Minnesota Statewide Adult Drug Court Evaluation – Follow- Up

In 2012, an initial evaluation of Minnesota's drug courts was completed. The study observed a statewide cohort of participants who entered drug court between July 1, 2007 and December 31, 2008 and evaluated the participants' outcomes (e.g., recidivism, incarceration costs) relative to a comparison group. The original study concluded drug courts significantly reduced recidivism, improved community outcomes, and limited incarceration and related incarceration costs for drug court participants over the research period. Furthermore, the study recommended a follow-up analysis be conducted to examine whether the positive effects of drug court continued into the long-run. The following supplements are the result of the long-run research, which extended the analysis timeframe to observe recidivism and incarceration for an additional year-and-a-half from the end date of the original study. Three supplements are included:

- Recidivism – The recidivism analysis cross-referenced a participant's "at-risk" time (i.e. time not spent in jail or prison) with any charges or convictions received. Recidivism results are presented along with logistic regressions and additional statistical techniques to present a broad scope of recidivism analyses.

- Incarceration – Rates of participant incarceration in jail, prison, or a combination of both were analyzed in this section, along with the associated average time of incarceration. Per diem jail and prison costs were used conjointly with average incarceration days to calculate average incarceration costs for the drug court cohort and comparison group.

- Methodology Addendum – In-depth explanation of variable definitions and the study's methodology is explicated in the methodology addendum. Additional analyses and description of nuanced data occurrences are also provided.

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MINNESOTA JUDICIAL BRANCH

Minnesota Statewide Adult Drug Court Evaluation – Follow-Up: Recidivism

Background

An initial evaluation of Minnesota's drug courts was completed in June 2012. The study concluded drug courts had significantly reduced recidivism, improved community outcomes, and limited incarceration and related incarceration costs for drug court participants over the research period. Furthermore, the study recommended a follow-up analysis be conducted to examine whether the positive effects of drug court continued into the long-run. This supplement is the result of efforts to follow-up on the original study's recommendations and continues research on the overall efficacy of drug courts in Minnesota.

Recidivism Results

The drug court cohort (which includes graduate and non-graduate participants) had consistently lower recidivism metrics than the comparison group. Statistical significance of the differences varied upon the analysis. Drug court graduates had lower values of charge and conviction recidivism compared to the aggregate cohort and comparison groups. Regression results supported the recidivism statistics, showing drug court had a statistically significant effect of reducing the likelihood of receiving a new charge or conviction after participation in the program. Throughout the analysis, at-risk time was used to standardize time intervals. At-risk time refers to the methodology of calculating time units based upon days that an individual spent on "the street" and not incarcerated, as time spent in jail or prison generally does not allow for an opportunity to recidivate. For a complete explanation of the methodology used in calculating recidivism and at-risk time, please reference the methodology addendum.

What was the conviction recidivism rate?

The drug court cohort had smaller proportions of participants who were convicted of a new offense after their start date compared to the comparison group. Participants were analyzed at six-month intervals, with each interval showing a smaller proportion of drug court participants with a new conviction compared to the comparison group. The proportional differences between the groups were statistically significant for all intervals.

Of the participants who reached four years of at-risk time, 28% of the drug court cohort received a new conviction at some point throughout the evaluation period, compared to 41% of the comparison group, a statistically significant difference of thirteen percentage points (Figure 1). Both groups' recidivism measures showed a discernable plateau, as seen in Chart 1. The cohort's decline in conviction recidivism in the final six-month interval was the result of the changing sample size and the methodology for calculating at-risk time, for which a full explanation can be referenced in the methodology addendum.
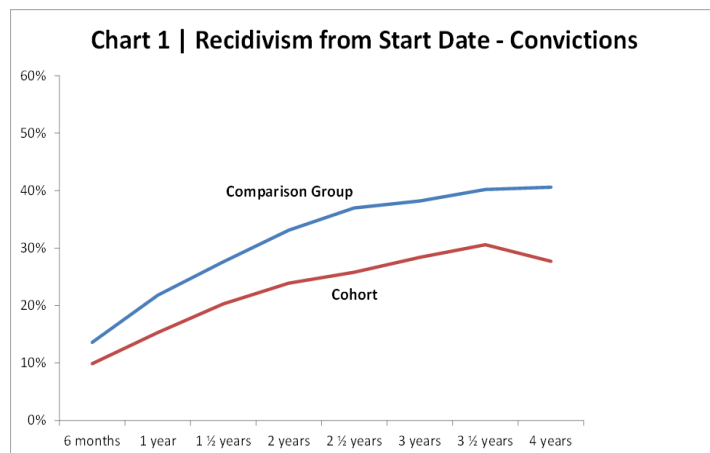

Chart 1 | Recidivism from Start Date - Convictions

Figure 1: Recidivism from Start Date - Convictions

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	14%	10%	639	533
1 year	22%	15%	634	530
1 ½ years	28%	20%	624	524
2 years	33%	24%	613	519
2 ½ years	37%	26%	598	508
3 years	38%	28%	568	486
3 ½ years	40%	31%	537	457
4 years	41%	28%	483	393

What was the charge recidivism rate?

Recidivism statistics measuring charges largely mirrored conviction recidivism results. At each six-month interval, the drug court cohort had smaller proportions of participants who were charged with new offenses after their start date compared to the comparison group. Of the participants who reached four years of at-risk time, 38% of the drug court cohort received a new charge during the evaluative period compared to 48% for the comparison group. This difference, along with all other proportional differences between the groups, was statistically significant. A full table and chart explaining the charge recidivism results can be found in the methodology addendum.

What was the overall recidivism rate disregarding ineligibility for time intervals?

Aggregate recidivism rates for drug court participants were lower than the comparison group (Figure 2). Nearly one-half (49%) of the drug court cohort received a new charge at some point during the analysis period, compared to 53% of the comparison group. The difference was not statistically significant. The cohort of drug court participants also had fewer individuals receive a new conviction (39%) relative to the comparison group (46%). The difference between these sample proportions is statistically significant.

Figure 2: Aggregate Recidivism from Start Date

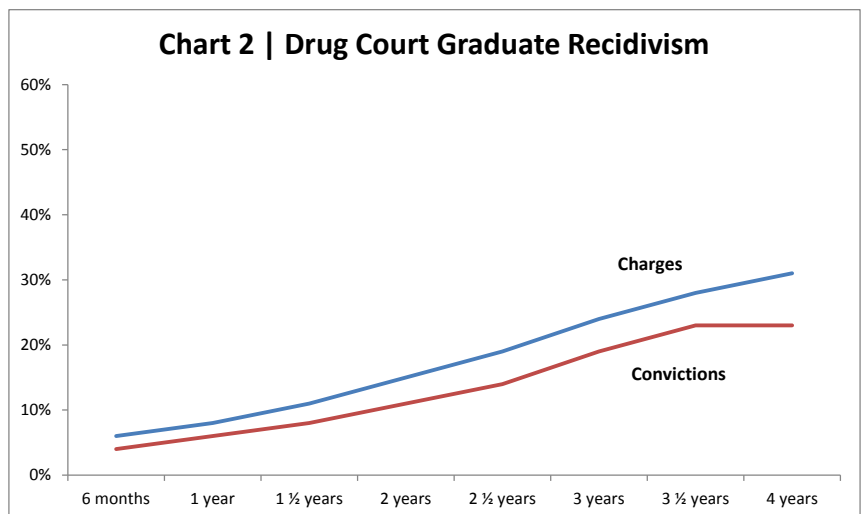| Type	Comparison Group	Cohort	(N) CG	(N) Cohort	Sig.
Charge	53%	49%	644	535	.129
Convictions	46%	39%	644	535	.024

Drug Court Graduate Recidivism Results

Recidivism percentages for graduates of drug court were lower than the total cohort group averages for each timeframe but see significant increases between the one-and-a-half year and four-year intervals.

Graduates of drug court had lower levels of recidivism than the aggregate cohort and comparison groups. After four years of at-risk time, 31% of the eligible graduates received a new charge and 23% were convicted of a new offense (Figure 3).

However, the percentage point increases in charge and conviction recidivism (20 and 15 percentage points, respectively) between the one-and-a-half year and four-year intervals (the average post-drug court time period) showed an increasing rate of recidivism. This result, which can be observed in Chart 2, is contrary to the decreasing rates of recidivism seen in the convictions and charge charts for both the comparison group and all drug court participants.

Figure 3: Drug Court Graduate Recidivism

Time from Start Date	Cohort Graduates - Charges	Cohort Graduates - Convictions	(N) Graduates
6 months	6%	4%	280
1 year	8%	6%	280
1 ½ years	11%	8%	280
2 years	15%	11%	280
2 ½ years	19%	14%	280
3 years	24%	19%	280
3 ½ years	28%	23%	279
4 years	31%	23%	266

Chart 2 | Drug Court Graduate Recidivism

Impact of Drug Court—Supplemental Analyses

What is the impact of drug court when controlling for other variables?

Regression analysis was conducted to determine whether drug court was a statistically significant factor affecting charges and convictions. Using logistic regression one can examine whether drug court is impacting new charges or convictions by holding other variables constant. The regression tables below show both the beta coefficient (B) and the statistical significance (Sig) for each of the variables that were analyzed. The direction of the effect, either positive or negative, of each variable on charges or convictions is indicated by the sign of the coefficient (i.e. "-" if it decreased convictions). The magnitude of the coefficients cannot be directly interpreted due to the logistic specification, but a discussion of the "log-odds" interpretation of the coefficients is included in the methodology addendum. Regarding statistical significance, typically levels of less than .05 are considered significant. This means that the likelihood of the coefficient's increase or decrease was due merely to chance is less than 5%.

