their first diversion, and females represented 21%. These results indicate that the proportions of male and female diversions and individuals diverted have remained very stable over time. These figures are also consistent with males generally being more highly represented in the criminal justice system.

⁴Per capita rates are calculated based on population estimates produced by the Australian Bureau of Statistics (2012, 3218.0 - Regional Population Growth, Australia, 2010-11)

⁵Note that population data per area by age group is not available, so the rates include those aged under 10 years, though the diversion data does not.

Table 3: Proportion of males and females first diverted in each time period

Time period of first diversion	% of Female Diversions	% of Male Diversions
1 September 2001 - 31 December 2004	21% (n=820)	79% (n=3186)
1 January 2005 - 30 April 2008	21% (n=840)	79% (n=3135)
1 May 2008 - 31 August 2011	21% (n=1172)	79% (n=4474)

2.2 Age

Age at time of diversion

The mean age at time of diversion over the ten year period was 25.6 ($SD=10.2$). The minimum age of an individual diverted was 10 and the maximum was 75. The average age for youth at time of diversion was 15.6 ($SD=1.4$) and the average age for adults was 31.3 ($SD=8.5$). Figures 6 and 7 show a breakdown of individuals' ages at the time of their diversion. The vast majority of diversions (95%) involved persons aged below 45 at the time of their diversion.

Figure 6: Age at diversion for adults

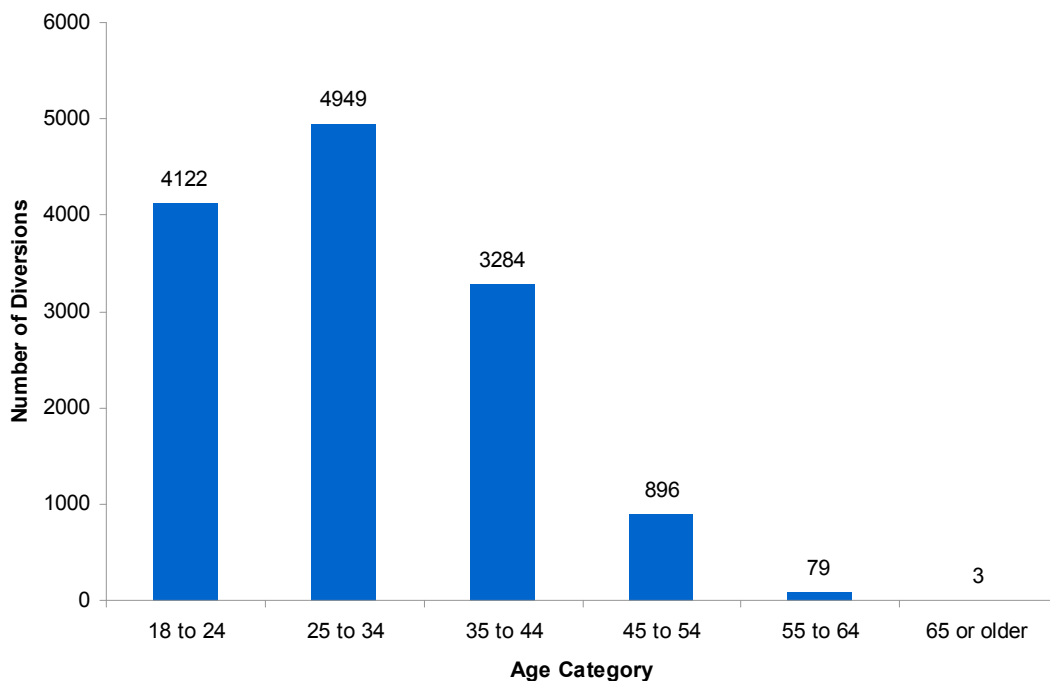
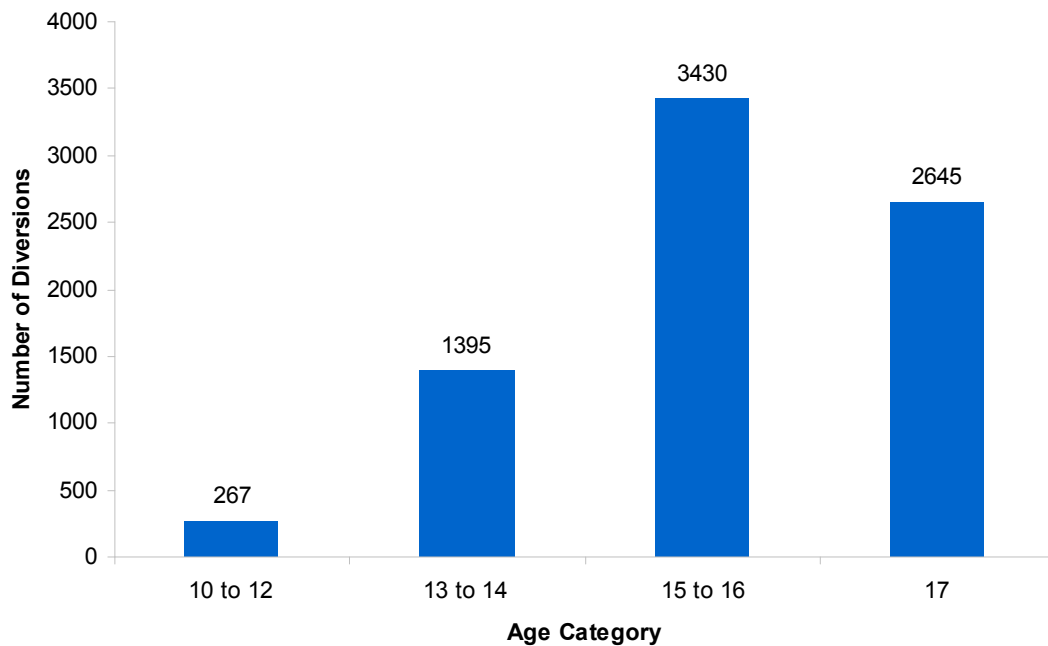


Figure 7: Age at diversion for youth



When all diversions are considered together, the proportion of youth has decreased from 52% ($n=2,852$) in the first time period to 24% ($n=2,744$) in the most recent period. Conversely, the proportion of those aged between 25 and 44 has increased over time from 28% ($n=1,264$) in the first time period to 48% ($n=4,447$) in the third time period.

Figures 8 and 9 depict the proportion of diversions accounted for by each age group over the three time periods for youth and adults separately.

The overall mean age at the time of diversion has increased significantly over time, from 21.2 ($SD=8.8$) in the first time period, to 25.4 ($SD=10.2$) in the second time period, to 26.9 ($SD=10.2$) in the most recent period⁶. For adults, the mean age was slightly higher in the second ($M=31.4$, $SD=8.5$) and third time periods ($M=31.5$, $SD=8.6$) than it was in the first time period ($M=30.2$, $SD=7.9$)⁷. For youth, the mean age increased slightly over consecutive time periods from 15.4 ($SD=1.5$) in the first time period, to 15.6 ($SD=1.4$) in the second period, to 15.7 ($SD=1.3$) in the third period⁸.

