YOUTH PLACEMENT STUDY

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Executive Summary

Study Details

For this research, we used data from the Office of the Court Administrator (i.e., JCATS), the Department of Corrections, and the Department of Public Health and Human Services (for Medicaid costs). We use a different sample for each section of the report.

Placement Sample: We examined youth placed in public or private facilities from 2011 through 2018. After removing duplicate youth and youth with missing data, we had a sample of 997 individuals.

Recidivism Sample: We examined recidivism within a 1-year risk period. We took the placement sample and removed any youth who (1) turned 18 before the end of the risk period, (2) who were discharged in late 2018 and therefore were not in the data for the full risk period, or (3) who were placed in another facility on the same day of their discharge. For various reasons, these youth would not be appropriate for these analyses, so they were dropped from the sample, leaving a sample of 507 youth.

Cost Sample: We examined the financial costs associated with placements by examining youth during fiscal years 2017 and 2018. Some youth (n=41) were dropped form the sample because they were in private placements but had not costs associated with the in JCATS or in Medicaid data. This resulted in a sample size of 260 youth.

Where Do Youth Get Placed and Why?

<u>What factors influence placement type?</u>

Youth are placed in either corrections or a private facility (residential group homes, therapeutic group homes, or residential treatment facilities). We examine how demographics (age, gender, and race), diagnoses (mental health diagnosis, substance use diagnosis, or dual mental health and substance use diagnoses), and offending history (misdemeanors, felonies, or sex offenses) impact a youth's placement type. Overall, age, diagnoses, and offending history tended to impact placement.

Compared to youth place in corrections, youth in **residential group homes** are:

- Younger
- Less likely to have a mental health diagnosis
- Less likely to have a dual diagnosis
- Less likely to have a more serious offending history (felonies or sex offenses)

Compared to youth placed in corrections, youth placed in **therapeutic group homes** or **residential treatment facilities** are:

- Younger
- More likely to have a mental health diagnosis
- Less likely to have a dual diagnosis
- Less likely to have a more serious offending history (felonies or sex offenses)

Do factors influencing placement differ for males and females?

We also explored whether gender differences existed in the factors influencing placement. We found several differences between males and females.

For youth placed in **residential group homes** (versus corrections):

- Age: Females placed in residential group homes are younger than females placed in corrections, but age doesn't impact placement for males.
- Diagnoses: Males placed here are less likely to have both mental health and substance use diagnoses, whereas dual diagnoses do not affect placement for females.
- Offense History: Both males and females placed here are less likely to have felonies on their records, but the impact is stronger for females than for males.

For youth placed in **therapeutic group homes** or **residential treatment facilities** (versus corrections):

- Race: Females placed here are more likely to be white (both Native American females and females in the "other" racial categories are less likely to be placed here compared to corrections). Race does not impact placement for males.

What influences the racial and gender disparities in placement type?

Males and Native American youth are more likely to be placed in corrections.

Male youth are 86% more likely than female youth to be placed in corrections instead of private placements (controlling for race and age). This is because males are more likely than females to have more serious offenses (felonies or sex offenses) on their records, which greatly increases the likelihood of placement in corrections.

Native American youth are 72% more likely than youth of other races to be placed in corrections instead of private placements (taking into account gender and age). This racial disparity exists because of differences in offending history and diagnoses between Native American youth and youth of other races. Compared to other youth, Native American youth are more likely to have a felony in their record and more likely to have a dual diagnosis. Both these factors greatly the likelihood of corrections placement.

How do sex offenders and non-sex offenders differ?

We examined sex offenders and non-sex offenders to see how they differed in terms of placement and individual characteristics.

Generally, there were few significant differences between the two groups. Sex offenders were less likely to be Native American, and sex offenders were less likely to have a substance use diagnosis (though this difference was statistically significant, it was not very substantive). However, when we controlled for other factors in regression models, we did find that sex offenders were much more likely to be placed in corrections over the various private placements. Additionally, other analyses indicated that sex offenders were much less likely to recidivate within one year compared to chronic misdemeanor offenders.

How Does Placement Impact Recidivism?

How does recidivism risk differ across placement types?

Compared to youth placed in corrections, youth in residential group homes and residential treatment facilities are far more likely to commit a recidivating offense within one year.

- Youth placed in **residential group homes** are **2.4 times more likely to recidivate** within one year compared to youth placed in corrections.
- Youth placed in **residential treatment facilities** are **2.6 times more likely to recidivate** within one year compared to youth in corrections.
- There is no statistically significant difference in recidivism risk between youth placed in therapeutic group homes and youth placed in corrections.
- Additionally, we found that youth who had previously committed more serious offenses (felonies or sex offenses) were less likely to recidivate compared to chronic misdemeanor youth.