The analysis showed that drug court *did have* a statistically significant effect of decreasing the likelihood of whether an individual received a new conviction within four years of their start date (Figure 4). However, participation in drug court did not significantly reduce the likelihood of an individual receiving a new charge within four years of their start date (Figure 5). The conviction and charges results for all time intervals can be viewed in the methodology addendum, along with more details about the regression methodology and the sensitivity analysis.

What other analysis techniques were used to examine recidivism?

In addition to the presented recidivism metrics, supplemental analyses not contained in the initial evaluation were conducted to further investigate the idea of recidivism and drug courts. These nuanced metrics offered different perspectives on looking at the question of recidivism. For example, frequency ratios were calculated to examine whether the aggregate amount of charges and convictions declined over time and whether drug courts contributed to a decrease in recidivism. Annualized recidivism rates were calculated to determine whether the staggered sample period introduced bias into the recidivism metrics. Both the frequency ratio and annualized rate analyses showed drug courts had lower recidivism relative to the comparison group. For a more in-depth explanation and examination of these metrics, see the methodology addendum.

Figure 4: Logistic Regression Model - Convictions Four Years from Start Date

Variable	B	Sig.
Drug Court	-.312	.036
Male	.076	.599
Age at Start Date	-.031	.000
Non-White	-.048	.738
Drug Offense Type	-.292	.406
Property Offense Type	-.066	.866
Felony Level Offense	.804	.389
Prior Juvenile Adjudications (#)	-.013	.931
Prior Targeted Misdemeanor or Gross Misdemeanor Convictions (#)	.129	.015
Prior Felony Convictions (#)	.008	.794
Custody Status	.346	.018
Chemically Dependent	-.500	.239
Treatment Received	-.133	.425
Inpatient Treatment Received	.314	.037
Jail Days Served (#)	.007	.000
Any Prison Served	.670	.000
Constant	-.222	.836

Figure 5: Logistic Regression Model - Charges Four Years from Start Date

Variable	B	Sig.
Drug Court	-.242	.100
Male	.030	.831
Age at Start Date	-.035	.000
Non-White	.233	.101
Drug Offense Type	-.381	.284
Property Offense Type	-.319	.420
Felony Level Offense	.541	.553
Prior Juvenile Adjudications (#)	.066	.684
Prior Targeted Misdemeanor or Gross Misdemeanor Convictions (#)	.126	.022
Prior Felony Convictions (#)	-.001	.973
Custody Status	.374	.011
Chemically Dependent	-.266	.535
Treatment Received	-.011	.946
Inpatient Treatment Received	.182	.225
Jail Days Served (#)	.008	.000
Any Prison Served	.700	.000
Constant	.270	.796

Conclusion

The recidivism analysis revealed lower recidivism for the cohort relative to the comparison group. Both charge and conviction recidivism measures were statistically significantly lower than the comparison group. Regression analysis supported the recidivism statistics, identifying drug court as a significant predictor of whether or not an individual received a new charge or conviction within a given time period. Additional sensitivity analysis confirmed the recidivism and regression analyses and ensured the staggered sample period was not introducing significant bias into the evaluation.

MINNESOTA JUDICIAL BRANCH

Minnesota Statewide Adult Drug Court Evaluation – Follow-Up: Incarceration

Background

An initial evaluation of Minnesota's drug courts was completed in June 2012. The study concluded drug courts had significantly reduced recidivism, improved community outcomes, and limited incarceration and related incarceration costs for drug court participants over the research period. Furthermore, the study recommended a follow-up analysis be conducted to examine whether the positive effects of drug court continued into the long-run. This supplement is the result of efforts to follow-up on the original study's recommendations and continues research on the overall efficacy of drug courts in Minnesota.

Incarceration Use

Nearly equivalent percentages of drug court (86%) and comparison group (87%) participants were incarcerated in jail and/or prison throughout the evaluation's four-year timeframe. Despite nearly equivalent incarceration rates, the drug court cohort (includes graduate and non-graduate participants) was incarcerated in jail and/or prison, on average, 74 fewer days than the comparison group four years after their start date. This difference resulted from drug court participants spending, on average, 12 more days in jail and 87 fewer days in prison relative to the comparison group through four years, with both differences being statistically significant. When removing Hennepin County participants from the analysis, the remaining drug court participants were incarcerated fewer days in jail (23) and prison (116) relative to the remaining comparison group participants four years after the start date, both statistically significant differences. For an explanation of the methodology used in calculating incarceration, please reference the methodology addendum.

What were the jail incarceration rates?

Jail incarceration rates for cohort and comparison group participants were equivalent four years after the start date (Figure 1). Despite a higher average percentage of drug court participants being incarcerated in jail through the first three years following the start date, only the differences for the six-month and one-year intervals were statistically significant. Hence, a drug court participant was statistically just as likely to be incarcerated in jail as a comparison group participant for the one-and-a-half through four-year time intervals.

Excluding Hennepin County observations from the drug court and comparison group yielded notable decreases in the jail percentages for the drug court cohort in the beginning time intervals, but little change for the comparison group (Figure 2).

Figure 1: % Incarcerated in Jail from Start Date

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	61%	68%	644	535
1 year	70%	76%	644	535
1 ½ years	74%	79%	644	535
2 years	77%	81%	644	535
2 ½ years	80%	81%	644	535
3 years	81%	82%	644	535
3 ½ years	83%	83%	644	535
4 years	84%	84%	644	535

Figure 2: % Incarcerated in Jail from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	60%	61%	563	320
1 year	69%	72%	563	320
1 ½ years	74%	75%	563	320
2 years	76%	78%	563	320
2 ½ years	79%	79%	563	320
3 years	81%	80%	563	320
3 ½ years	82%	81%	563	320
4 years	83%	82%	563	320

How many days were participants incarcerated in jail?

Drug court participants spent, on average, 12 more days incarcerated in jail relative to the comparison group four years after their start date (Figure 3). These results were consistent with the initial evaluation. The difference in average jail days between the cohort and comparison group four years after start date was statistically significant.

Excluding Hennepin County from the jail day analysis revealed a 36 day decrease in average jail days for the cohort four years after the start date, while the comparison group had an observed decrease of only one day (Figure 4). Comparing Figures 3 and 4 illustrates that when Hennepin participants are included, the cohort spent more time in jail than the comparison group, but when Hennepin participants are excluded from the cohort and comparison groups, the cohort spent fewer average days in jail relative to the comparison group. The four year average jail day difference between the groups, when excluding Hennepin County participants, was statistically significant.

Figure 3: Average Number of Days Incarcerated in Jail from Start Date

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	22	22	644	535
1 year	34	40	644	535
1 ½ years	43	53	644	535
2 years	51	66	644	535
2 ½ years	60	74	644	535
3 years	66	81	644	535
3 ½ years	73	87	644	535
4 years	79	91	644	535

Figure 4: Average Number of Days Incarcerated in Jail from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	21	13	563	320
1 year	33	23	563	320
1 ½ years	41	30	563	320
2 years	50	38	563	320
2 ½ years	58	42	563	320
3 years	65	48	563	320
3 ½ years	72	53	563	320
4 years	78	55	563	320

What were the prison incarceration rates?

The drug court cohort was incarcerated in prison less often than the comparison group (Figure 5). Four years after the start date, 29% of the drug court cohort had been incarcerated in prison compared to 40% of the comparison group, a statistically significant difference.

After Hennepin County observations were excluded from the groups, the prison percentages decreased for the drug court cohort, but insignificant changes occurred for the comparison group (Figure 6). Four-year prison incarceration rates fell nine percentage points for the drug court cohort after excluding Hennepin County. The difference between the comparison and cohort groups' prison incarceration percentage was statistically significant four years after the start date.

Figure 5: % Incarcerated in Prison from Start Date

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	21%	3%	644	535
1 year	26%	11%	644	535
1 ½ years	29%	16%	644	535
2 years	32%	22%	644	535
2 ½ years	36%	24%	644	535
3 years	38%	26%	644	535
3 ½ years	39%	28%	644	535
4 years	40%	29%	644	535

Figure 6: % Incarcerated in Prison from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	22%	1%	563	320
1 year	26%	6%	563	320
1 ½ years	30%	10%	563	320
2 years	33%	14%	563	320
2 ½ years	36%	16%	563	320
3 years	38%	18%	563	320
3 ½ years	39%	19%	563	320
4 years	41%	20%	563	320

How many days were participants incarcerated in prison?

Drug court participants spent, on average, 87 fewer days incarcerated in prison relative to the comparison group four years after their start date (Figure 7). These results were consistent with the initial evaluation. The difference in average prison days four years after start date was statistically significant.

Excluding Hennepin County from the incarceration day analysis revealed a 31 day decrease in average prison days for the cohort four years after the start date, while the comparison group decreased only two days (Figure 8). Consequently, after Hennepin County participants were excluded, the comparison group's prison time was over three times as high as the cohort. The differences in prison days between the cohort and comparison groups, for all time intervals, were statistically significant.