⁶ $F(2, 19717)=517.45, p<.01$

⁷ $F(2, 11977)=1394.47, p<.01$

⁸ $F(2, 7734)=46.68, p<.01$

Figure 8: Age at diversion per time period for youth

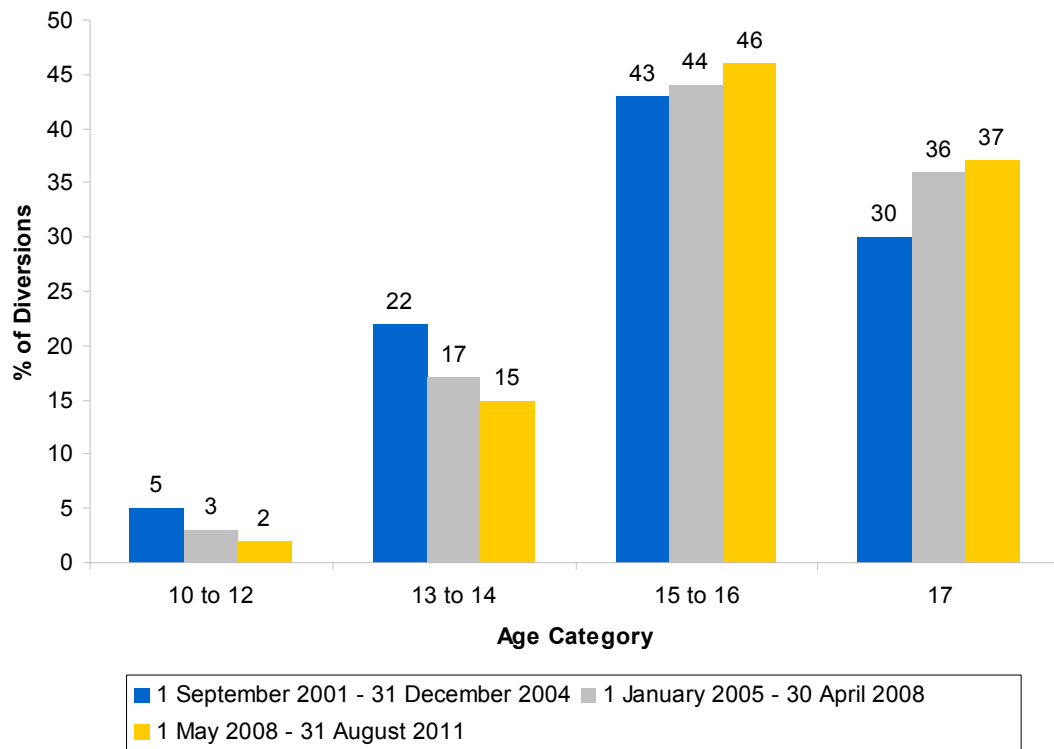
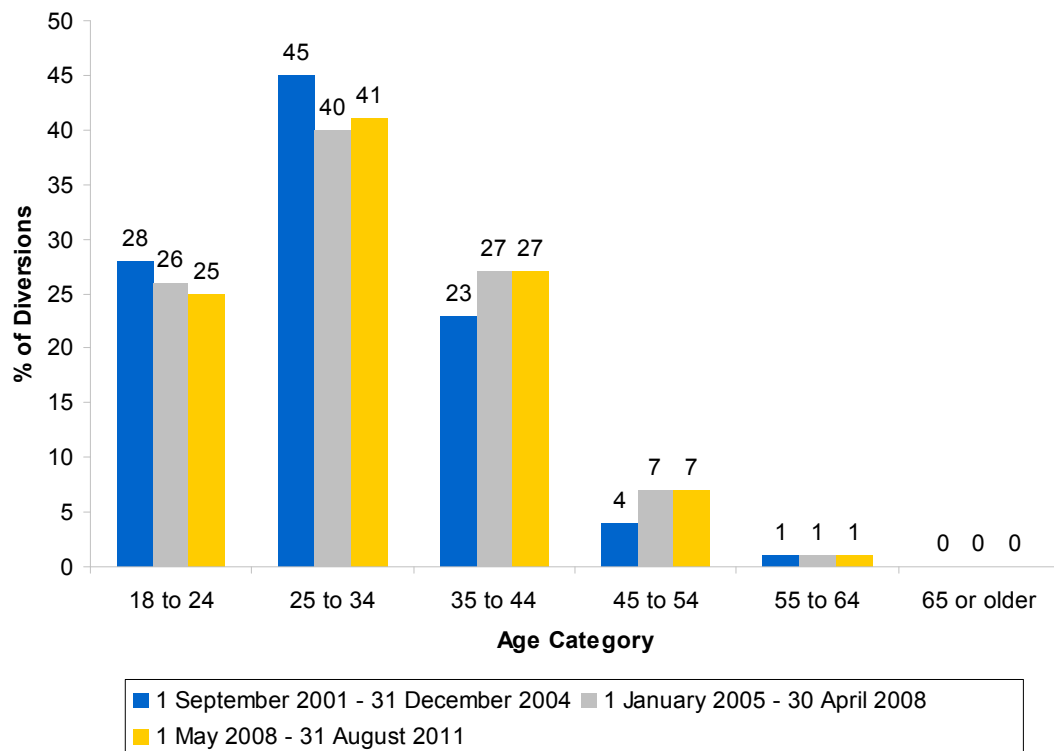


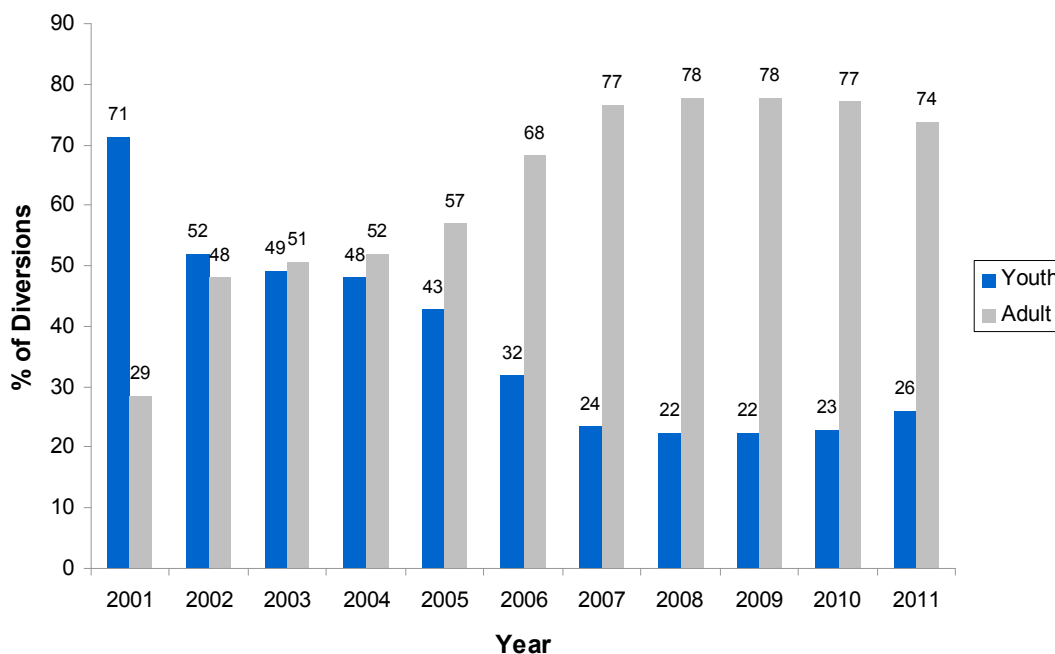
Figure 9: Age at diversion per time period for adults



Further exploration of the age variable as depicted in Figure 10 reveals that the increase in the average age at time of diversion is associated with a significant increase in the proportion of adult diversions since the commencement of the PDDI in 2001⁹. In 2002 (the first full year of PDDI operation), youth accounted for 52% (n=766) of all diversions, whilst in 2010, they accounted for just 26% (n=694). As shown in Figure 11, the reason for the decline in the proportion in youth diversions is not a significant decrease in the number of youth diversions, but rather a very large increase in the number of adult diversions over time (from 708 in 2002 to 3,218 in 2010).

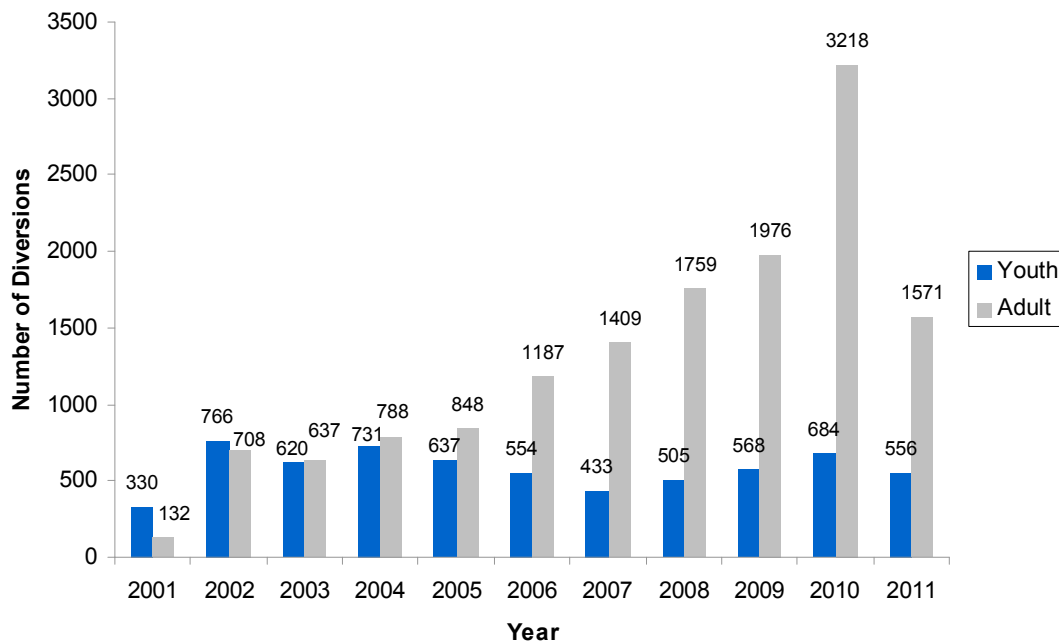
There have been only minor fluctuations in the overall number of youth diversions over the course of the PDDI. However, 2010 had the third highest number of youth diversions (n=694), and 2011 looks set to have a similarly high number. Nevertheless, reasons as to why the number of adult diversions has increased so significantly over the ten year period compared with youth diversions remain unclear.