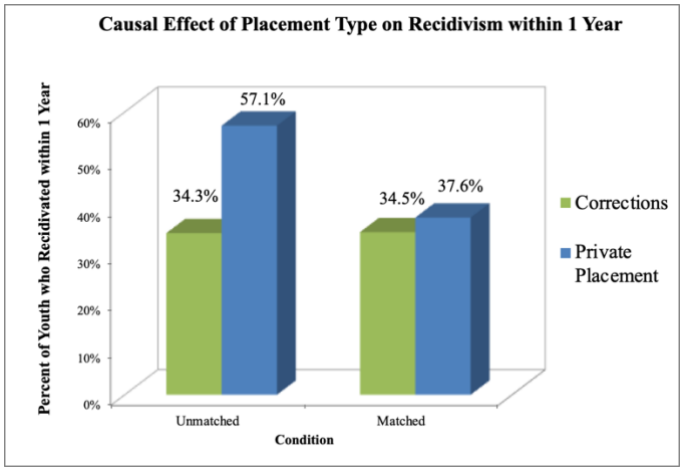
These findings take into account all of the control variables (length of placement, demographics, offense history, and official diagnoses). They suggest that many types of private placements are associated with increased risks of recidivism. In fact, additional analyses show that youth placed in corrections are 47% less likely to recidivate compared to youth placed in private facilities.

However, it is not entirely clear from these results that the placement itself is causing the recidivism risk. Previous analyses showed that certain youth are more likely to be placed in certain types of facilities. While it is possible that the experience of being in corrections decreases recidivism risk, it is also possible that these underlying characteristics that lead to a particular form of placement in the first place are also influencing recidivism. In order to disentangle these potential confounding factors, we performed propensity score matching analyses.

Are the differences in recidivism risk caused by placement or underlying differences?

Propensity score matching analyses indicate that it is not corrections itself that causes reductions in recidivism. Rather, it is the factors that influenced placement in corrections or private placement initially that cause the differential risks of recidivism.

In the original sample, we see a significant difference in recidivism between corrections and private placement youth. When balancing on these factors (essentially matching youth who were placed in corrections with youth who had a similar likelihood to be placed in corrections but were placed in a private facility instead), we see that the difference disappears in the matched sample. The gap between the groups is no longer statistically significant.



What are the Financial Costs Associated with Different Types of Placements?

What are the average daily costs of different placement types?

The lowest average daily cost was for residential group homes (median cost of $119/day). Therapeutic group homes came next (median = $219/day). Residential treatment facilities (median = $327/day) and corrections (median = $339/day) were similar in cost, with corrections having a slightly higher median cost; however, residential treatment facilities had the greatest variability in cost.

Do these costs differ for males and females?

Costs associated with corrections and private placements are relatively similar for males and females, though corrections placements cost somewhat more for males than for females.

How do the costs of private placements differ between facilities located in Montana or out of the state?

Some private placements located out of state are more expensive than facilities in Montana. Therapeutic group homes located in state or out of state are similar in cost, but residential group homes in Montana are cheaper than out of state alternatives and we find the largest gap in average daily costs when comparing residential treatment facilities located out of Montana to those located in state.

How do costs of private placements differ across districts?

Average daily costs for placements vary by district for the same placement type, with therapeutic group homes and residential treatment facilities showing the greatest variation.

Recommendations

Data Recommendations

Going forward, it would be useful to collect additional data to examine youth placements:

- The specific offense lead to a youth's placement
- The services a youth received during their placement
- Employment or educational outcomes following discharge from a placement
- All placement costs (whether paid by the state or not) collected and stored in one location

Policy Recommendations

The results from this report have several policy implications:

- Steps should be taken to ensure that no racial or gender biases are impacting placement for youth, particularly non-White females.
- Though corrections placement is associated with lower recidivism, this is due to underlying differences between corrections youth and private placement youth (demographics, diagnoses, and offending history). Therefore, more youth could be placed in private facilities without leading to an increase in recidivism. This would result in cost savings for

the state, since the average daily costs of private placements are lower than the costs for corrections. Finally, placing youth in private facilities in Montana (rather than out of the state) would result in additional cost savings.

Introduction

In this study, we examine the factors influencing placement types for youth in Montana, the risk factors for recidivism after discharge from placement, and the costs associated with public and private placements.

Literature Review

In the 1980s and 1990s, due to a brief surge in violent juvenile delinquency, a shift occurred in the juvenile justice system approach where protecting the community became priority. This shift caused the juvenile justice perspective to change from a that of strictly rehabilitative one to a perspective that emphasized punishment and criminalization of the young offenders (Fried, 2001). With this change in perspective, over half of the states in the U.S made it easier to adjudicate young offenders in adult criminal court and laws were changed to increase the punishment associated with adolescent crime (Wald, 2003). While youth have committed fewer violent and nonviolent crimes in the past several decades, the number of youth processed in the juvenile justice system has increased (Harms, 2002). As the number of youth processed increased, utilizing juvenile detention peaked in 2002 but has subsequently decreased since then to its lowest levels since 1985 (Hockenberry 2013). There appears to be consensus in the literature on juvenile placement that—while necessary for a small percent of youth—long-term confinement is counterproductive, often leading to increased offending and recidivism (Gisso, 2011; Holman, 2006; Petrosino et al., 2010; Stoddard-Dare et al., 2011).

In the 1990s, a drop in the availability of public mental health services for children caused juvenile justice systems to attempt to fill these gaps (Grisso, 2011). Motivated by the lack of mental health services, in addition to the increased research of the detrimental impact that punishment has on youth, public opinion of the juvenile justice system began to change. A shift in perspective towards rehabilitation once again emerged. This change has led to the increased reliance of the juvenile justice system to care for the mental health and other specialized needs of youth offenders (Teplin 2002).