Figure 7: Average Number of Days Incarcerated in Prison from Start Date

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	31	2	644	535
1 year	60	14	644	535
1 ½ years	84	27	644	535
2 years	105	41	644	535
2 ½ years	121	52	644	535
3 years	138	63	644	535
3 ½ years	154	74	644	535
4 years	171	84	644	535

Figure 8: Average Number of Days Incarcerated in Prison from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	31	1	563	320
1 year	60	7	563	320
1 ½ years	85	15	563	320
2 years	106	25	563	320
2 ½ years	122	31	563	320
3 years	139	38	563	320
3 ½ years	153	46	563	320
4 years	169	53	563	320

What were the overall incarceration rates for jail and/or prison?

In this section, overall incarceration refers to both jail and/or prison incarceration. Drug court and comparison group participants had nearly identical incarceration rates four years after the start date (86% drug court cohort; 87% comparison group). The groups' incarceration rates throughout the time interval analysis showed similar growth rates. A table showing the incarceration rates for each six-month interval can be seen in Figure 9.

Drug court participants from Hennepin County received the highest proportions of incarceration. Excluding Hennepin County observations from the drug court and comparison group yielded decreases in incarceration percentages for the drug court cohort, but little change for the comparison group (Figure 10). Four-year incarceration rates declined four percentage points after excluding Hennepin County for the cohort (86% to 82%), but the change was not statistically significant. However, with Hennepin observations excluded, the incarceration difference between the cohort and comparison group four years after the start date was statistically significantly different.

Figure 9: % Incarcerated in Jail and/or Prison from Start Date

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	68%	68%	644	535
1 year	77%	76%	644	535
1 ½ years	81%	79%	644	535
2 years	83%	82%	644	535
2 ½ years	85%	83%	644	535
3 years	86%	84%	644	535
3 ½ years	87%	85%	644	535
4 years	87%	86%	644	535

Figure 10: % Incarcerated in Jail and /or Prison from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	68%	61%	563	320
1 year	76%	71%	563	320
1 ½ years	80%	75%	563	320
2 years	82%	78%	563	320
2 ½ years	85%	78%	563	320
3 years	86%	79%	563	320
3 ½ years	87%	80%	563	320
4 years	87%	82%	563	320

How many days were participants incarcerated in jail and/or prison?

Although the proportion of participants incarcerated through the four-year intervals did not yield significant differences, the number of days incarcerated showed statistically significant variance by group. The drug court cohort spent, on average, 74 fewer days incarcerated in jail or prison relative to the comparison group four years from the start date (Figure 11). This difference between the means is considered to be statistically significant.

Excluding Hennepin County from the incarceration day analysis revealed a 68 day decrease in average incarceration days for the cohort four years after the start date, while the comparison group had an observed decrease of only three days (Figure 12).

Figure 11: Average Number of Days Incarcerated from Start Date

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	52	24	644	535
1 year	94	54	644	535
1 ½ years	126	81	644	535
2 years	156	107	644	535
2 ½ years	181	126	644	535
3 years	204	144	644	535
3 ½ years	227	160	644	535
4 years	250	176	644	535

Figure 12: Average Number of Days Incarcerated from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	51	14	563	320
1 year	93	30	563	320
1 ½ years	126	44	563	320
2 years	156	63	563	320
2 ½ years	180	73	563	320
3 years	203	87	563	320
3 ½ years	225	99	563	320
4 years	247	108	563	320

Incarceration Costs

Average jail costs were marginally higher for the cohort ($673) four years after the start date relative to the comparison group. After removing Hennepin County participants, average jail costs decreased for the cohort and were $1,279 lower than the comparison group. Average prison costs were significantly lower for the cohort four years after the start date both including and excluding Hennepin County participants ($4,960 and $6,631, respectively). Overall incarceration costs were, on average, $4,288 lower for the cohort with Hennepin County participants included and $7,910 lower after Hennepin participants were removed.

The jail and prison costs used for this analysis were provided by the Department of Corrections (DOC). The DOC recommended using a marginal per diem cost rate for the prison and jail costs. For further explanation of the methodology for calculating incarceration costs, please reference the methodology addendum.

What were the jail incarceration costs?

Jail costs were $5,030 per drug court participant and $4,357 per comparison group participant four years after the start date (Figure 13). Because drug court participants spent more time in jail relative to the comparison group, their incarceration cost was higher. After four years, the cost difference between the cohort and comparison group was less than the two-and-a-half year interval, an improvement from the cutoff date of the previous evaluation.

Excluding Hennepin County participants led to a $1,998 average jail cost decrease for the drug court cohort four years after the start date compared to $47 for the comparison group (Figure 14). Savings four years after the start date ($1,279) was greater than the previously measured two-and-a-half year interval ($876).

Figure 13: Average Cost of Jail per Participant from Start Date

Time from Start Date	Comparison Group	Cohort	Difference (CG - Cohort)
6 months	$1,185	$1,194	($9)
1 year	$1,872	$2,219	($347)
1 ½ years	$2,352	$2,937	($585)
2 years	$2,831	$3,644	($813)
2 ½ years	$3,292	$4,051	($759)
3 years	$3,625	$4,448	($823)
3 ½ years	$3,994	$4,762	($768)
4 years	$4,357	$5,030	($673)

Figure 14: Average Cost of Jail per Participant from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	Difference (CG - Cohort)
6 months	$1,131	$739	$392
1 year	$1,794	$1,250	$544
1 ½ years	$2,241	$1,627	$614
2 years	$2,723	$2,087	$636
2 ½ years	$3,200	$2,324	$876
3 years	$3,550	$2,652	$898
3 ½ years	$3,933	$2,889	$1,044
4 years	$4,310	$3,032	$1,279

What were the prison incarceration costs?

Prison costs were $4,816 per drug court participant and $9,776 per comparison group participant four years after the start date (Figure 15). Because comparison group participants were incarcerated in prison more frequently and for longer average periods of time than the drug court cohort, their incarceration cost was higher. The four-year savings amount, including Hennepin County participants, increased $1,032 relative to the prior evaluation's two-and-a-half year cutoff date.

Excluding Hennepin County participants resulted in decreased average prison costs four years after the start date, with the drug court cohort's cost falling by $1,787 to $3,029. The comparison group saw costs decline only $116 to $9660 (Figure 16). The average prison cost for the comparison group when excluding Hennepin is over three times as much as the drug court cohort's cost. The four-year savings amount increased to $1,421 relative to the two-and-a-half year interval.

Figure 15: Average Cost of Prison per Participant from Start Date

Time from Start Date	Comparison Group	Cohort	Difference (CG - Cohort)
6 months	$1,750	$110	$1,640
1 year	$3,411	$773	$2,638
1 ½ years	$4,789	$1,555	$3,234
2 years	$5,981	$2,346	$3,635
2 ½ years	$6,913	$2,985	$3,928
3 years	$7,923	$3,617	$4,306
3 ½ years	$8,833	$4,209	$4,624
4 years	$9,776	$4,816	$4,960

Figure 16: Average Cost of Prison per Participant from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	Difference (CG - Cohort)
6 months	$1,753	$55	$1,698
1 year	$3,445	$391	$3,054
1 ½ years	$4,854	$851	$4,003
2 years	$6,068	$1,409	$4,659
2 ½ years	$6,966	$1,756	$5,210
3 years	$7,931	$2,202	$5,729
3 ½ years	$8,775	$2,629	$6,146
4 years	$9,660	$3,029	$6,631

What were the overall incarceration costs for both jail and prison?

Overall incarceration costs were $9,846 per drug court participant and $14,134 per comparison group participant four years after the start date (Figure 17). Four years after the start date, the total savings amount of $4,288 increased $1,119 relative to the two-and-a-half year value.

Excluding Hennepin County participants showed drug court average incarceration costs decreased to $6,060 four years after the start date compared to $13,970 for the comparison group (Figure 18). The average total incarceration cost for the comparison group, when excluding Hennepin, was nearly two and a half times as much as the cost for the drug court cohort.

Figure 17: Average Overall Incarceration Cost per Participant from Start Date

Time from Start Date	Comparison Group	Cohort	Difference (CG - Cohort)
6 months	$2,935	$1,304	$1,631
1 year	$5,283	$2,992	$2,291
1 ½ years	$7,141	$4,492	$2,649
2 years	$8,812	$5,990	$2,822
2 ½ years	$10,205	$7,036	$3,169
3 years	$11,548	$8,066	$3,482
3 ½ years	$12,827	$8,971	$3,856
4 years	$14,134	$9,846	$4,288

Figure 18: Average Overall Incarceration Cost per Participant from Start Date - Excluding Hennepin

Time from Start Date	Comparison Group	Cohort	Difference (CG - Cohort)
6 months	$2,884	$793	$2,091
1 year	$5,239	$1,641	$3,598
1 ½ years	$7,095	$2,478	$4,617
2 years	$8,791	$3,496	$5,295
2 ½ years	$10,166	$4,080	$6,086
3 years	$11,481	$4,854	$6,627
3 ½ years	$12,708	$5,519	$7,189
4 years	$13,970	$6,060	$7,910

Conclusion

Analyses of incarceration costs revealed nuances that resulted from incarceration length variance and the disproportionate effect of Hennepin County drug court participants. Segmented jail incarceration costs showed that, because drug court participants spent, on average, more days in jail, their four-year average jail incarceration cost was $673 greater than the comparison group. After Hennepin County participants were excluded, the cohort's average four-year jail costs were $1,279 less than the comparison group. Prison costs were over double for the comparison group ($9,776) relative to the drug court cohort ($4,816), and after excluding Hennepin County participants, the comparison group's average prison cost ($9,660) rose 219% higher than the drug court cohort ($3,029). Overall incarceration costs were $9,846 per drug court participant and $14,134 per comparison group participant four years after the start date. Excluding Hennepin County participants showed drug court average incarceration costs decreased to $6,060 four years after the start date compared to $13,970 for the comparison group.