Figure 10: Proportion of adult/youth diversions per year



^{9 9} $\chi^2(10, N=19,717) = 1512.59, p < .01$

Figure 11: Number of adult/youth diversions per year



Age at time of first diversion

In terms of individuals, the average age of the 13,627 individuals at the time of their first diversion was 24.0 (*SD*=9.9). The average age at time of first diversion for those who were first diverted as youth was 15.5 (*SD*=1.45) and for those first diverted as adults was 30.6 (*SD*=8.5). Forty-four percent were first diverted when they were youth (aged between 10 and 17 years), and 56% when they were adults (aged over 18 years). Table 4 shows the proportion of adults and youth that had their first diversion in each of the three time periods. First diversions were significantly more likely to occur for youth than for adults in the first time period, but this trend has reversed from 2005 onwards¹⁰.

Table 4: Percentage of youth and adult first diversions per time period

Time Period	% of Youth First Diversions (n)	% of Adult First Diversions (n)
1 September 2001 - 31 December 2004	61% (2,422)	39% (1,584)
1 January 2005 - 30 April 2008	38% (1,506)	62% (2,469)
1 May 2008 - 31 August 2011	21% (2,002)	79% (3,644)

¹⁰ $\chi^2(2, N=13,627) = 668.24, p < .01$

Age and gender at time of diversion

For all diversions, females who were diverted tended to be slightly older at the time of their diversion ($M=26.1$, $SD=10.0$) than males who were diverted ($M=24.8$, $SD=10.2$)¹¹. Figures 12 and 13 show the proportions of males and females diverted that fell into each age category for the whole ten year period. For youth, females account for slightly more diversions in the 13 to 14 year old age category (23%) than they do in other categories. They account for only a very small proportion of 17 year olds (12%) who are diverted. For adults, females account for the smallest proportion of diversions in the 55 to 64 year old age category (19%).

Figure 12: Proportion of male/female diversions per age category for youth

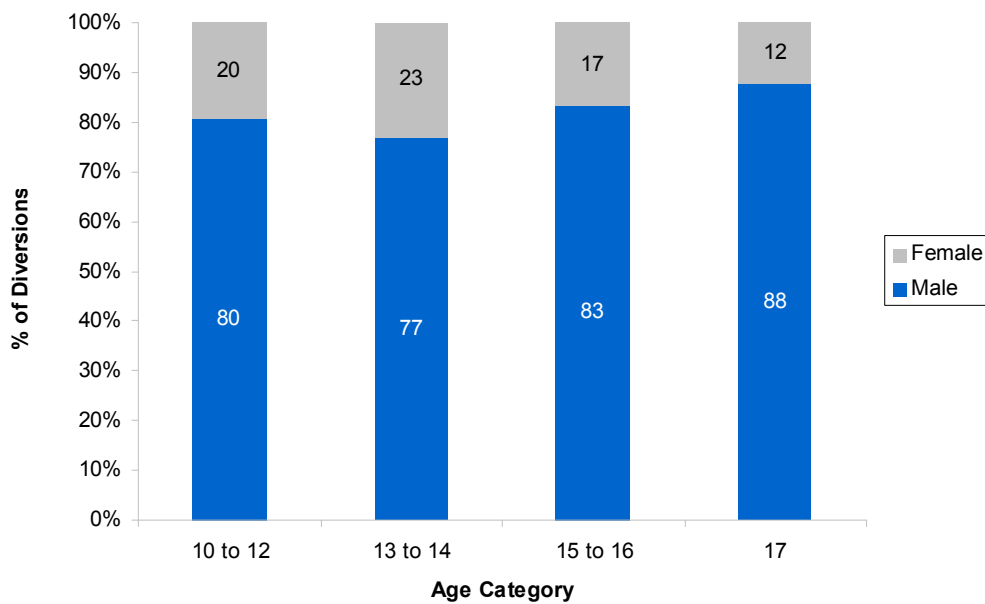
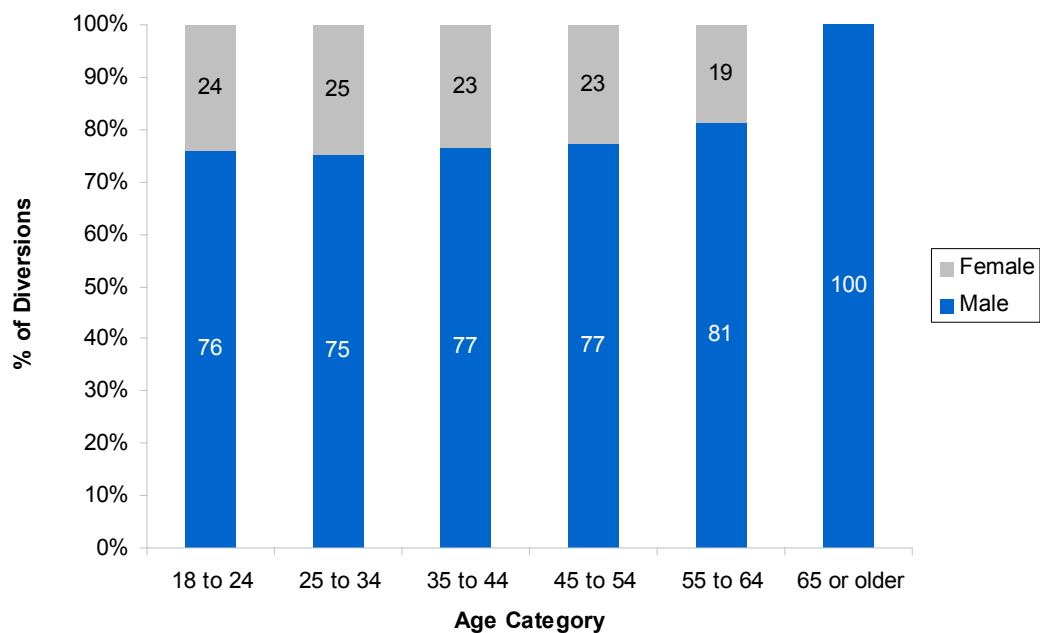


Figure 13: Proportion of male/female diversions per age category for adults



¹¹ $T(6641.32)=-7.68$, $p<.01$

Table 5 provides the gender breakdown for each age category across the three time periods. As shown, the proportions of males and females within each age group did not change significantly over time. Proportions of males and females aged 55 or older did change, but the number of diversions in these categories is too low to infer any significant difference.

Table 5: Gender breakdown for each age category per time period

Age Group	Time Period 1		Time Period 2		Time Period 3	
	% Male (n)	% Female (n)	% Male (n)	% Female (n)	% Male (n)	% Female (n)
10 to 17	83% (2,364)	17% (488)	84% (1,807)	16% (334)	84% (2,290)	16% (454)
18 to 24	75% (381)	25% (130)	76% (683)	24% (221)	76% (1,230)	24% (379)
25 to 34	76% (634)	24% (205)	74% (1,055)	26% (364)	75% (2,007)	25% (657)
35 to 44	76% (323)	24% (102)	77% (725)	23% (222)	77% (1,371)	23% (412)
45 to 54	77% (58)	23% (17)	79% (198)	21% (52)	76% (367)	24% (114)
55 to 64	78% (7)	22% (2)	86% (19)	14% (3)	80% (31)	20% (8)
65 or older	100% (1)	0% (0)	0% (0)	0% (0)	0% (0)	100% (2)

2.3 ATSI Status

Over the ten years of PDDI operation, people that identified as ATSI accounted for 7% (n=1326) of all diversions. 7% (n=916) of the 13,627 individuals diverted also identified as ATSI. These proportions are significantly higher than the 2% of people that identify as ATSI in the South Australian population¹², and are reflective of the over-representation of individuals that identify as ATSI in the broader criminal justice system and amongst those who experience adverse health issues and outcomes.

Table 6 shows the proportion of ATSI and non-ATSI individuals who had their first episode of diversion in each of the three time periods. While there was a slightly higher proportion of ATSI individuals who had their first diversion in the first time period, the proportion has remained stable since 2005.

¹² Australian Bureau of Statistics (2006), *Population characteristics, Aboriginal and Torres Strait Islander Australians*, cat. no. 4713.0, ABS, Canberra.

Table 6: Proportion of ATSI and non-ATSI first diversions per time period

Time Period	% ATSI (n)	% Non-ATSI (n)	% Not Stated (n)
1 September 2001 - 31 December 2004	8% (387)	79% (3,714)	13% (611)
1 January 2005 - 30 April 2008	7% (383)	93% (5,299)	0% (1)
1 May 2008 - 31 August 2011	6% (556)	94% (8,766)	0% (0)
Total	7% (1,326)	90% (17,779)	3% (612)

Table 7 shows the gender breakdown for ATSI and non-ATSI individuals who were diverted over the whole ten year period. A significant relationship was found between ATSI status and gender¹³. Diverted ATSI individuals were more likely than expected to be female (29%, n=269), and less likely to be male (71%, n=647).

Table 7: Gender of ATSI and non-ATSI individuals

Gender	% ATSI (n)	% Non-ATSI (n)	% Not Stated (n)
Male	71% (647)	80% (9,675)	82% (473)
Female	29% (269)	20% (2,460)	18% (103)

Individuals who identified as ATSI were younger at the time of their first diversion than those that did not, with a mean age of 21.4 (SD=9.17), compared to 24.5 (SD=9.98) for non-ATSI people¹⁴. Table 8 illustrates this finding, and shows that the age group with the highest proportion of ATSI first diversions was 10 to 17 (9% ATSI compared with 0 to 6% ATSI for all other age groups).