In the literature on juvenile justice placement, there are three prevailing findings regarding the characteristics of youth. There is an overrepresentation of males, non-white, and those with one or more mental health problems (Houchins et al., 2020). Males are found to be consistently overrepresented in juvenile justice system facilities. For example, Sickmund and colleagues (2013) found that 86% of youth in juvenile justice are male. According to the National Center for Educational Statistics (2016), one-third of the U.S population are non-white; however, two-thirds of the juvenile justice population are non-white (OJJDP, 2013). Finally, having a mental health issue increases a youth's risk of incarceration. Seiter (2017) found 70% of incarcerated youth had three or more mental health disorders. Additionally, about half of the youth in secure placement have a conduct disorder, a rate ten times as high as their non-delinquent counterpart (Fazel et al., 2008).

As Lyons and colleagues (2001) discussed, in an ideal situation, placement decisions would be objectively based on the risk and needs of youth. However, research has found that several non-legal and environmental factors predict placement type. Youth with behavioral and emotional problems, youth not in school at the time of their arrest, and youth with prior treatment based on mental health and substance use were more likely to be incarcerated. Meanwhile, those youth who

are no longer living with the natural parents were more likely to be sent to residential treatment facilities (Lyons et al., 2001). Youth who have experienced trauma are more likely to have more restrictive placements (Espinosa, Sorensen, & Lopez 2013). Placement decisions are important, as the environment in which juvenile offenders are confined can affect their future behavior and may even contribute to recidivism.

Research has consistently found high recidivism rates for youth who were securely confined. In a study of Texas youth, Espinosa and colleagues (2013) found that 85% of state confined youth were rearrested. Reconviction rates tend to be lower. Snyder and Sickmund (2006) found that, within one year of discharge, 55% of youth had a rearrest, while 33% of youth had a reconviction. Based largely on the high rates of recidivism, advocates have argued for the widespread implementation of alternatives to secure placement. Ryan, Abrams, & Haung (2014) found that, compared to youth on probation in their own home, youth placed into group homes were 1.28 times more likely to recidivate and youth placed into a secure probation camp were 2.12 times more to recidivate.

Current Study

Research Questions

This report is divided into three main sections, each of which focuses on a research question associated with juvenile placement in Montana:

Section 1: Where do youth get placed and why? Specifically, we examine:

- What factors influence placement type?
- Do these factors differ for males and females?
- What influences the racial and gender disparities in placement type?
- How do sex offenders differ from non-sex offenders in terms of placement and individual characteristics?

Section 2: How does placement impact recidivism? Here, we focus on:

- How does recidivism risk differ across placement types?
- Are the differences in recidivism risk caused by placement or underlying differences?

Section 3: What are the financial costs associated with different types of placements? Here, we examine:

- What are the average daily costs of different placement types?
- Do these costs differ for males and females?
- How do the costs of private placements differ between facilities located in Montana or out of the state?
- How do costs of private placements differ across districts?

Definitions

Before we move to the analyses and results sections, we provide some useful context for terms that we use throughout the report.

Private facilities: private facilities fall under one of three categories: (1) residential group home, (2) therapeutic group home, and (3) residential treatment facility.

Public facilities or corrections: public facilities are referring to correction institutions used in Montana which include: Pine Hills Correctional Facility for males, and Riverside Youth Correctional Facility or Five County Treatment and Youth Rehabilitation Center (Five C's) for females. Riverside Correctional Facility was used in Montana at the beginning of the time period under examination in this study. Later, female youth were sent to Five C's Correction Facility located Idaho.

Offense history: Throughout this report special attention is given to three populations of interest: (1) chronic misdemeanor offenders, (2) felony offenders, and (3) sex offenders. In Montana, youth can be placed into a private or public facility if they have committed four or more misdemeanors (chronic misdemeanor offender) or one or more felonies (felony offenders). Youth who have committed a prior sex offense (sex offenders) are removed from these two categories of offenders and placed into their own category to allow for comparisons. To qualify as a sex offender the youth must have committed one of 14 offenses that require sex offender registration in Montana (see Weiss 2019). Sex offenses requiring registration can be found in the Appendix. Additionally, sex and race are included in all analyses to examine differences and similarities found between these subsamples.

Recidivism: recidivism is defined here as the commission of an offenses leading to a new intake during the one-year period of risk. Three categories of offenses are included: (1) status/technical/city ordinance, (2) misdemeanor, and (3) felony.

Period of risk: the period of risk is the span of time in which the youth is eligible to have a recidivating offense or a follow-up placement. In this study, we focus on a one-year risk period, meaning 12 months following discharge from the original placement.

Part 1. Where Do Youth Get Placed and Why?

In this section, we will examine several questions. First, what factors influence the type of facility in which a youth is placed? Second, do these factors influencing placement differ for males and females? Third, what causes the racial and gender disparities that we find in placement type, with Native Americans and males more likely to be placed in corrections over private facilities? Finally, how do sex offenders differ from non-sex offenders in terms of placement and personal characteristics?