Lower overall incarceration costs for the drug court cohort were, in part, a result of incarceration trends. The cohort and the comparison group were incarcerated in jail at similar rates, but the cohort spent, on average, 12 more days in jail four years after the start date. When Hennepin County participants were removed, the cohort spent 23 fewer average days in jail relative to the comparison group over the same time period. More distinct prison trends showed the comparison group's higher prison incarceration rate (40%) relative to the cohort (29%) four years after the start date. The comparison group also had higher average prison days (171) relative to the cohort (84). After Hennepin County participants were removed, the difference between the groups' average prison days grew from 87 to 116.

MINNESOTA JUDICIAL BRANCH

Minnesota Statewide Adult Drug Court Evaluation – Follow-Up: Methodology Addendum

Background

In 2007 the Minnesota Judicial Branch received first-time funding for drug courts from the Minnesota Legislature. Following the appropriation of funds, the Judicial Council ratified a policy on Drug Court Standards for all drug courts in Minnesota (see standards). These standards, based on the 10 Key Components of Drug Courts (see 10 Key Components), set guiding principles and minimum requirements for all drug courts in Minnesota, regardless of the court's funding source.

In addition, 2007 marked the formation of the multi-disciplinary, cross-branch Drug Court Initiative advisory committee (DCI) to oversee the implementation of drug courts/problem-solving approaches in Minnesota. The charge of the DCI was to "oversee and advise policy formulation and implementation as well as funding distribution for drug courts/problem-solving approaches in Minnesota." The Evaluation Committee, acknowledging the new funding, implementation of the Drug Court Standards, and the role of the DCI to implement drug courts across the state, developed a statewide approach to the evaluation of drug courts in Minnesota. The statewide approach was determined to be more robust compared to conducting an evaluation on a sample of individual drug courts.

An initial evaluation of Minnesota's drug courts was completed in June 2012. The study concluded drug court had significantly reduced recidivism, improved community outcomes, and limited incarceration and related incarceration costs for drug court participants over the sample period. Furthermore, the study recommended a follow-up analysis be conducted to examine whether the positive effects of drug court continued into the long-run. This study is the result of efforts to follow-up on the original study's recommendations and continues research on the overall efficacy of drug courts in Minnesota.

Current Literature

Extensive amounts of research have examined the effectiveness of drug courts and their impact on recidivism and cost-savings. The majority of drug court research shows drug courts reduce recidivism relative to a control or comparison group, though some studies have been methodologically weak while other studies have shown contrary results.[1,2] For example, one recent research study purported that drug court may have unintended increased crime outcomes that negatively impact jurisdictions.[3] Despite this, drug courts have demonstrably been shown to work and are supported by meta-analytic synthesis that conclude reduced levels of drug relapse, re-arrest, and recidivism for drug court participants and sustained effects of the intervention up to three years after drug court entry.[4,5,6] Other studies reported long-term benefits of drug court. One of the oldest drug courts in the

[1] Mitchell, Ojmarrh et al. 2012. Assessing the effectiveness of drug courts on recidivism: A meta-analytic review of traditional and non-traditional drug courts. *Journal of Criminal Justice*. 38:60-71.

[2] U.S. Government Accountability Office. 2011. Adult drug courts: Studies show courts reduce recidivism, but DOJ could enhance future performance measure revision efforts. *Report to Congressional Committees*. Retrieved from http://www.gao.gov/assets/590/586793.pdf.

[3] Lilley, David R. 2013. Drug courts and community crimes rates: a nationwide analysis of jurisdiction-level outcomes. *Journal of Criminology*. Retrieved from http://www.hindawi.com/journals/jcrim/2013/571760/.

[4] Mitchell, Ojmarrh et al. 2012. See reference 1.

[5] Rossman, Shelli B. et al. 2011. The multi-site adult drug court evaluation: Executive summary. *Urban Institute*: *Justice Policy Center*. Retrieved from http://www.urban.org/UploadedPDF/412353-multi-site-adult-drug-court.pdf.

United States, the Multnomah County Drug Court, studied drug court participants over a 10-year period. The evaluation showed that the incidence of re-arrest for drug court participants decreased nearly 30% five years from the drug court petition hearing relative to a comparison group, drug crimes reduced substantially up to 14 years after the petition hearing, and that drug courts generated significant cost savings.[7] The Minnesota statewide follow-up evaluation's results largely reflected the survey of nationwide literature, showing decreased recidivism and overall incarceration cost savings for participants of drug court.

Sample Group Selection

The evaluation followed the methodology from the 2012 Minnesota Statewide Adult Drug Court Evaluation. Cohort and comparison group composition was identical to the previous evaluation. For a detailed explanation of the sampling and analytic methodology, please refer to the prior study.

The drug court cohort was comprised of all individuals entering drug court in Minnesota from July 1, 2007 to December 31, 2008. Since one aggregate group was used for the drug court participants, a statewide comparison group was used to assess and compare outcomes. This approach was different from methods used in various nationwide drug court evaluations. In other studies, presumptions are made about the effectiveness of all courts in a state based on the results from a representative sample of courts, a sample of participants in those drug courts, or an examination of one individual court, whereas the statewide approach chosen in Minnesota included the entire population of adult drug participants during the given timeframe.

The comparison group was selected from a stratified random sample of felony offenders. To ensure a contemporaneous comparison group, individuals whose cases were disposed between January 1, 2007 and June 30, 2008 were included for possible selection of the comparison group. In defining the disposition of a particular case, the first final disposition on a case was used.

Many of the potential comparison group participants were incarcerated for a period of time following their sentence. When measuring recidivism, it was important to calculate rates based on a participant's actual at-risk time, meaning the time they were at risk to re-offend. When participants are incarcerated, the risk to re-offend is significantly reduced. To ensure comparable at-risk time periods for the comparison group and cohort, it was necessary to slightly move the time period from which the comparison group was selected. By staggering the timeframe of the comparison group 6 months, relevant laws and other policies were still similar, but more time was available to meet the at-risk timeframes necessary to complete the evaluation.

In addition, chemical health assessment information was collected and only participants with a diagnoses of dependence (and a small group of participants diagnosed as chemically abusive) were considered. Once these participants were deemed eligible for the final comparison group, a propensity score matching process was used to match the groups on key criteria such as criminal history, chemical health status, and personal demographics.

Recidivism

The primary goal of drug courts is "to engage individuals in treatment long enough to experience the benefits of treatment in order to end the cycle of recidivism and successfully intervene on the addiction."[8] Several analysis

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[6] Marlowe, Doug B. 2012. Drug Court Review: Special issue on best practices in drug courts. *National Drug Court Institute*. 3(1). Retrieved from http://www.npcresearch.com/Files/Best_practices_in_drug_courts_2012.pdf.

[7] Finigan, Michael W., Carey, Shannon M., and Cox, Anton. 2007. The impact of a mature drug court over 10 years of operation." *NPC Research*. Retrieved from: https://www.ncjrs.gov/pdffiles1/nij/grants/219225.pdf.

[8] Drug court standards. 2007. *Minnesota Judicial Council Policy No. 5*.11(1).

techniques and metrics of new charges and convictions were employed to help determine whether drug courts are achieving the goal of reducing recidivism and enhancing public safety.

Calculating Recidivism

Recidivism rates were reported to show drug court's effect on enhancing public safety. Because time spent in jail or prison does not generally put participants at risk to re-offend, it was essential to adjust the time the offenders have "at-risk" (i.e. time not incarcerated) to re-offend to determine whether offenders re-offend less when on "the street." Belenko (1998) outlined this more sophisticated method as the preferred recidivism analysis technique, as it controls for differences in recidivism due to time incarcerated and creates standardized timeframes for each individual participant.[9]

Determining the at-risk time for a given time period required the total number of days spent in jail during that interval of reporting to be added to the half-year interval. This iterative process was repeated until the required number of at-risk days accrued for a participant to become eligible for inclusion into a respective interval. For example, if Participant A spent 10 days in jail in the first six months after acceptance into drug court, then in the reporting for recidivism for six months, Participant A's six-month interval was 190 days, instead of 180 days. Thus, in analyzing whether a participant recidivated within the first six months, evaluators looked 190 days after the participant's start date to identify if a new offense had been committed.

Implementation of the iterative process occurred when a participant was incarcerated during the additional time that was added to the timeframe. Consider the case mentioned above. Participant A had 10 days added to their respective interval. Evaluators would examine these 10 days in addition to the 180 day period. If Participant A received a 50 day jail sentence that began during the additional 10 added days, 50 more days would be added to the interval, bringing the total amount of time of Participant A's six-month time period to 240 days. The street time at the end of the fifty day period would again be looked at for incarceration until 180 days of at-risk time was reached for eligibility to the six-month interval.

Calculating recidivism in this manner created standardized timeframes for analysis between the cohort and comparison groups. The method was more sophisticated than simply comparing calendar year timeframes, which introduces bias into analyses by not accounting for unequal amounts of at-risk time between the cohort and comparison groups. Despite its advantages, the potential drawback of the standardized at-risk time method was the potential bias of excluding frequent recidivators from the analysis as they reached the end of the data sampling period faster than individuals who do not recidivate. Because frequent recidivators may not reach the required amount of at-risk time to become eligible for a specific interval (e.g. 365 "street days" to be eligible for the one-year interval), their removal from the sample for that time period and subsequent intervals can potentially reduce the overall percentage of recidivism. A by-product of this effect can be seen in conviction recidivism movement from the three-and-a-half to four-year interval for the cohort. Because the sample was reduced, and a disproportionate number of recidivators were removed from the sample between the periods, the recidivism percentage fell. It is important to not confuse this effect with falling rates of recidivism, and should be kept in mind when examining rates of recidivism.