Table 8: Age of ATSI and non-ATSI individuals

Age Category	% ATSI (n)	% Non-ATSI (n)	% Not Stated (n)
10 to 17 years	9% (541)	83% (4907)	8% (482)
18 to 24 years	4% (90)	95% (2043)	1% (30)
25 to 34 years	5% (167)	93% (2979)	1% (44)
35 to 44 years	6% (104)	93% (1693)	1% (16)
45 to 54 years	3% (14)	96% (454)	1% (4)
55 to 64 years	0% (0)	100% (56)	0% (0)
65 years or older	0% (0)	100% (3)	0% (0)

¹³ $\chi^2(2, N=13,627) = 45.87, p < .01$

¹⁴ $T(6631.23) = -7.72, p < .01$

3. Drug Type

In order to analyse the profile of drugs detected throughout the PDDI, drugs were categorised in accordance with the Australian Bureau of Statistics' *Standard Classification of Drugs of Concern* (see Appendix A for a summary of how drugs were classified).

Overall, amphetamines were the primary drug detected for almost half of the diversions that occurred over the ten year period (47%, n=9254), followed by cannabis (27%, n=5324). Equipment for using drugs (where no drugs were detected) made up 20% (n=3931) of all diversions. Within this category, ice pipes (43%, n=1686), pipes (25%, n=996), and bongs (20%, n=779) made up the vast majority of diversions. Only 399 of the 19,717 diversions (2%) involved detection of more than one drug.

Only youth can be diverted for cannabis offences in South Australia. Given that the drug type variable is confounded by age, the remaining drug type analyses in this section are presented for youth and adults separately.

Drugs diverted for over time

Table 9 presents the primary drug type detected for youth diversions over each of the three time periods. For each period, the primary drug detected was cannabis, accounting for almost three quarters of all youth diversions (70% overall). Around a quarter of all youth diversions were for drug equipment (27% overall). Pipes and bongs made up the vast majority of drug equipment diversions for youth (86%, n=1,742). The relatively high proportion of equipment diversions for youth is therefore probably a result of youth being able to be diverted for cannabis offences since the inception of the PDDI. A small but increasing proportion of youth diversions were for amphetamines (3% overall), while the proportions of youth detected with all other drug types were negligible.

Table 10 provides the same information for adult diversions. Amphetamines accounted for the majority of adult diversions (75%). The proportion of amphetamine diversions dropped in the most recent time period, due to a large increase in the number of diversions for drug equipment (from 1% in the first time period to 24% in the most recent period). However, the number of amphetamine diversions has continued to increase steadily over time (from 1,541 in the first time period to 4,495 in the most recent period).

Ice pipes made up the vast majority of drug equipment diversions for adults (87%, n=1,669), and so the increase in equipment diversions over time may be related to the increase in amphetamine diversions use. The increase in the number of drug equipment diversions for adults may also be due to an amendment to the *Controlled Substances Act 1984*. On 19 October 2008 an amendment was brought in (Section 33LA) that specified a new offence specific for the 'possession of prescribed equipment'.

Table 9: Primary drug detected per time period for youth diversions

Drug Type	1 September 2001 - 31 December 2004 %(n)	1 January 2005 - 30 April 2008 %(n)	1 May 2008 - 31 August 2011 %(n)	Total
Amphetamines	2% (n=64)	3% (n=67)	4% (n=98)	3% (n=229)
Benzodiazepines	0% (n=1)	0% (n=0)	0% (n=1)	0% (n=2)
Opioids	0% (n=8)	0% (n=8)	0% (1)	0% (n=17)
Cannabis	68% (n=1937)	72% (n=1547)	70% (n=1834)	70% (n=5318)
Cocaine	0% (n=0)	0% (n=0)	0% (n=0)	0% (n=0)
Hallucinogens	0% (n=4)	0% (n=2)	0% (n=3)	0% (n=9)
Inhalants	0% (n=3)	0% (n=0)	0% (n=0)	0% (n=3)
Other / Unknown	1% (n=15)	0% (n=5)	0% (n=8)	0% (n=28)
Equipment	29% (n=820)	24% (n=512)	26% (n=685)	27% (n=2017)

Table 10: Primary drug detected per time period for adult diversions

Drug Type	1 September 2001 - 31 December 2004 %(n)	1 January 2005 - 30 April 2008 %(n)	1 May 2008 - 31 August 2011 %(n)	Total
Amphetamines	83% (n=1541)	84% (n=2989)	68% (n=4495)	75% (n=9025)
Benzodiazepines	0% (n=0)	0% (n=0)	0% (n=3)	0% (n=3)
Opioids	10% (n=180)	4% (n=133)	4% (n=289)	5% (n=602)
Cannabis	0% (n=1)	0% (n=3)	0% (n=2)	0% (n=6)
Cocaine	1% (n=14)	1% (n=25)	1% (n=62)	1% (n=101)
Hallucinogens	1% (n=25)	1% (n=42)	1% (n=80)	1% (n=147)
Inhalants	1% (n=13)	0% (n=0)	0% (n=0)	0% (n=13)
Other / Unknown	4% (n=67)	1% (n=42)	1% (n=59)	1% (n=168)
Equipment	1% (n=19)	9% (n=308)	24% (n=1587)	16% (n=1914)

Gender and drug diverted for

The proportions of males and females that were diverted for each drug type are presented in Table 11. A significant relationship was found between drug type and gender for youth¹⁵, which indicated that females were more likely than expected to be diverted for amphetamines and opioids, and less likely to be diverted for cannabis. A significant relationship was also evident for adults¹⁶, such that females were more likely than expected to be diverted for drug equipment, and less likely than expected to be diverted for cocaine.

Table 11: Proportion of females and males per drug type for youth and adults

Drug Type	Youth		Adults	
	% Females (n)	% Males (n)	% Females (n)	% Males (n)
Amphetamines	5% (63)	3% (166)	73% (2118)	76% (6907)
Benzodiazepines	0% (0)	0% (2)	0% (0)	0% (3)
Opioids	1% (9)	0% (8)	6% (164)	5% (438)
Cannabis	66% (821)	70% (4497)	0% (0)	0% (6) ¹⁷
Cocaine	0% (0)	0% (0)	0% (10)	1% (91)
Hallucinogens	0% (1)	0% (8)	1% (35)	1% (112)
Inhalants	0% (0)	0% (3)	0% (3)	0% (10)
Other / Unknown	1% (6)	0% (22)	1% (37)	1% (131)
Equipment	27% (339)	26% (1678)	18% (521)	15% (1393)

ATSI status and drug diverted for

As shown in Table 12, the profile of drug use did not vary significantly between ATSI and non-ATSI youth who were diverted, with the vast majority of diversions falling into the cannabis and drug equipment categories. There were only minor differences in the drug use profiles for adults. Though the proportions are small, ATSI adults were diverted for opioids (9%) slightly more than non-ATSI adults (5%), and non-ATSI adults (16%) were diverted for drug equipment slightly more than ATSI adults (10%)¹⁸.

¹⁵ $\chi^2(8, N=7,623) = 43.23, p < .01$

¹⁶ $\chi^2(9, N=11,979) = 31.85, p < .01$

¹⁷ Given that adults cannot be diverted for cannabis, it is unclear as to why six adults have been recorded as being diverted for cannabis.

¹⁸ Note that the very low number of individuals that fell into the various drug categories for this analysis meant chi-square analyses were unable to be carried out.

Table 12: Proportion of ATSI and non-ATSI per drug type for youth and adults

Drug Type	Youth		Adults	
	% ATSI (n)	% non-ATSI (n)	% ATSI (n)	% non-ATSI (n)
Amphetamines	2% (n=17)	3% (n=208)	77% (n=435)	75% (n=8503)
Benzodiazepines	0% (n=0)	0% (n=7)	0% (n=0)	0% (n=3)
Opioids	0% (n=1)	0% (n=15)	9% (n=52)	5% (n=546)
Cannabis	71% (n=533)	70% (n=4447)	0% (n=0)	0% (n=6)
Cocaine	0% (n=0)	0% (n=0)	0% (n=0)	1% (n=101)
Hallucinogens	0% (n=1)	0% (n=8)	1% (n=6)	1% (n=138)
Inhalants	0% (n=3)	0% (n=0)	2% (n=13)	0% (n=0)
Other / Unknown	0% (n=3)	0% (n=21)	1% (n=4)	1% (n=154)
Equipment	26% (n=751)	26% (n=1664)	10% (n=55)	16% (n=1858)