Methodology

Sample

The data for this section were queried by the Montana Office of the Court Administrator and the Montana Department of Corrections and provided to the Criminology Research Group. To construct the placement sample, we started with all Montana youth placed in public or private facilities from 2011 through 2018. Then, we removed duplicate youth and youth with missing data, resulting in a sample of 997 individuals.

Measures

The descriptive statistics for the placement sample are shown in Table 1. Our outcome measures are placement type. Youth were either placed in *Corrections* (the reference category) or a variety of private placements: *Residential Group Home*, *Residential Treatment Facility*, or *Therapeutic Group Home*. We account for several demographic factors. Gender is coded as *Male* = 1. *Age* is measured in years. Race is measured as a set of dummy-coded variables: *White*, *Native American*, and *Other* (Black, Hispanic, Asian, Pacific Islander, and multiracial), with *White* as the reference category. Mental health and substance use are measured as a set of dummy-coded variables comparing youth with no mental health or substance use diagnoses (*No Diagnosis*), youth with only a mental health diagnosis (*Mental Health Diagnosis*), youth with only a substance use diagnosis (*Substance Use Diagnosis*), or youth with both a mental health diagnosis and a substance use diagnosis (*Dual Diagnosis*). Finally, offending history is measured as a set of dummy-coded variables comparing youth with a record of chronic misdemeanors but no felonies or sex offenses (*Misdemeanors*) to youth who have committed a felony but no sex crimes (*Prior Felony Offense*) or youth who have committed a sex offense (*Prior Sex Offense*).

Table 1: Placement Sample Descriptive Statistics (*N*=997)	
	Percent/Mean(SD)
Placement Type	
Corrections (reference category)	41.52%
Residential Group Home	13.64%
Residential Treatment Facility	17.85%
Therapeutic Group Home	26.98%
Male	75.33%
Age (years)	15.59 (1.29)
Race	
White (reference category)	72.82%
Native American	19.26%
Other Race	7.92%
Mental Health and Substance Use	
No Diagnosis (reference category)	24.77%
Mental Health Diagnosis	58.07%
Substance Use Diagnosis	1.60%
Dual Diagnosis	15.55%
Offending History	
Prior Misdemeanors Only (no sex offenses)	35.70%
Prior Felony (no sex offenses)	54.36%
Prior Sex Offense	9.93%

Analytic Strategy

We focus on several research questions in this section. First, we examine what factors influence placement type for youth. Because the dependent variable (placement) is nominal, we use multinomial logistic regression to examine how demographics, diagnoses, and offending history impact placement. Next, we examine whether these factors differ by gender. We run separate multinomial logistic regression models for males and females, and then we compare the coefficients across models using z-scores. Next, we examine why males and Native American youth are more likely to be placed in corrections instead of private facilities. Here, we use a series of logistic regression models to examine how certain factors mediate the effects of race and gender on correction placement. (cite mediating). Finally, we examine how sex offenders differ from youth who do not have any sex crimes in their offending history. Due to the relatively small number of sex offenders in the sample, we simply use *t*-tests to compare the means for placement type, demographics, and mental health/substance use for these two groups. All analyses in this section were performed in Stata 16.1.

Results

The sample characteristics are presented in Table 1. We are analyzing a sample of 997 youth in this section. The youth are mostly male (75.3%) and White (72.8%), with 19.3% Native American youth and 7.9% youth of other races. The average age of the youth is 15.6 years old. Regarding mental health and substance use diagnoses, about a quarter of the youth have no official diagnoses (24.7%), most have only a mental health diagnosis (58.1%), very few have only a substance use diagnosis (1.6%), and several have both mental health and substance use diagnoses (15.6%).

When examining offending history, around one-third of youth have only non-sexual misdemeanors on their records (35.7%), over half have a prior non-sexual felony arrest (54.4%), and a fraction have committed some prior sex offense (9.9%). Finally, corrections placement is the most common form of placement for youth in the sample (41.5%). Therapeutic group homes are the most common form of private placement, with around a quarter of youth (26.9%), followed by residential treatment facilities (17.9%) and residential group homes (13.6%). Next, we examine what causes youth to be placed in these different types of facilities.

What Factors Influence Placement?

Here, we use multinomial logistic regression to examine how various factors influence the likelihood a youth is placed in various types of private placements versus corrections. Though we initially compared residential group homes, residential treatment facilities, and therapeutic group homes to corrections placements separately, postestimation tests (Wald and LR tests) indicated that the factors influencing placement did not distinguish between Therapeutic Group Homes and Residential Treatment Facilities. Based on these tests, we combined these two categories for these analyses. The coefficients in the model are exponentiated to show relative risk ratios.[1] These results are presented in Table 2.

Several factors influence placement in residential group homes versus corrections. Compared to youth placed in corrections, youth placed in residential groups homes are younger: each year increase in age leads to a 22% decrease in the likelihood of being placed in a residential group home instead of corrections ($p \leq .01$). Compared to youth with no mental health diagnoses, youth with a mental health diagnosis are 45% less likely to be placed in a residential group home versus corrections ($p \leq .05$) while youth with both a mental health diagnosis and a substance use diagnosis are 56% less likely to be placed in a residential group home ($p \leq .01$). Finally, offending history influenced placement in residential group homes. Compared to youth with only non-sexual misdemeanors on their records, youth who had committed non-sexual felonies were 85% less likely to be placed in a residential group home instead of corrections ($p \leq .001$) and youth with a prior sex offense (misdemeanor or felony) were 66% less likely to be placed in a residential group home ($p \leq .01$).