Furthermore, the methodology employed to calculate at-risk time lends itself to higher levels of recidivism as individuals are given more opportunity to recidivate. Recidivism calculations were cumulative, meaning that if an individual recidivated during the half-year time interval, they are coded as a recidivator for the subsequent periods. The percentage calculated whether an individual recidivated *at any point* after the start date and before

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[9] Belenko, Steven. 1998. Research on drug courts: a critical review. *The National Center on Addiction and Substance Abuse*. Retrieved from http://www.ndci.org/sites/default/files/ndci/CASA.Bekenko.1998.pdf.

the end of the time interval. As the 2014 Statewide Drug Court Evaluation used the same groups as the 2012 Drug Court Evaluation with an extended incarceration sample period, recidivism measures were likely to increase as a result. Consequently, recidivism metrics between the prior and current evaluations will misalign due to the expanded data sampling period used in the 2014 follow-up evaluation.

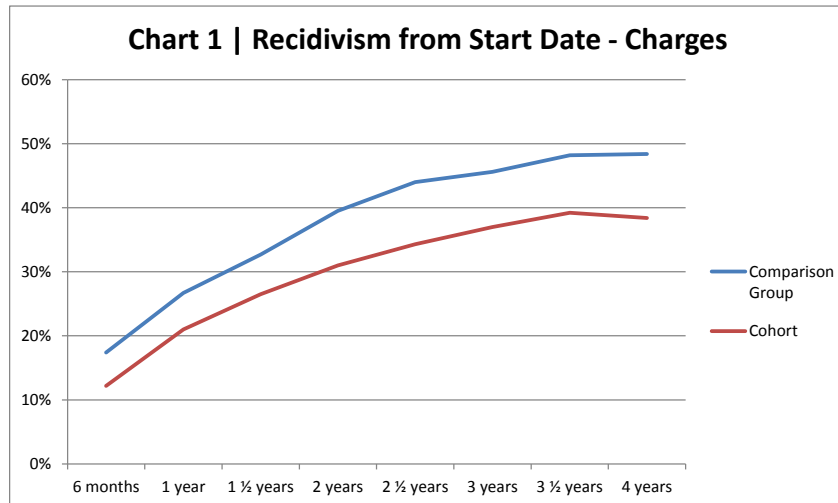### Recidivism from Start Date – Charges

Charge recidivism largely mirrored the trends seen in conviction recidivism. Because of the similarity, and because convictions were viewed as the best indicator of recidivism, the entirety of the charge recidivism results section was not included in the main recidivism report and was instead included below.

The drug court cohort had smaller proportions of participants who were charged with new offenses after their start date compared to the comparison group. Participants were analyzed at six-month intervals, with each interval showing a smaller proportion of drug court participants with new offenses relative to the comparison group. The proportional differences between the groups were statistically significant for all intervals.

Of the participants who reached four years of at-risk time, 38% of the drug court cohort received a new charge during the evaluative period compared to 48% for the comparison group (Figure 1). This difference was statistically significant. Both groups' recidivism percentages showed slowing growth rates and a discernable plateau, as seen in Chart 1. The cohort's decline in charge recidivism in the final six-month interval was a result of the methodology for calculating at-risk time and recidivism.

Figure 1: Recidivism from Start Date - Charges

Time from Start Date	Comparison Group	Cohort	(N) CG	(N) Cohort
6 months	17%	12%	639	533
1 year	27%	21%	634	530
1 ½ years	33%	27%	624	524
2 years	40%	31%	613	519
2 ½ years	44%	34%	598	508
3 years	46%	37%	568	486
3 ½ years	48%	39%	537	457
4 years	48%	38%	483	393

Chart 1 | Recidivism from Start Date - Charges

	6 months	1 year	1 ½ years	2 years	2 ½ years	3 years	3 ½ years	4 years

Legend: Comparison Group, Cohort

Recidivism Analysis – Logistic Regression

Regression analysis was conducted to analyze the independent effect of drug court on the outcomes of new charges and convictions. The follow-up evaluation used a logistic regression for each of the specified time intervals to ascertain the significance of drug court on criminal outcomes. While some studies avoid using convictions in the study of recidivism due to concerns that convictions can occur months or years after the time of the arrest (resulting in the false appearance of no criminal activity) and that some convictions could be the result of criminal activity which occurred before drug court entry, the follow-up evaluation accounted for these factors by using the offense date for measuring charges and convictions.[10] If the offense date occurred in the specified recidivism interval, it was coded as an offense during that time period regardless of when the charge or conviction occurred. The outcome of the offense (e.g. a charge or conviction) was then tied to the date. Furthermore, convictions offered benefits relative to arrests in recidivism analysis, the primary benefit being that they were the final determinative measure of whether an offense was actually committed by an individual (i.e. the charges are not dismissed, the arrest was not due to a targeted police "sweep," etc.).

Data for the logistic recidivism regression measured whether an individual received a new charge or conviction by the end of the stated time interval. At-risk time is used to calculate the time intervals for each individual in the regression. See the above "Recidivism" section for an in-depth explanation of the at-risk time calculation. The dependent variable in the charge and conviction regressions was cumulative, meaning an individual receiving a new charge or conviction one-half year after their start date will be considered to have received a new charge or conviction for all subsequent time intervals, regardless of whether or not they received a new charge or conviction in those subsequent periods. Once an individual recidivates, they are denoted as a new charge or conviction recidivator throughout the rest of the sample and analysis. Therefore, the logistic regressions evaluated the effect drug court had on receiving a new charge or conviction at any point up to the given time interval.

The regressions controlled for personal demographics, criminal history, chemical dependency, and treatment. The non-white variable clustered all individuals of minority status into one variable. Regressions were executed with segmented race variables, but the outcomes were unchanged from using an aggregate variable. The drug offense type, property offense type, and felony offense type variables were fixed effects included to control for the type of offense which led an individual into drug court. Prior juvenile adjudications, prior misdemeanor and gross misdemeanor convictions, and prior felonies were included for criminal history. Custody status denotes whether

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[10] Carey, Shannon M., Waller, Mark S. 2011. Oregon drug court cost study: statewide costs and promising practices. *NPC Research*. Retrieved from http://jpo.wrlc.org/bitstream/handle/11204/2087/3423.pdf?sequence=1.

an individual received a "custody point" on their sentencing guidelines review (i.e. they were under court supervision at some point, such as supervised/conditional release, parole, etc.). Chemically dependent was a control variable for whether a person was deemed to be dependent on chemical substances. The treatment received and inpatient treatment received variables were controls for whether a participant received treatment, or inpatient treatment, so as to not confound treatment effects with drug court effects. Finally, cumulative jail days and a dummy prison indicator were included based upon nationwide research to control for recent incarceration effects and their effect on recidivism.[11] These variables were lagged two time periods in order to limit confounding effects with the dependent variable.

Sensitivity Analysis – Non-Recidivators

Sensitivity analysis was conducted to ensure a robust model. The first tests examined whether use of at-risk time intervals were biasing the results of the drug court variable. At-risk time extends the length of the time intervals based upon incarceration time, as previously described. However, incarceration time could be a result of an arrest for an alleged new offense, drug court sanctions, probation violations, and a multitude of factors not associated with a new offense. Consequently, individuals who have not recidivated can become ineligible for a time interval (i.e. the end date of an interval would extend beyond the recidivism data cutoff of December 31, 2012). Forty-six individuals (28 cohort; 18 comparison) had three-and-a-half years of recidivism-free, at-risk time but became ineligible for the four-year interval due to incarceration time not related to new recidivism. Including these individuals in the analysis and assuming no recidivism among this group in the four year interval could potentially bias the analysis in favor of drug court.

Regression results that excluded all individuals ineligible for the four-year interval still found significance on the drug court variable. However, excluding all ineligible participants includes those who did recidivate before or during the four-year interval. In order to include the entire sample, four-year outcomes for the forty-six individuals who did not recidivate prior to the four-year interval, but were still ineligible, were modified. Using the prior interval's recidivism percentages, 40% of the comparison group participants (seven participants) were coded as recidivators and 30% of the cohort (eight participants) were coded as having recidivated. Incorporating these assumed recidivism rates showed little change to the overall regression results. This indicated that including the forty-six individuals in the regression without a known four-year interval outcome is not significantly biasing the results. Results from the modified regression can be seen below. "B" refers to the beta coefficient from the logistic regression when holding all other variables constant. While this number cannot be directly interpreted from a logistic regression (i.e. logistic regression outputs are interpreted based upon their log-odds ratios), it can be compared between the sensitivity analyses and final output to observe changes in magnitude. The "Sig." refers to the statistical significance of the variable when all other variables are held constant. Any values between .05 and .000 are deemed statistically significant at the 5% level of confidence.

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[11] Carey, Shannon M., Mackin, Juliette R., and Finigan, Michael, W. 2012. Drug court review: What works? The ten key components of drug court: Research-based best practices *National Drug Court Institute*. 3(1). Retrieved from http://www.npcresearch.com/Files/Best_practices_in_drug_courts_2012.pdf.