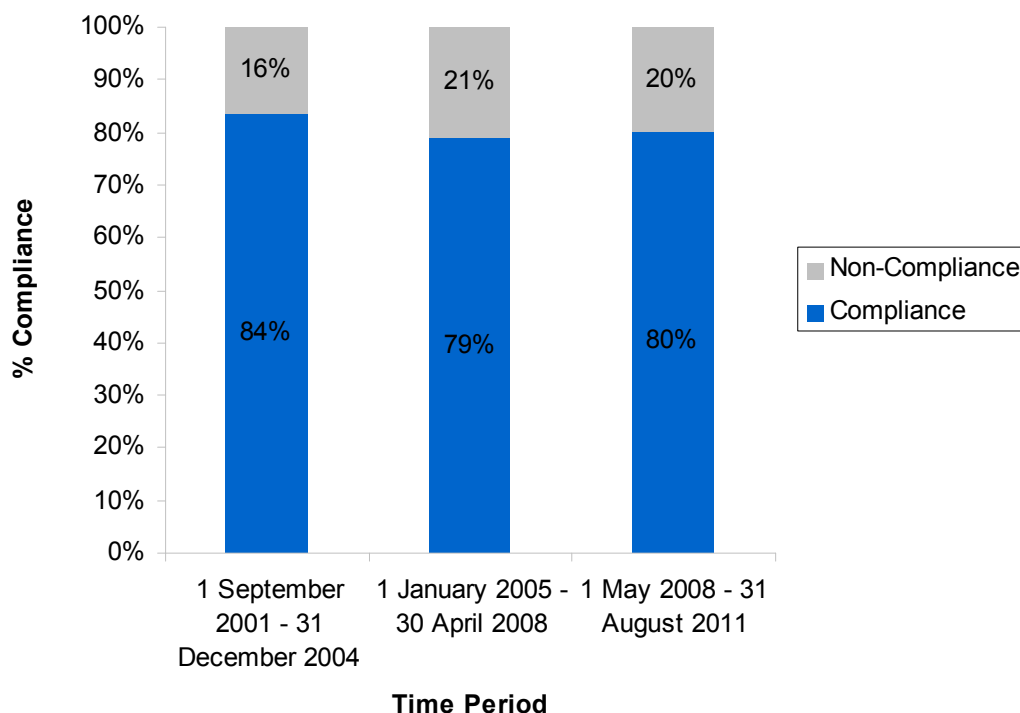
4. Compliance

In the context of the PDDI, compliance is defined as an individual attending a PDDI assessment appointment that they have been diverted to by the police. Where an individual does not attend the initial appointment scheduled for them, the PDDI agency may provide them with subsequent opportunities to do so. The individual will still be deemed compliant if they attend at a re-scheduled appointment.

Overall level of compliance with diversion

The overall compliance rate for all diversions over ten years of the PDDI was 81%, with 15,466 of the 19,136 diversions where compliance data was available complied with. As shown in Figure 14, compliance levels were at their highest in the first time period, and have dropped slightly since then.

Figure 14: Compliance levels per time period



Time taken to comply

The minimum number of days taken to comply for the 15,466 diversions that were complied with was zero (where an individual attended the assessment appointment on the same day they were diverted) and the maximum was 1,221. The mean number of days taken to comply was 28.22 ($SD=51.59$). However of all diversions that were complied with, 50% were complied with within 12 days.

Figure 15 shows the number of days taken to comply with a diversion. Levels of compliance within five days of diversion were significantly higher in the first time period (42%, $n=1607$) than they were in the second (14%, $n=622$) and third (15%, $n=1079$) time periods¹⁹. In the most recent time period, a high proportion (26%, $n=1,830$) of diversions complied with have been completed within 21 and 50 days. It is possible that the increasing number of diversions over time has resulted in a difficulty to complete such a high proportion of assessment appointments within the first five days following diversion.

The increase in time to comply may also be related to the decline in the percentage of youth diversions, as youth take significantly less time to comply than adults²⁰. The mean number of days taken to comply for youth was 17.0 ($SD=28.6$) and for adults was 36.3 ($SD=63.5$). Figure 16 shows the number of days taken to comply for youth and adults. As shown, youth are far more likely to comply within the first five days of being diverted (33%) than adults and a quarter of adults take between 21 and 50 days to comply.

¹⁹ $\chi^2(16, N=15,448) = 1449.01, p < .01$
²⁰ $T(13,038) = -25.28, p < .01$

Figure 15: Number of days to comply per time period

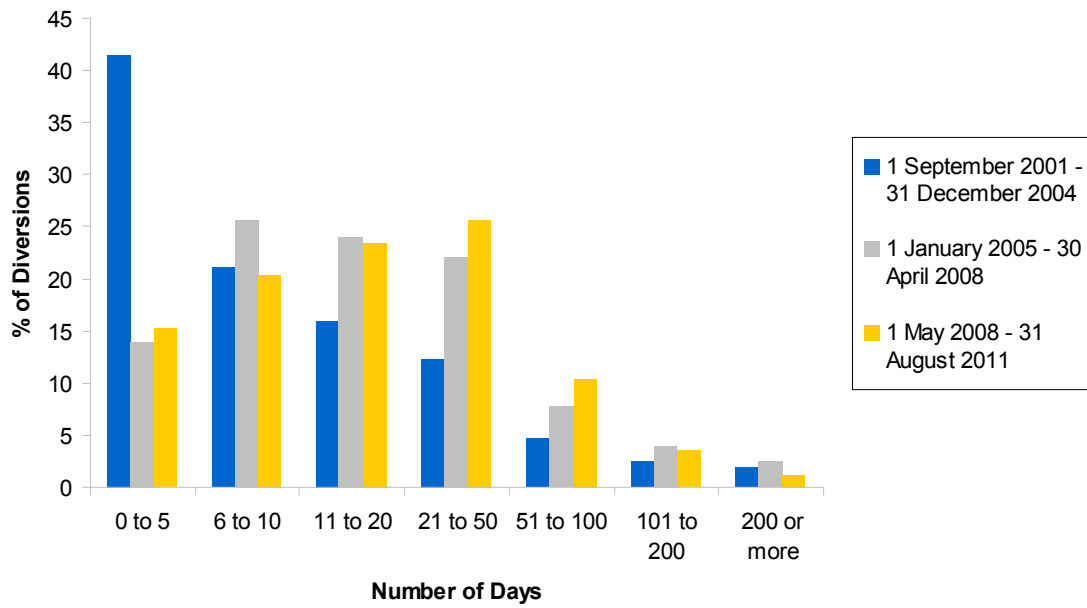
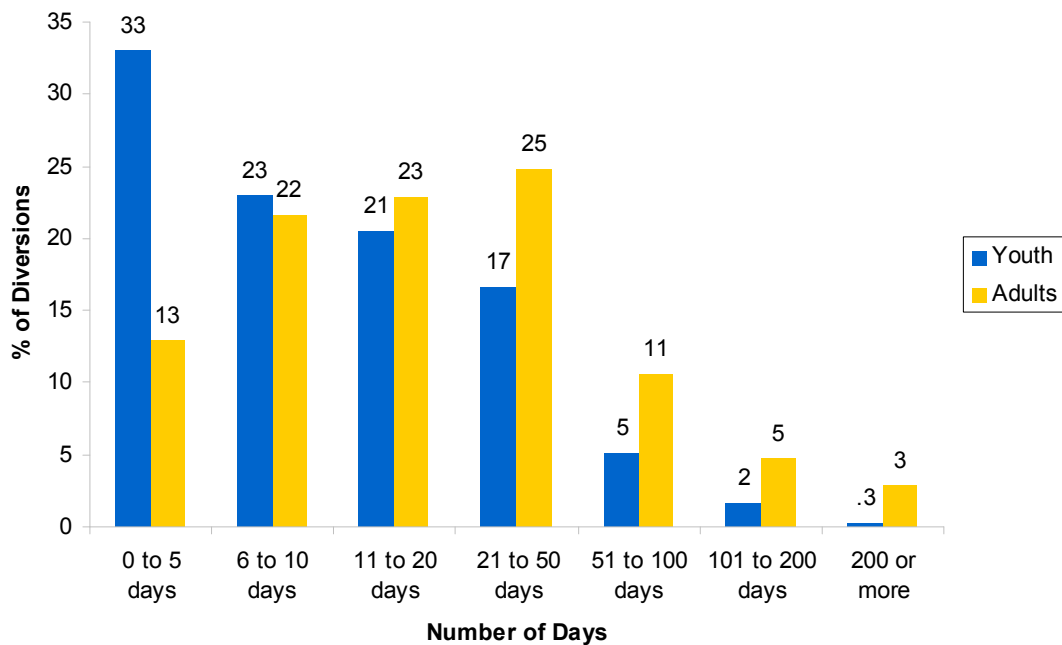


Figure 16: Number of days to comply for youth and adults



Factors related to compliance

Chi square analyses were conducted to determine if there were significant relationships between compliance with the diversion and gender²¹, age²², and ATSI status²³.

Significant relationships were found between compliance with the diversion and all of these variables. Further analyses revealed that the nature of these relationships was as follows:

- Females were less likely than expected to comply with their diversion (72% compliance), and males were more likely to comply (80% compliance).
- Youth were more likely than expected to comply (85% compliance), and adults were less likely to comply (74% compliance).
- Individuals who identified as ATSI were less likely than expected to comply (64% compliance), and those who did not identify as ATSI were more likely to comply (79% compliance).
- Those who used amphetamines (77% compliance) and opioids (69% compliance) were less likely than expected to comply, and those that used cannabis were more likely to comply (88% compliance, though this result is confounded by the age variable, given that only youth can be diverted for cannabis).