Similar factors influence placement in therapeutic group homes/residential treatment faculties versus corrections. These youth are younger than youth placed in corrections: each year increase in age leads to a 33% decrease in the likelihood of being placed in a therapeutic group home/residential treatment facility instead of corrections ($p \leq .001$). Compared to youth with no mental health diagnoses, youth with a mental health diagnosis are 214% more likely to be placed in one of these private placements instead of corrections ($p \leq .001$). However, youth with both a mental health diagnosis and a substance use diagnosis are 44% less likely to be placed in either a therapeutic group home or a residential treatment facility ($p \leq .05$). Finally, youth with more serious offending histories are less likely to be placed in either a therapeutic group home or a residential treatment facility instead of corrections. Compared to youth with only non-sexual

[1] With relative risk ratios, the extent to which a number is above 1.00 shows the extent to which the factor increases the probability of the outcome compared to the reference category (corrections placement), while a number below 1.00 shows how much a factor decreases the likelihood of an outcome. For instance, a relative risk ratio of 1.75 means that the factor increases the likelihood of the outcome by 75%, while a relative risk ratio of 0.75 means that the factor is associated with a 25% decrease in the likelihood of the outcome.

misdemeanors on their records, youth with a prior non-sexual felony are 92% less likely to be placed in one of these private facilities versus corrections ($p \leq .001$) and youth who had committed a sex offense are 82% less likely to be placed in a residential group home ($p \leq .001$). Next, we examine whether there are gender differences in the factors impacting placement.

Table 2: Multinomial Logistic Regression of Placement on Demographics, Diagnoses, and Offending History (*N*=997)

Reference Category = Corrections		
	e^{b}	
Residential Group Home		
Male	0.91	
Age	0.78	**
Race (White = Reference Category)		
Native American	0.66	
Other Race	0.83	
Mental Health and Substance Use (No Diagnosis = Reference Category)		
Mental Health Diagnosis	0.55	*
Substance Use Diagnosis	0.90	
Dual Diagnosis (Both Mental Health and Substance Use Diagnosis)	0.44	**
Offending History (Misdemeanors, no sex offenses = Reference Category)		
Prior Felony Offense (no sex offenses)	0.15	***
Prior Sex Offense	0.34	**
Therapeutic Group Home or Residential Treatment Facility		
Male	0.82	
Age	0.67	***
Race (White = Reference Category)		
Native American	0.76	
Other Race	1.00	
Mental Health and Substance Use (No Diagnosis = Reference Category)		
Mental Health Diagnosis	2.14	***
Substance Use Diagnosis	1.05	
Dual Diagnosis (Both Mental Health and Substance Use Diagnosis)	0.56	*
Offending History (Misdemeanors, no sex offenses = Reference Category)		
Prior Felony Offense (no sex offenses)	0.08	***
Prior Sex Offense	0.18	***
Model Fit		
Nagelkerke R^2	0.18	

Note: *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

Do Factors Influencing Placement Differ by Gender?

In order to examine whether the factors that impact placement differ by gender, we preform the previous analyses separated by males (n = 751) and females (n = 246). To test for differences between the male and female models, we use the following formula from Brame and colleagues (1998), where a significant z-score indicates a statistically significant difference between models:

$$Z = \frac{b_1 - b_2}{\sqrt{SEb_1^2 + SEb_2^2}}$$

This is the same approach employed by Espinosa and colleagues (2013) when examining gender differences in placement. As in the previous analyses, we combined therapeutic group home and residential treatment facility into one category (see above for more details). The coefficients in the model have been exponentiated to show relative risk ratios. These results are presented in Table 3.

When examining placement in residential group homes versus corrections, we find several significant differences. Younger girls are more likely to be placed in residential group homes, whereas age does not impact residential group home placement for males. For females, each year increase in *Age* leads to a 49% decrease in the likelihood of being placed in a residential group home ($p \leq .001$). Additionally, males with a dual diagnosis are 72% less likely to be placed in a residential group home ($p \leq .001$), whereas a dual diagnosis does not impact residential group home placement for females. Offending history impacts both males and females, with previous felonies greatly decreasing the likelihood of placement in a residential group home. However, this effect if more pronounced for females. Males with a previous felony are 81% less likely to be placed in a residential group home ($p \leq .001$), while females with a previous felony are 94% less likely to be placed in a residential group home ($p \leq .001$). Finally, there are some factors in the models that influence placement for males or females that do not have significant z-scores for the tests of difference. A mental health diagnosis decreases the likelihood for residential group home placement for males but has no impact for females, and a prior sex offense reduces the likelihood of residential group home placement for males but has not impact for females. However, the differences in these effects across genders are not statistically significant.