Sensitivity Analysis - Modified Conviction Outcomes for "No Recidivism, Four-Year Ineligible" Participants

	B	Sig.
Drug Court	-.302	.043
Male	.112	.434
Age at Start	-.028	.000
Non-White	-.133	.354
Drug Offense Type	-.290	.411
Property Offense Type	-.100	.798
Felony Offense Type	.100	.913
Prior Juvenile Adjudications (#)	-.011	.945
Prior Targeted Misdemeanor or Gross Misdemeanor Convictions (#)	.137	.011
Felony Offense Type	-.009	.775
Custody Status	.318	.030
Chemically Dependent	-.459	.279
Treatment Received	-.077	.647
Inpatient Treatment Received	.261	.083
Jail Days Served (#)	.007	.000
Any Prison Served	.809	.000
Constant	.340	.745

Different outcome manipulations of the 46 participants produced varying results. Changing only the cohort participants to recidivators, or by changing half of the cohort and half of the comparison group to reflect recidivism in the four year time interval, made the drug court variable insignificant. However, these modifications were extreme; it is unlikely that only drug court participants would recidivate or that an equal, and higher (relative to the previous time interval) percentage of individuals in each group would recidivate. Furthermore, recognizing the fact that these individuals did not recidivate in the periods leading up to the four year interval indicated that these individuals likely had a lower than average propensity to recidivate. Assuming this is true, or that the 40%/30% modification was appropriate, one can conclude that at-risk time was not biasing the result of the logistic regression.

Sensitivity Analysis – Calendar Year Regression

Additionally, calendar year time intervals, as opposed to at-risk time intervals, were tested. The regression results were nearly identical to the at-risk conviction model, with drug court maintaining its magnitude and significance four years after the start date. The control variables were largely unchanged except for inpatient treatment, which became insignificant at the 5% level.

Sensitivity Analysis - Calendar Year Convictions
Four Years After Start

	B	Sig.
Drug Court	-0.32	0.032
Male	0.051	0.725
Age at Start	-0.028	.000
Non-White	-0.124	0.386
Drug Offense Type	-0.365	0.299
Property Offense Type	-0.073	0.851
Felony Offense Type	0.779	0.403
Prior Juvenile Adjudications (#)	0.041	0.787
Prior Targeted Misdemeanor or Gross Misdemeanor Convictions (#)	0.123	0.021
Prior Felony Convictions (#)	-0.003	0.928
Custody Status	0.365	0.013
Chemically Dependent	-0.573	0.175
Treatment Received	-0.053	0.751
Inpatient Treatment Received	0.261	0.083
Jail Days Served (#)	0.007	.000
Any Prison Served	0.612	.000
Constant	-0.207	0.847

Specification Testing

The above analyses tested the validity of the sample and showed significant bias was not introduced into the regression equation by using at-risk time intervals. Further specification testing was undertaken to examine the model's validity. While inclusion of variables in the model was fundamentally based upon theory, variables were both dropped and included to observe any effect on the drug court variable as well as the effect on the overall model. The controls for drug, property, and felony offense type had little impact on the model when removed. Removing prison served does not have an effect on the long-run regression. However, these values were included in the regression based upon their theoretical necessity. Yet several criminal history variables had more significant omitted variable effects, in particular prior targeted misdemeanors, gross misdemeanors and jail days served. The largest impact on the model was observed by omitting jail days served. The drug court variable became insignificant (at the three, three-and-a-half, and four year intervals) due to a large reduction in its coefficient (along with a smaller reduction in its standard error) and the model lost explanatory power, which indicated significant omitted variable bias. Jail days were deemed as an essential theoretical and statistical variable for the model.

Control Variables

Caution should also be used when interpreting variables other than drug court. The logistic regression was not modeled to test the significance or effectiveness of treatment or custody, or to comment on the relationship between criminal history and recidivism. The model was constructed to test the significance of drug court on convictions and charges, and attempted to control for variables that were theoretically important to individuals entering drug court treatment. One will notice disconcerting coefficients on several variables, in particular, receiving inpatient treatment. Conclusions should not be made that inpatient treatment was ineffective because it had a statistically significant positive effect on the dependent variable. Rather, one must consider the effect that a

high-risk, high-need sample has on such variables. Because individuals were both high-risk and high-need, many of those who received inpatient treatment were likely recidivators, as is denoted by their high-risk status. Additionally, those in the comparison group were also receiving treatment, but do not receive the drug court intervention. Thus, it was not surprising to see a positive coefficient on the inpatient treatment variable.

Yet some value can be placed on control variables, specifically the jail days served variable. Significance at the 1% level coupled with theory and its importance to the model demonstrate the general effect jail days had on recidivism. Once again, the regression was not specifically investigating the effect jail days served had on recidivism, but supporting theory, strong correlations, and significance made the jail days served variable noteworthy.

Below are the regression outputs for convictions and charges, segmented by half-year time intervals. The Cox and Snell R-squared value for the four year conviction regression was 0.172. Overall, the model predicted 68.5% observations of the dependent variable correctly. The log-odds ratio for drug court was 0.732. Because of the difficulty interpreting ratios below one, observations of drug court were inverted (i.e. the comparison group was coded as 1; drug court participants as 0). Results of the regression show that the comparison group's participants had 36.7% greater odds than drug court participants to be convicted of a new offense four years after their start date, holding all other variables constant. For each additional jail incarceration day received, a participant's odds of having a new conviction four years after the start date increased 0.7%, holding all other variables constant. It should be noted that regression analysis was used as a method to further examine baseline recidivism results. The model is an imperfect predictor of recidivism and likely has omitted variables, which is evident by the pseudo R-squared value and overall predictive power of the model. Consequently, magnitudes of the log-odds ratios should be interpreted with caution (whereas the directional impact (i.e. a positive or negative effect) can be interpreted with more confidence) and are not comprehensively presented below.

Logistic Regression Model - Convictions

	HalfYrConvictions		YrConvictions		1.5YrConvictions		2YrConvictions		2.5YrConvictions		3YrConvictions		3.5YrConvictions		4YrConvictions	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
Drug Court	-.513	.018	-.516	.004	-.367	.028	-.452	.005	-.462	.003	-.398	.009	-.241	.107	-.312	.036
Male	.364	.100	.274	.124	.295	.071	.254	.104	.201	.182	.122	.409	.139	.338	.076	.599
Age at Start Date	-.024	.033	-.027	.003	-.033	.000	-.035	.000	-.034	.000	-.035	.000	-.036	.000	-.031	.000
Non-White	.103	.601	.216	.185	.098	.521	.073	.622	.014	.924	-.018	.900	.015	.916	-.048	.738
Drug Offense Type	.004	.994	-.181	.655	-.330	.373	-.189	.604	-.204	.568	-.273	.440	-.329	.348	-.292	.406
Property Offense Type	.252	.642	.188	.667	.110	.785	.216	.587	.211	.589	.132	.734	-.111	.775	-.066	.866
Felony Level Offense	18.913	.999	19.582	.999	19.992	.999	.553	.629	.803	.482	1.186	.303	.549	.555	.804	.389
Prior Juvenile Adjudications (#)	.354	.035	.271	.077	.091	.554	.026	.864	-.028	.853	-.011	.940	-.002	.990	-.013	.931
Prior Targeted Misdemeanor or Gross Misdemeanor Convictions (#)	.156	.012	.151	.006	.133	.012	.139	.009	.129	.015	.117	.028	.119	.025	.129	.015
Prior Felony Convictions (#)	.075	.055	.106	.001	.087	.008	.088	.006	.063	.047	.052	.106	.027	.405	.008	.794
Custody Status	.540	.007	.308	.066	.413	.008	.390	.010	.378	.011	.347	.018	.329	.025	.346	.018
Chemically Dependent	-.930	.084	-.718	.130	-.687	.126	-.938	.029	-.677	.115	-.623	.140	-.429	.313	-.500	.239
Treatment Received	.123	.614	.019	.926	-.225	.232	-.113	.530	-.164	.343	-.151	.376	-.133	.428	-.133	.425
Inpatient Treatment Received	.430	.042	.430	.015	.423	.010	.368	.020	.311	.044	.314	.040	.267	.077	.314	.037
Jail Days Served (#)	N/A	N/A	N/A	N/A	.009	.000	.009	.000	.008	.000	.008	.000	.007	.000	.007	.000
Any Prison Served	N/A	N/A	N/A	N/A	-.201	.378	0.200	.268	.414	.012	.466	.003	.663	.000	.670	.000
Constant	-20.165	.999	-20.028	.999	-19.824	.999	-0.108	.932	-.378	.764	-.578	.648	.004	.997	-.222	.836