The relationship between ATSI status and compliance is complex, given that ATSI individuals are also more likely to be female, and to be diverted for opioid use. Further analyses showed that, when gender is controlled for, ATSI status is still related to compliance. Both male and female ATSI individuals are less likely to comply than non-ATSI males and females (with a 65% compliance rate for ATSI females compared with 75% for non-ATSI females, and 68% compliance for ATSI males compared with 83% for non-ATSI males)²⁴. There was no significant difference between ATSI and non-ATSI individuals diverted for opioids, suggesting that opioid use may in part explain the relationship between ATSI status and compliance.

Compliance rates were also found to be related to whether it was an individual's first or subsequent diversion²⁵. Individuals were more likely to comply with their first diversion (83% compliance), than with second or subsequent diversions. In fact, compliance rates appear to continue to decrease as number of diversions increases, with rates of 73% for second diversions, 67% for third diversions, 66% for fourth diversions, and 63% for fifth and subsequent diversions.

This finding is suggestive that the more diversions an individual receives, the less successful the initiative is in engaging that individual in a health assessment, and provides some support for the proposition of capping the number of times an individual can be diverted.

5. Recidivism

Level of recidivism

Over the ten years that the PDDI has been in operation, 24% (n=3,274) of the 13,627 individuals diverted have been diverted more than once. The maximum number of diversions one person has received is 32.

²¹ $\chi^2(2, N=19,717) = 135.05, p < .01$

²² $\chi^2(2, N=19,717) = 390.92, p < .01$

²³ $\chi^2(4, N=19,717) = 184.04, p < .01$

²⁴ Males: $\chi^2(1, N=14,624) = 125.81, p < .01$, Females: $\chi^2(1, N=3,916) = 17.93, p < .01$

²⁵ $\chi^2(8, N=19,717) = 503.50, p < .01$

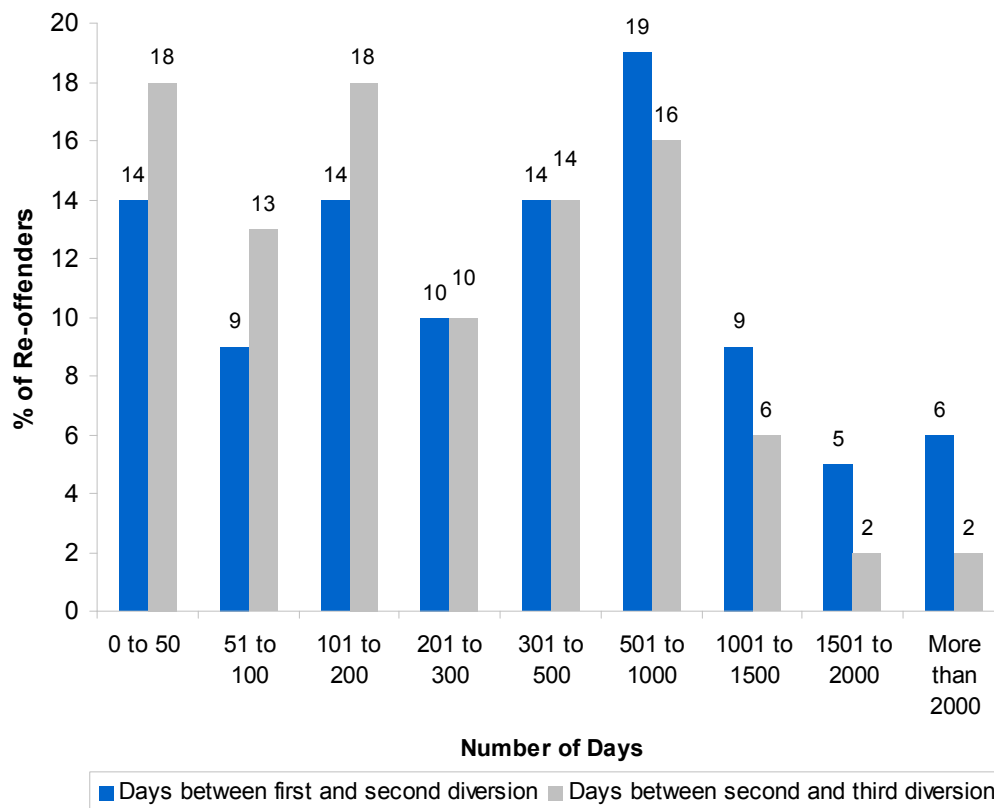
Table 13: Number of diversions per individual

Number of Diversions	% of individuals	n
1	76%	10,353
2	15%	2,022
3	5%	639
4	2%	277
5	1%	138
6 or more	1%	198

Time between first and subsequent diversions

Over the ten years of PDDI, the mean number of days between a first and second detection under the PDDI was 588.27 ($SD=11.66$). The minimum number of days between a first and second diversion was 0 and the maximum was 3,455. Figure 17 shows a breakdown of the number of days between first and second diversions (for those who had two or more diversions) and between second and third diversions (for those who had three or more diversions). As shown, time between diversions varied, but most commonly fell between 101 and 500 days.

Figure 17: Number of days between diversions



Factors related to re-offending under the PDDI

A chi-square analysis was carried out to determine if there is a relationship between an individual's compliance with their first diversion, and whether or not they re-offended. A statistically significant relationship was found²⁶, which showed that those who complied with their diversion were less likely than expected to re-offend (23% re-offending rate, n=2,586), whereas those who did not comply with their first diversion were more likely than expected to re-offend (32% re-offending rate, n=653). This result provides some support for the capacity of the PDDI assessment appointment to prevent future low-level drug-related offending.

Chi-square analyses were also conducted to determine if there were relationships between PDDI recidivism and gender, age at first diversion, ATSI status or drug diverted for at first diversion. Statistically significant relationships were found between recidivism and age at first diversion²⁷, ATSI status²⁸ and drug diverted for at first diversion²⁹. The specific nature of these relationships is as follows:

- Those aged between 18 and 24 at the time of their first diversion are less likely than expected to re-offend (21% re-offending rate), whilst those aged between 25 and 34 and between 35 and 44 are more likely than expected to re-offend (27% and 28% re-offending rates, respectively).
- ATSI individuals were more likely than expected to re-offend (28% re-offending rate).
- Individuals whose first diversion is for opioids were more likely than expected to re-offend (31% re-offending rate), whereas individuals who are first diverted for hallucinogens are less likely than expected to re-offend (14% re-offending rate).

Once again, the relationship between ATSI status and re-offending is complex. Further analysis showed that there was no significant difference in re-offending between ATSI and non-ATSI individuals diverted for opioids. This suggests that the relationship between ATSI status and re-offending can in part be accounted for by the fact that ATSI individuals are more likely to be diverted for opioids.

Survival following first diversion episode

Survival analysis was used to further examine the level of recidivism across the course of the PDDI³⁰. The Kaplan-Meier procedure was used to determine the proportions of various groups who 'survived' (i.e., did not re-offend) following their first diversion.

Survival analyses were carried out in relation to two different time variables. The first time variable considers the number of days from the *health assessment appointment* to the date of the next offence for all of those that complied with their appointment. These analyses examine the impact of the PDDI appointment as an intervention that impacts on survival time. The impact of gender, age (adult/youth), ATSI status and drug type on survival was tested using this time variable. Of these variables, gender, ATSI status and drug type were all found to have a significant relationship with survival time. More detail about the specific nature of these relationships is provided below. The only variable that did not have a significant relationship with survival was age, in that there was no significant difference between the survival curves for youth and adults.

The second time variable considers the number of days from the first PDDI offence to the second PDDI offence. This allows comparison of all diverted individuals, whether or not they complied with their diversion. This type of analysis examines the impact of simply being

²⁶ $\chi^2(2, N=13,627) = 123.57, p < .01$

²⁷ $\chi^2(6, N=13,627) = 55.69, p < .01$

²⁸ $\chi^2(2, N=13,627) = 114.17, p < .01$

²⁹ $\chi^2(9, N=13,627) = 33.63, p < .01$

³⁰ Note that this analysis considers only recidivism for further PDDI offences, as it is not possible to match PDDI records with other offence data without applying for an exemption from the South Australian Information Privacy Principles.

detected by police on survival time and allows for comparison of survival between those that complied with their appointment and those that did not.

Relationship between gender and survival

The relationship between gender and survival was examined using time between compliance with assessment date and second offence date as the time variable. This analysis examines how gender impacts upon time to re-offend following the PDDI assessment appointment. Small but significant differences were found in proportion surviving over time between males and females³¹. As shown in Figure 18 and Table 14, the proportion of females who had survived (i.e., had not re-offended) at various points in time was higher than the proportion of males who had survived. Although the differences in percentage surviving were quite small (e.g., 75% of males compared to 79% of females at the five year mark), this finding may indicate that the PDDI assessment appointment is more effective in prolonging time to re-offend for females than it is for males.