Turning to placement in therapeutic group homes or residential treatment facilities versus corrections, we find several significant differences between males and females. Race impacts placement for females but not for males. Girls are less likely to be placed in these private facilities if they are non-White. Native American females are 63% less likely to be placed in these private placements compared to White females ($p \leq .05$), and females of another race (Black, Hispanic, Asian, Pacific Islander, and multiracial) are 75% less likely than White females to be placed in these private facilities ($p \leq .05$). We also find several factors that impact placement for both males and females, but these effects do not differ across genders. Younger males and females are more likely to be placed in therapeutic group homes or residential treatment facilities over corrections. Offending history also has similar impacts for males and females: youth with prior felonies or sex offenses are much less likely to be placed in these private facilities. Next, we take a closer look at the causes of gender and racial disparities in placement.

Table 3: Multinomial Logistic Regression of Placement on Demographics, Diagnoses, and Offending History by Gender (*N*=997)

Reference Category = Corrections	Males (*n* =751)	Females (*n* =246)	Test of Difference
	e^{b}	e^{b}	
Residential Group Home			
Age	0.85	0.51 ***	-2.18 *
Race (White = Reference Category)			
Native American	0.19	0.74	0.56
Other Race	1.09	0.23	-1.49
Mental Health and Substance Use (No Diagnosis = Reference Category)			
Mental Health Diagnosis	0.46 **	1.13	1.49
Substance Use Diagnosis	0.81	1.90	0.52
Dual Diagnosis (Both Mental Health and Substance Use Diagnosis)	0.28 ***	2.03	2.68 **
Offending History (Misdemeanors, no sex offenses = Reference Category)			
Prior Felony Offense (no sex offenses)	0.19 ***	0.06 ***	-1.90 †
Prior Sex Offense	0.35 *	0.32	-0.11
Therapeutic Group Home or Residential Treatment Facility			
Age	0.69 ***	0.52 ***	-1.48
Race (White = Reference Category)			
Native American	0.96	0.37 *	-1.92 †
Other Race	1.38	0.25 *	-2.23 *
Mental Health and Substance Use (No Diagnosis = Reference Category)			
Mental Health Diagnosis	2.08 **	2.88 *	0.68
Substance Use Diagnosis	1.04	1.44	0.22
Dual Diagnosis (Both Mental Health and Substance Use Diagnosis)	0.57	0.87	0.63
Offending History (Misdemeanors, no sex offenses = Reference Category)			
Prior Felony Offense (no sex offenses)	0.09 ***	0.06 ***	-0.67
Prior Sex Offense	0.18 ***	0.15 **	-0.30
Model Fit			
Nagelkerke R^2	0.17	0.25	

Note: †$p \leq .10$, *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

What Influences Racial and Gender Disparities in Placement?

We find racial and gender disparities among youth placed in corrections versus private facilities: Native American youth are more likely to be placed in corrections than other racial groups and males are more likely to be placed in corrections compared to females. To examine the causes of these racial and gender gaps, we use a series of logistic regression models to see whether other factors mediate these racial and gender effects. The coefficients in the models have been exponentiated to show odds ratios.[2] These results are presented in Table 4.

In model 1, we only include demographic factors. Results indicate that, compared to other races, Native American youth are 72% more likely to be placed in corrections instead of a private facility ($p \leq .001$). Similarly, males are 86% more likely than females to be placed in corrections rather than a private placement ($p \leq .001$). Older youth are also more likely to be placed in corrections: each year increase in age leads to a 57% increase in the likelihood of being placed in corrections.

In model 2, we add in mental health and substance use factors. Youth with a dual diagnosis (both mental health and substance use diagnoses) are 74% more likely to be placed in corrections compared to youth with no diagnoses. Including mental health and substance use factors in the model decreases the strength of the effect of Native American on corrections placement (the odds ratio drops from 1.72 to 1.60), but the relationship is still strong and significant. This suggests that the effect of race on corrections is partially mediated through mental health and substance use.

In model 3, we include offense history along with demographics. Compared to youth with only non-sexual misdemeanors, youth with prior (non-sexual) felonies are almost 10 times as likely to be placed in corrections ($p \leq .001$) and youth with prior sex offenses are over 4.5 times as likely to be placed in corrections ($p \leq .001$). When controlling for offending history, the impact of gender on corrections placement becomes non-significant. Offending history fully mediates the effect of gender on corrections. This means that the gender gap observed in model 1 is due to gender differences in offending history: males are more likely to be placed in corrections because they are more likely to have prior felonies or sex offenses. Similar to the previous model, including offending history decreases the strength of the effect of Native American on corrections placement (the odds ratio drops from 1.72 to 1.50), but the relationship is still strong and significant. This suggests that offending history partially mediates the effect of race on corrections.

Finally, in model 4 we include both mental health and substance use and offending history. In this model, we see that age impacts corrections placement: every year increase in age is associated with a 44% increase in risk of corrections placement ($p \leq .001$). Youth with a dual diagnosis are over twice as likely to be placed in corrections compared to youth with no diagnoses ($p \leq .001$). Compared to youth with only misdemeanors, youth with a prior felony are almost 10.5 times as likely to be placed in corrections ($p \leq .001$) and youth with a prior sex offense are almost 4.7 times as likely to be placed in corrections. Most importantly, we see that the impact of being Native American on corrections placement is no longer significant. This means that, together, mental health/substance use and offending history fully mediate the effect of race on placement. Model 1

[2] With odds ratios, the extent to which a number is above 1.00 shows the extent to which the factor increases the probability of the outcome, while a number below 1.00 shows how much a factor decreases the likelihood of an outcome. For instance, an odds ratio of 1.80 means that the factor increases the likelihood of the outcome by 80%, while an odds ratio of 0.30 means that the factor is associated with a 70% decrease in the likelihood of the outcome.

showed that Native American youth are more likely to be placed in corrections over private facilities. This is because Native American youth are more likely to have dual mental health and substance use diagnoses and are more likely to have more serious offenses on their records. Next, we examine differences between youth who have committed sex offenses and those who have no sex offenses on their records.