Logistic Regression Model - Charges

	HalfYrConvictions		YrConvictions		1.5YrConvictions		2YrConvictions		2.5YrConvictions		3YrConvictions		3.5YrConvictions		4YrConvictions	
	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.	B	Sig.
Drug Court	-.407	.040	-.318	.051	-.200	.198	-.337	.024	-.361	.015	-.331	.025	-.260	.077	-.242	.100
Male	.408	.043	.294	.069	.250	.096	.140	.335	.130	.361	.076	.590	.104	.462	.030	.831
Age at Start Date	-.027	.008	-.035	.000	-.038	.000	-.037	.000	-.037	.000	-.037	.000	-.038	.000	-.035	.000
Non-White	.201	.260	.371	.012	.285	.044	.259	.064	.237	.090	.260	.063	.236	.095	.233	.101
Drug Offense Type	-.465	.253	-.328	.360	-.272	.433	-.244	.477	-.446	.196	-.406	.243	-.460	.197	-.381	.284
Property Offense Type	-.237	.597	-.037	.925	.034	.929	-.056	.882	-.239	.530	-.154	.691	-.341	.388	-.319	.420
Felony Level Offense	19.451	.999	.461	.684	.754	.505	.034	.971	.348	.708	.667	.474	.243	.786	.541	.553
Prior Juvenile Adjudications (#)	.341	.031	.118	.430	.107	.468	-.024	.875	.002	.992	.083	.598	.068	.675	.066	.684
Prior Targeted Misdemeanor or Gross Misdemeanor Convictions (#)	.194	.001	.165	.002	.163	.002	.157	.003	.156	.004	.094	.079	.113	.037	.126	.022
Prior Felony Convictions (#)	.074	.040	.083	.008	.057	.072	.049	.114	.026	.404	.032	.320	.014	.667	-.001	.973
Custody Status	.371	.041	.217	.160	.332	.024	.367	.011	.354	.014	.342	.019	.355	.015	.374	.011
Chemically Dependent	-.410	.444	-.219	.642	-.441	.311	-.664	.116	-.380	.374	-.190	.656	-.217	.612	-.266	.535
Treatment Received	-.172	.431	-.143	.433	-.274	.118	-.142	.403	-.177	.289	-.146	.380	-.004	.980	-.011	.946
Inpatient Treatment Received	.466	.017	.349	.031	.365	.017	.315	.034	.240	.107	.265	.077	.135	.368	.182	.225
Jail Days Served (#)	N/A	N/A	N/A	N/A	.007	.000	.008	.000	.008	.000	.008	.000	.008	.000	.008	.000
Any Prison Served	N/A	N/A	N/A	N/A	.032	.882	.379	.030	.528	.001	.578	.000	.724	.000	.700	.000
Constant	-20.260	.999	-.596	.638	-.366	.770	.696	.511	.490	.644	.035	.974	.588	.569	.270	.796

Supplemental Analyses

Supplemental analyses were conducted to further examine recidivism trends and confirm results from the recidivism and regression analysis.

Annualized Recidivism

Annualized rates of recidivism were calculated to control for at-risk time and the staggered sample period. An average amount of at-risk days per eligible participant was calculated for both the cohort and comparison groups for each time interval. This value was transformed into the average number of years per participant (i.e. days were converted into years by dividing by 365). Finally, the cumulative percentage of individuals who had recidivated (new charge or conviction) at any point up to the time interval was divided by the average year value. When interpreting this style of analysis, it is important to recall that the annualized rate presented refers to the average annual rate of recidivism for that bucket (i.e. this percentage is not reflecting the total amount of recidivism). For example, at the four year charge interval, more than 11% of the comparison group and 9% of the cohort recidivated, but the analysis presents this number as the annual rate that would accrue over four years to reach the total recidivism level. Most importantly, the cohort's annualized rates never exceeded the comparison group's rate, evidence that the differentiated sample periods and time are not drastically biasing the recidivism results. The annualized rates converged to a certain extent as expected, but suggested that the drug court cohort did have a lower propensity to recidivate.

Figure 2: Annualized Recidivator Rates

Time from Start Date	Charges		Convictions	
	Comparison Group	Cohort	Comparison Group	Cohort
6 months	20%	19%	16%	15%
1 year	19%	17%	15%	12%
1 ½ years	17%	15%	14%	11%
2 years	16%	13%	13%	10%
2 ½ years	15%	12%	12%	9%
3 years	13%	11%	11%	9%
3 ½ years	13%	10%	10%	8%
4 years	11%	9%	9%	7%

Charge and Conviction Frequency Analysis

The following charts portray recidivism from the perspective of frequency, to address the question of whether individuals receiving charges or convictions are disproportionately receiving more in a certain group. Participants' data who begin the time period as eligible, but become ineligible by the interval's end, were included. This approach represented a different style than the main recidivism analysis. Calculation of the frequencies took the total number of charges or convictions divided by the total number of individuals in a time interval. The data showed that the comparison groups' charge and conviction frequency was higher than the cohort. While the slopes appear to be converging, no conclusions can be made regarding future frequencies of charges or convictions. Additionally, this analysis was extremely sensitive to outliers, as it simply used a count of charges or convictions. Several individuals receiving a large number of charges or convictions could potentially skew the analysis; however, it was assumed an equal proportion of high-volume recidivators would be distributed among the groups.

Unnecessary significance should not be placed on these charts as a result of these cautions, but the presented analysis lends additional support to the drug court cohort having lower recidivism than the comparison group.

Chart 2 | Charge Frequency

Chart 3 | Conviction Frequency
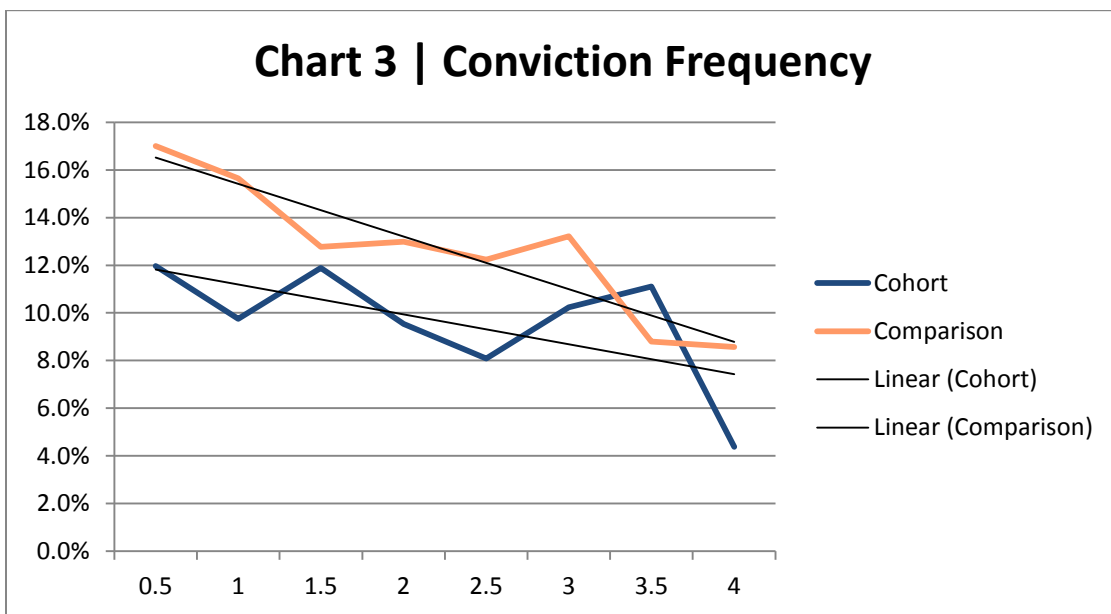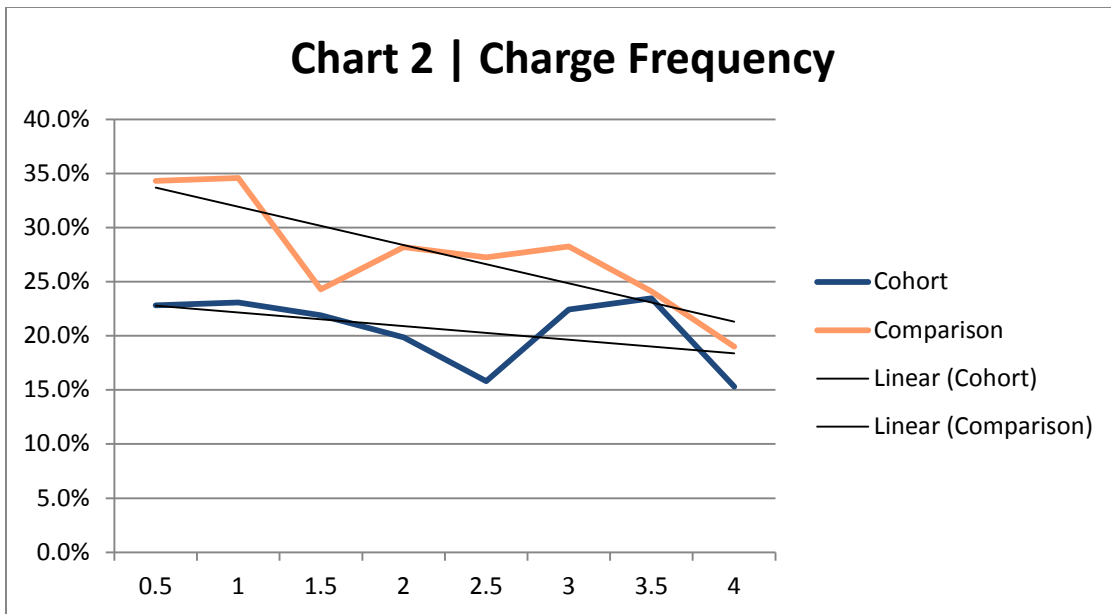
Non-Recidivator/Early Recidivator Effects

Further, the study examined various recidivism outcomes. Specifically, questions of whether drug court helped 1) prevent recidivism by individuals who had clean "track records," or 2) limited convictions following a recidivism instance, were addressed. Descriptive statistics were used to look at eligible individuals at the one-and-a-half year time interval and beyond (the average amount of time it takes to complete drug court and beyond). The one-and-a-half year interval was the base year and the following intervals were used as comparison. Figure 3 shows that a

smaller percentage of cohort participants recidivated in the long-run following a year-and-a-half in the sample without a new conviction relative to the comparison group. Participants were not excluded for inadequate at-risk time because any recidivism following the one-and-a-half year interval, regardless of when it occurred, would include an individual in the data. While a trend in the data between the groups appears apparent, the difference between the cohort and comparison groups at the four year interval is not statistically significant.