Figure 18: Survival curves for males and females

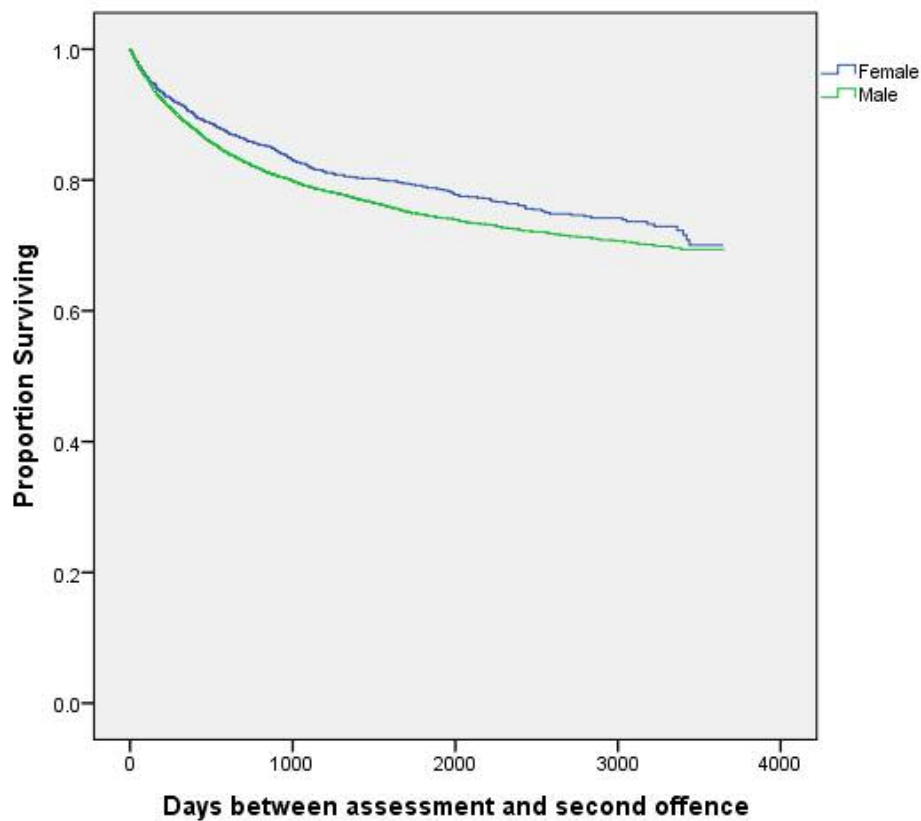


Table 14: Survival percentages for males and females

Gender	% Survival at 6 months (183 days)	% Survival at 1 year (365 days)	% Survival at 2 years (730 days)	% Survival at 5 years (1825 days)
Male	93%	88%	83%	75%
Female	94%	91%	86%	79%

³¹ Log-rank test of equality: Total $\chi^2 = 9.65$, $df=1$, $p<.01$ Wilcoxon statistic: Total $\chi^2 = 11.61$, $df=1$, $p<.01$

Relationship between ATSI status and survival

Significant differences were also found in the proportion surviving between ATSI and non-ATSI individuals³². Figure 19 and Table 15 show the proportion of ATSI and non-ATSI individuals that had survived at various points following their initial assessment appointment. As indicated, ATSI individuals tend to re-offend sooner than non-ATSI individuals. At the five year mark, this difference is relatively large, with 76% of non-ATSI individuals surviving (24% re-offended), but only 69% of ATSI individuals surviving (31% re-offended).

Figure 19: Survival curves for ATSI and non-ATSI individuals

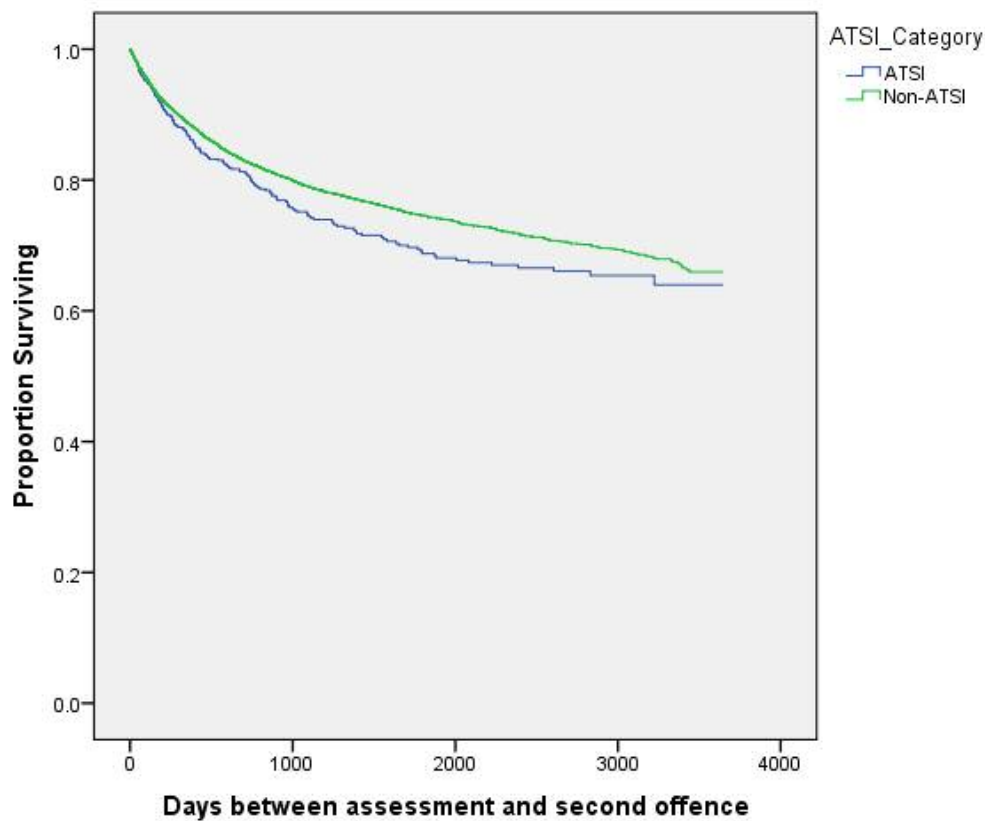


Table 15: Survival percentages for ATSI and non-ATSI individuals

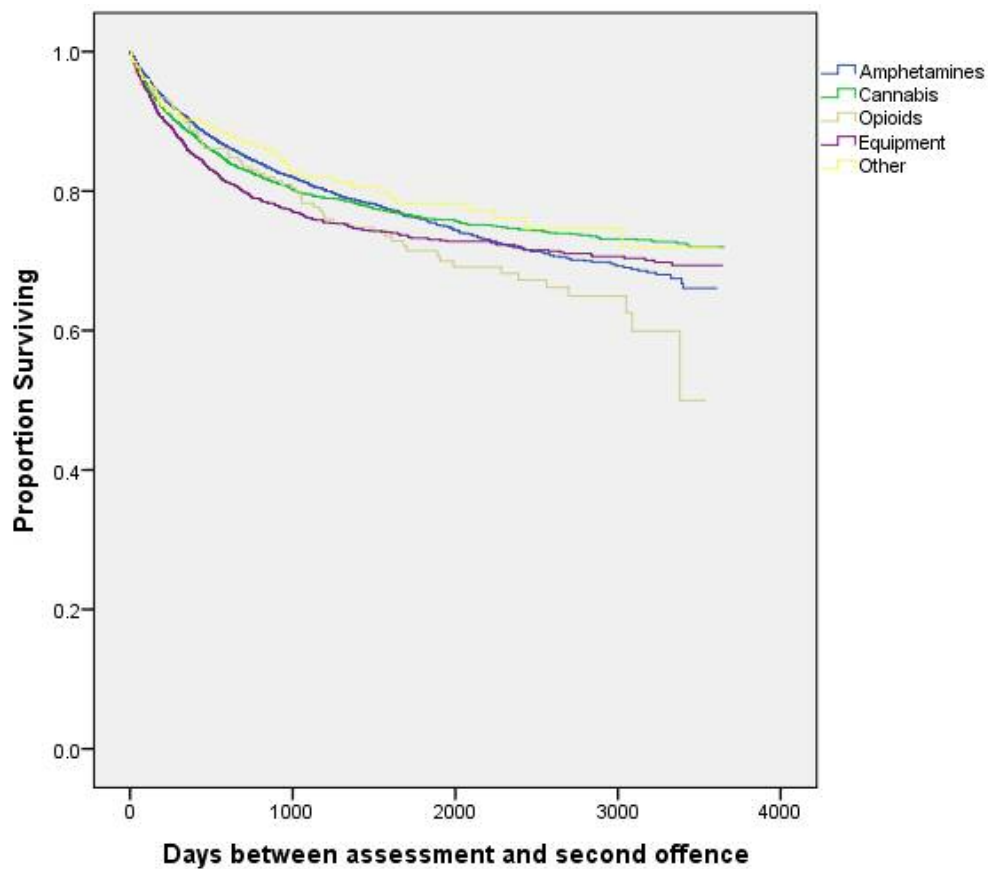
ATSI Status	% Survival at 6 months (183 days)	% Survival at 1 year (365 days)	% Survival at 2 years (730 days)	% Survival at 5 years (1825 days)
ATSI	92%	87%	81%	69%
Non-ATSI	93%	89%	83%	76%

³² Log-rank test of equality: Total $\chi^2 = 7.71$, $df=1$, $p<.05$ Wilcoxin statistic: Total $\chi^2 = 4.73$, $df=1$, $p<.05$

Relationship between drug offence type and survival

A significant relationship was found between survival and type of offence at diversion³³. Specifically, individuals who were diverted for drug equipment had significantly lower survival rates than those diverted for amphetamines and cannabis. For example, as shown in Table 16, at the six month mark 91% of those diverted for equipment had survived versus 94% of those diverted for amphetamines and 93% of those diverted for cannabis. At the five year mark, 73% of those diverted for equipment had survived versus 76% of those diverted for both amphetamines and cannabis.