Table 4: Logistic Regression of Placement on Race (*N*=997)

	Model 1	Model 2	Model 3	Model 4
	e^b	e^b	e^b	e^b
Native American	1.72 ***	1.60 **	1.50 *	1.37
Age	1.57 ***	1.54 ***	1.47 ***	1.44 ***
Male	1.86 ***	1.91 ***	1.18	1.17
Mental Health and Substance Use (No Diagnosis = Reference Category)				
Mental Health Diagnosis	—	0.75	—	0.72
Substance Use Diagnosis	—	1.18	—	1.02
Dual Diagnosis (Both Mental Health and Substance Use Diagnosis)	—	1.74 **	—	2.01 ***
Offending History (Misdemeanors, no sex offenses = Reference Category)				
Prior Felony Offense (no sex offenses)	—	—	9.77 ***	10.44 ***
Prior Sex Offense	—	—	4.54 ***	4.65 ***
Model Fit				
Nagelkerke R^2	0.07	0.08	0.20	0.22

Note: *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

How Do Sex Offenders Differ from Non-Sex Offenders?

We examine how sex offenders differ from non-sex offenders on several factors: placement type, demographics, and mental health or substance use diagnoses. We use two sample *t*-tests to compare the means for sex offenders and non-sex offenders. Beforehand, we conducted Levene's test of equal variances for each variable. Based on these results, we used either *t*-tests with equal variances or *t*-tests with unequal variances as appropriate. These results are presented in Table 5.

We do not find any statistically significant differences between youth with prior sex offenses and those without in terms of their placement type. Similarly, we do not find significant differences between these two groups in terms of gender or age. Sex offenders are no more or less likely to be White or Other race; however, we do find significant differences for Native Americans. Sex offenders are significantly less likely to be Native American: 13% of youth with prior sex offenses were Native American, versus 20% of youth without prior sex offenses ($p \leq .10$). In terms of mental health and substance use diagnoses, we find a small but significant difference related to substance use diagnoses. No sex offenders have substance use diagnosis only, while 2% of non-sex offenders have only a substance use diagnosis ($p \leq .001$). There are no significant differences between sex offenders and non-sex offenders regarding their likelihood of having no diagnosis, only a mental health diagnosis, or a dual (mental health and substance use) diagnosis. It should be noted that previous analyses in this section indicate that, when controlling for a variety of factors,

previous sex offenses do impact placement. Additionally, analyses in the next section indicate that previous sex offenses impact recidivism risk. These patterns are addressed in the discussion.

Table 5: *T*-Tests Comparing Means for Sex Offenders and No-Sex Offenders (*N*=997)

	Sex Offenders (*n* =99)	Non-Sex Offenders (*n* =898)	*t* -value
	Mean	Mean	
Placement Type			
Corrections	0.42	0.40	0.24
Residential Group Home	0.17	0.13	-0.99
Residential Treatment Facility	0.16	0.18	0.46
Therapeutic Group Home	0.26	0.27	0.17
Male	0.78	0.75	-0.61
Age	15.60	15.59	-0.03
Race			
White	0.79	0.72	-1.51
Native American	0.13	0.20	1.86 †
Other Race	0.08	0.08	-0.06
Mental Health and Substance Use			
No Diagnosis	0.22	0.25	0.62
Mental Health Diagnosis	0.60	0.58	-0.32
Substance Use Diagnosis	0.00	0.02	4.03 ***
Dual Diagnosis	0.18	0.15	-0.72

Note: †$p \leq .10$, *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

Discussion

We found that several factors impacted placement. Youth placed in residential group homes are younger, less likely to have a mental health diagnosis or a dual diagnosis, and less likely to have a more serious offending history than youth placed in corrections. Youth placed in either residential treatment facilities or therapeutic group homes are younger, more likely to have a mental health diagnosis but less likely to have a dual diagnosis, and less likely to have a more serious offending history than youth placed in corrections.

We also found that these factors impacting placement were different for boys and girls. Younger females were more likely to be placed in residential group homes versus corrections, but age didn't impact residential group home placement for males. Males with dual diagnoses (both mental health and substance use diagnoses) were less likely to be placed in residential group homes versus corrections, but dual diagnoses did not affect placement for females. Both males and females with felonies on their records were less likely to be placed in residential group homes versus corrections, but the impact was stronger for females than males. Finally, non-White females were less likely to be placed in therapeutic group homes or residential treatment facilities, whereas race did not impact the placement of males in these facilities. Ultimately, these findings raise several questions. Why do diagnoses impact male placement in residential group homes but not females? And why are girls of color more likely to be placed in corrections instead of therapeutic group homes or residential treatment facilities? This gendered racial disparity deserves further attention. It is a particularly troubling finding considering this model holds other important factors constant such

as mental health, substance use, and offending history constant. The model does not account for all possible factors and thus this topic should be continued to be investigated to ensure no systemic inequality in placement exists for young women based on race.