Figure 3: % of Participants With a New Conviction - 1.5 Years of No Convictions

	Cohort	Comparison Group
2 Years	5.7%	8.4%
2.5 Years	10.0%	14.8%
3 Years	16.0%	19.0%
3.5 Years	21.5%	22.6%
4 Years	22.9%	26.1%

The converse of the prior analysis was also examined. For individuals who received at least one conviction within one-and-a-half years from the start date, 63% of the drug court cohort did not receive a new conviction compared to 59% of the comparison group. Once again, the cohort performed better, but the difference is not statistically significant.

Incarceration Use and Costs

The primary goal of drug courts is "to engage individuals in treatment long enough to experience the benefits of treatment in order to end the cycle of recidivism and successfully intervene on the addiction." Examination of incarceration use and costs measured the frequency and extent to which drug court participants were incarcerated in jail, prison, and the combination of both.

Calculating Incarceration

As stated in the initial evaluation, many factors impacted the amount of time a participant was incarcerated during the study period. Some of the common factors were arrests for new offenses, sentences imposed by the court, and sanctions for refusing to follow the court's order (e.g. probation violations, drug court sanctions). This study, nor the previous evaluation, did not attempt to identify the source or reason for incarceration other than to determine if the participants in the drug court cohort were incarcerated more or less than the comparison group. The comparison group was selected to be similar to the drug court cohort on key criteria such as criminal history, current offense type and level, age, race, and gender. The research questions regarding incarceration time then aimed to understand whether drug court, versus "business-as-usual", had any impact on the jail and prison days served over time.

While sentencing practices have a significant impact on the incarceration time (prison time in particular) served by participants, other factors, such as varying criminal justice programs and interventions, may also have an impact on the incarceration time of participants. Some counties may employ diversion or other programs with felony offenders that may impact jail or prison time served. This evaluation did not intend to understand whether drug courts have more or less of an impact than any specific intervention (e.g. program, prison). The local or judicial criminal justice system responses across the state were not being evaluated in comparison to drug court. The

question answered in the evaluation was simply whether or not participants who go to drug court spend fewer days incarcerated over a period of time than those who do not receive drug court.

Incarceration days were calculated based on jail and prison data provided by the Department of Corrections. Six-month intervals were determined based upon a participants start date in the sample (for drug court participants, the start date is the drug court acceptance date; for comparison group participants, the start date is the disposition date for their offense). The number of incarceration days were aggregated and de-duplicated to account for overlapping jail or prison sentences. Any booking in jail or prison was counted as one incarceration day, including admissions that did not last 24 hours.

Utilizing this methodology of calculating jail incarceration had the potential drawback of overestimating jail incarceration. For example, a jail record could represent an individual appearing at a jail to be finger-printed and entered into the system, but then immediately released without ever being formally incarcerated. This instance would be counted as one day incarcerated in jail throughout the analysis. Because of the cumulative calculations, an individual who was finger-printed during the first six-month time interval, but never received any additional incarceration, would be counted as incarcerated in jail for all time periods. Furthermore, average jail days could be slightly inflated if individuals had numerous non-incarceration related jail instances during the four year sample period.

Cost Calculations – Marginal Per Diem for Prison and Jail

For this analysis, all jail and prison time spent by all participants was collected. The incarceration time may, or may not, be related to their sentence. It may be related to incarceration for new offenses. It may be related to sanctions imposed by probation or the drug court. It may include incarceration for prior or concurrent cases of the participants.

This analysis was not a cost benefit and did not include any costs other than the cost of clothing, feeding, and housing offenders. The jail and prison costs used for this analysis were provided by the Department of Corrections. The DOC recommended using a marginal per diem for prison and jail costs (average cost over the years of the study is $57.21). A marginal per diem included only the costs associated with clothing, feeding, and housing offenders. In addition to marginal per diems, the DOC calculates two operational per diems for the legislature, as required by statute. The operational per diems are calculated several different ways, defined by statute. The DOC recommended against using the operational per diems as they include staffing and construction costs. Absent a comprehensive analysis that would evaluate whether at least 1,000 prison beds are saved by drug courts, the DOC indicated the operational per diem should not be used.

In addition to the marginal per diem for prison, a per diem for jail was necessary to analyze the incarceration costs incurred by jail. Jails are required, by statute, to provide the DOC with the operational per diems annually for inclusion in the DOC report to the legislature. However, the DOC does not collect, and local jails do not provide, a marginal per diem. As such, the DOC recommended using a jail per diem of $55.00 as the daily rate the DOC has paid county jails to house state prisoners.

Hennepin Exclusion

The 2012 statewide drug court evaluation identified Hennepin County as contributing factor to higher average incarceration days for the cohort relative to the comparison group. The current evaluation continued this analysis by segmenting Hennepin County participants, both in the cohort and comparison group, out of the samples and recalculated incarceration statistics. Average jail, prison, and overall incarceration days declined after removing Hennepin County participants. This evaluation was not commenting on Hennepin County or its drug court

practices from 2007 – 2012. Rather, the segmentation was conducted to offer another statewide perspective of drug court incarceration use and costs.

Hennepin County participants spent more days, on average, incarcerated in jail and/or prison than non-Hennepin participants. Drug court participants from Hennepin County were incarcerated 276 days, on average, compared to 108 days for non-Hennepin drug court participants. Comparison group participants from Hennepin County were incarcerated 270 days, on average, compared to 247 days for non-Hennepin comparison group participants. Drug court incarceration in Hennepin County was disproportionately greater than comparison group incarceration when compared to the non-Hennepin County groups.

Furthermore, analysis was performed on Hennepin County participants to understand the composition of the samples and ensure outliers were not skewing the results. The charts below show that Hennepin County drug court participants had more incarceration than non-Hennepin County drug court participants at all points of the sample. Individuals in each group were sorted based upon incarceration time and graphed. Hennepin County did not have outliers biasing the results, rather, the middle and upper quartiles of drug court participants simply received more incarceration than the non-Hennepin cohort participants. The discrepancy is not apparent in Chart 5, as only comparison group participants in the upper quartile received more average incarceration relative to the non-Hennepin comparison group participants.

Chart 4 | Avg. Incarceration Days for Drug Court Participants - 4 Years from Start
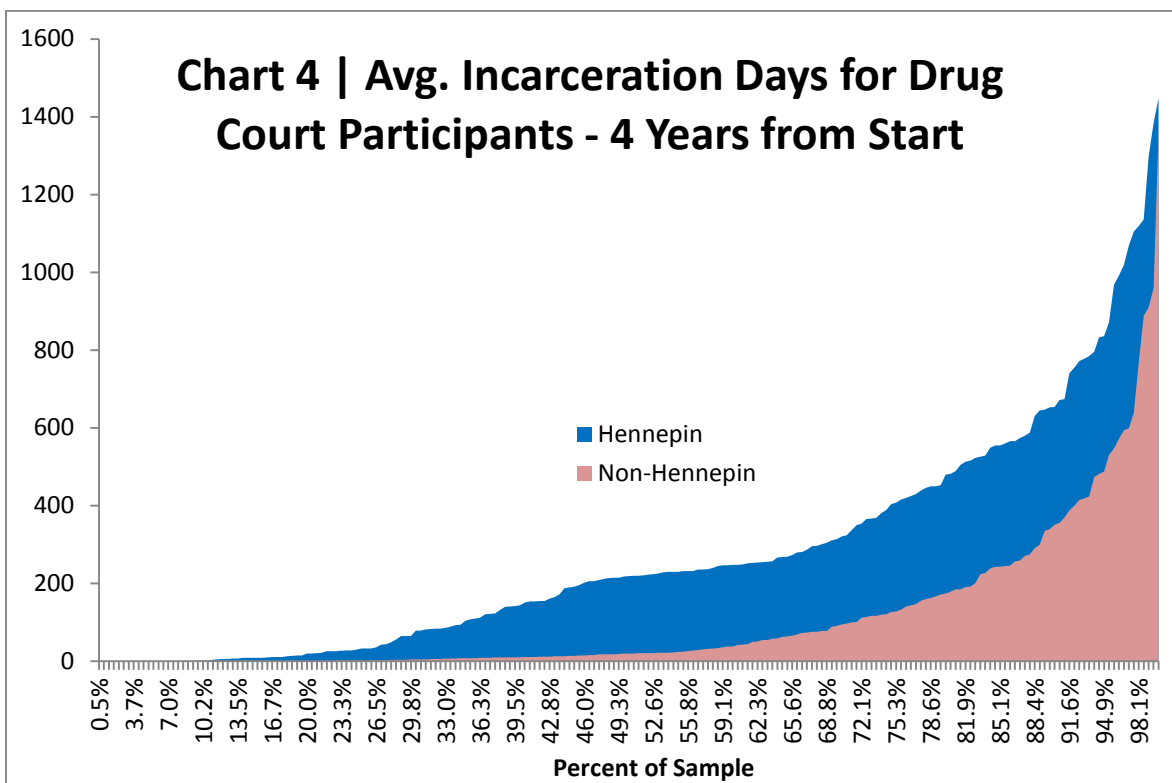
Chart 5 | Avg. Incarceration Days for Comparison Group Participants - 4 Years from Start