Figure 20: Survival curves for drug offence type detected



³³

Equipment and Amphetamines:

Log-rank test of equality: Total $\chi^2 = 5.43$, $df=4$, $p<.05$

Wilcoxin statistic: Total $\chi^2 = 18.49$, $df=4$, $p<.01$

Equipment and Cannabis:

Log-rank test of equality: Total $\chi^2 = 6.22$, $df=4$, $p<.05$

Wilcoxin statistic: Total $\chi^2 = 7.33$, $df=4$, $p<.05$

Table 16: Survival percentages for drug offence type detected

Drug detected at first diversion	% Survival at 6 months (183 days)	% Survival at 1 year (365 days)	% Survival at 2 years (730 days)	% Survival at 5 years (1825 days)
Amphetamines	94%	90%	85%	76%
Cannabis	93%	89%	83%	76%
Opioids	93%	89%	83%	71%
Drug Equipment	91%	86%	80%	73%
Other Drugs	93%	90%	87%	78%

Relationship between compliance and survival

As discussed, a survival analysis for compliers and non-compliers was carried out using time between first and second offences as the time variable. Significant differences were found in proportion surviving over time between those that complied with their diversion and those that did not³⁴. As shown in Figure 21 and Table 17, two years after their first diversion offence, 25% of non-compliers had re-offended, whereas only 18% of compliers had re-offended.

Although overall re-offending rates are relatively low in the context of the PDDI, this analysis provides evidence that attendance at the assessment appointment is not only related to lower levels of recidivism, but also prolongs the time to re-offend for those that do re-offend.

³⁴ Log-rank test of equality: Total $\chi^2 = 83.46$, $df=1$, $p<.01$ Wilcoxin statistic: Total $\chi^2 = 63.88$, $df=1$, $p<.01$

Figure 21: Survival curves for non-compliers and compliers

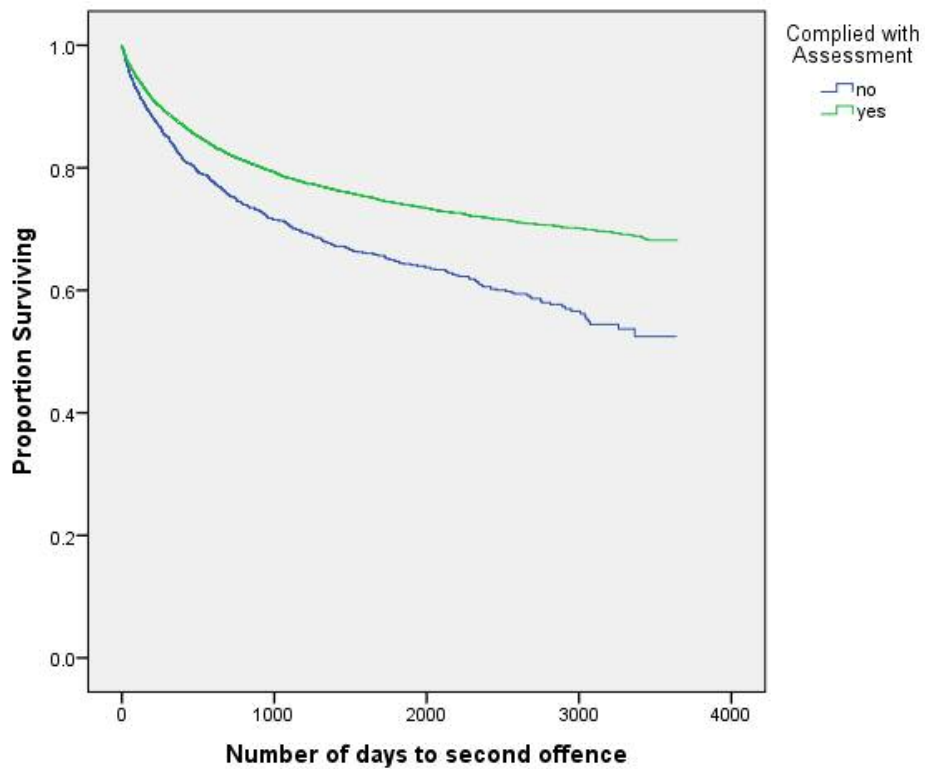


Table 17: Survival percentages for non-compliers and compliers

Group	% Survival at 6 months (183 days)	% Survival at 1 year (365 days)	% Survival at 2 years (730 days)	% Survival at 5 years (1825 days)
Non-Compliers	89%	83%	75%	64%
Compliers	92%	88%	82%	74%

Discussion

This report provides an update to previous analyses of PDDI data and offers some directions for further exploration.

Overall, the PDDI has continued to grow steadily over the past ten years. The analysis presented here highlights key changes that have occurred in the PDDI over time, namely a declining proportion of both regional diversions compared with metropolitan diversions and of youth diversions compared with adult diversions. Such findings may be indicative of increased drug use or targeting in metropolitan areas or amongst adults. However, this is difficult to infer from the data analysed here and may instead indicate an opportunity to reach more regional and youth drug users through more specific targeting of the Initiative amongst these groups.

The gender and ATSI breakdown of diversions and individuals diverted has remained stable over time. Males account for approximately 80% of all diversions and individuals diverted, which is consistent with their over-representation in the broader criminal justice system.

The proportion of individuals who identify as ATSI remains higher than the proportion of ATSI individuals in the South Australian population, which is once again in line with the over-representation of ATSI individuals in the broader criminal justice system. However, this analysis has also shown that ATSI individuals are less likely to comply with their diversion, are more likely to re-offend, and tend to re-offend more quickly following their first diversion. It is difficult to isolate the impact of ATSI status on diversions, given that there are interactions between ATSI status and other variables that impact on compliance and recidivism. For example, ATSI individuals are more likely to be diverted for opioids and opioid users are also less likely to comply and more likely to re-offend. Nevertheless, these findings may support a need for further analysis to identify whether any changes to the PDDI would increase its success amongst ATSI populations.

Compliance with diversions is generally very good, with an overall compliance level of 81%. Nevertheless, another important finding is that compliance with diversion tends to decrease the more times an individual is diverted. This indicates that it may be necessary to re-visit the PDDI model and once again consider capping the number of times an individual can be diverted.

Individuals who comply with their diversions have been shown to be significantly less likely to re-offend. Furthermore, survival analysis has been used to show that those who comply with their initial diversion but do eventually re-offend generally take longer to do so. These findings provide some support for the PDDI as a successful intervention for reducing drug use.

Overall, the analyses presented here provide some support for the utility of the health assessment appointment and also offer several directions that can be considered for further exploration and/or future improvement within the Initiative.

Appendix A: Drug Categories

Category	Drugs categorised (taken from the PDDI database)
Amphetamines	Amphetamines, Dexamphetamine, MDA, MDMA (ecstasy), Methamphetamine, Methylphenidate, Phenethylamines, Pseudoephedrine
Benzodiazepines	Benzodiazepines, Diazepam
Cannabis	Cannabis - Hash, Pot etc., Synthetic Cannabis (Kronic/K2/Spice/HU-210)
Cocaine	Cocaine
Hallucinogens	Ketamine, Lysergic acid diethylamide (LSD), Psilocybin
Inhalants	Petroleum
Opioids	Buprenorphine, Heroin, Levomethadyl acetate hydrochloride, Methadone, Morphine (incl. Opium), Opiate Antagonists, Organic Opiate Analgesics, Suboxone
Other/unknown	Analgesics, Gamma-hydroxybutyrate, Miscellaneous drugs (incl. prescription drugs), Paracetamol (incl. panadol), Steroids - Anabolic androgenic, Unknown liquid, Unknown tablets, Vegetable matter, White powder
Equipment	Plastic bag, Blade, Bong, Joint, Ice pipe, Pipe, Powder, Pump/nasal spray, Spoon, Torniquet, Unknown/other