Overall, age, mental health and substance use diagnoses, and offending histories tended to have some of the strongest impacts on placement decisions. Older youth are generally more likely to end up in corrections instead of private placements (there are some gendered variation in these effects, as discussed above). Mental health and substance use also play a significant role in placement decisions. All private placements relative to corrections are influenced by a primary mental health diagnosis but not in the same direction (with some gender variation in effects). Youth with a mental health diagnosis are less likely to be placed into a regular group home compared to corrections but more likely to be placed into a residential treatment facility and therapeutic group home compared to corrections. Interestingly, youth with a dual diagnosis are less likely to be placed into a regular group home and residential treatment facility compared to corrections. Finally, offending history has the greatest impact on placement decisions for all categories of placement (with some variation by gender). Chronic misdemeanor offenders are far more likely to be placed in private facilities, while individuals with more serious offenses (felonies or sex offenses) on their records are far more likely to be placed in corrections.

Males and Native American youth are more likely to be placed in corrections, and we found that this is because of offending history and diagnoses. The gender gap is due to the fact that males are more likely to have previous felonies compared to females. Native American youth are more likely to be placed in corrections versus private facilities because they are more likely to have felony arrests and are more likely to have dual diagnoses. It should be noted that this does not mean there is no racial bias at play; rather, to the extent that bias is impacting this disparity, it is due to a youth's offending history and diagnoses. It is possible that structural inequality impacts the diagnoses and arrest records of Native American youth. For instance, maybe Native American youth are more likely to be detected by law enforcement and charged with felonies than White youth. Similarly, the medical profession may be more likely to diagnose mental health and substance issues in Native American youth. Ultimately, these results do not mean that the racial gap we find is not due to some form of bias. Rather, any racial bias impacting Native American youth is happening prior to the placement decision. However, these findings come with an important caveat: the patterns discussed above apply to youth in general. The analyses that focused on males and females separately found that non-White females are more likely to be placed in corrections instead of therapeutic group homes or residential treatment facilities, even when controlling for a variety of factors.

Finally, we found relatively few differences between sex offenders and non-sex offenders. Sex offenders were less likely to be Native American compared to non-sex offenders, and sex offenders were less likely to have a substance use diagnosis only compared to non-sex offenders (though this difference was very minor). In the models predicting placement, we found that sex offenders were more likely to be placed in corrections over private placements, though sex offender status did not impact female placement in residential group homes versus corrections. The discrepancy between these results and the results from the analyses comparing sex offenders and non-sex offenders is due to the fact that the placement analyses held constant a variety of other factors. When taking these factors into account, sex offenders are far more likely to be placed in corrections.

Additionally, in the next section, regression analyses indicate that sex offenders are less likely to recidivate compared to chronic misdemeanor offenders.

In the next section, we focus on the factors influencing risk of recidivism.

Part 2. How Does Placement Impact Recidivism?

In this section, we examine risk of recidivism by focusing on two main questions. First, how does recidivism risk differ across placement types? Second, are the differences in recidivism across placements actually the result of the placement facility or are they caused by underlying differences in the youth placed in different types of facilities.

Methodology

Sample

For the recidivism sample, we started with the placement sample, which included all Montana youth placed in public or private facilities from 2011 through 2018 (removing duplicate youth and youth with missing data). In this sample, we focused on long-term recidivism within a one-year risk period. Therefore, we took the placement sample and removed any youth who: (1) turned 18 before the end of the risk period, (2) who were discharged in late 2018 and therefore were not in the data for the full risk period, or (3) who were placed in another facility on the same day of their discharge. For various reasons, these youth would not be appropriate for these analyses, so they were dropped from the sample, leaving a sample of 507 youth.

Measures

The descriptive statistics for the recidivism sample are shown in Table 6. Our outcome measure is recidivism. *Recidivism* is a dichotomous measure of any recidivism within one year. This includes felony, misdemeanor, status, technical, and city ordinance offenses.

Placement type is measured as a series of dummy-coded variables: *Residential Group Home*, *Residential Treatment Facility*, *Therapeutic Group Home*, or *Corrections* (the reference category). *Placement Length* is measured in weeks.

The remaining variables are the same as in the placement sample. Gender is coded *Male* = 1. *Age* is measured in years. Race is a set of dummy-coded variables: *White* (the reference category), *Native American*, and *Other* (Black, Hispanic, Asian, Pacific Islander, and multiracial). Mental health and substance use are measured as a set of dummy-coded variables comparing youth with no mental health or substance use diagnoses (*No Diagnosis*) to youth with only a mental health diagnosis (*Mental Health Diagnosis*), youth with only a substance use diagnosis (*Substance Use Diagnosis*), and youth with both a mental health diagnosis and a substance use diagnosis (*Dual Diagnosis*). Offending history is measured as a set of dummy-coded variables comparing youth with a record of chronic misdemeanors but no felonies or sex offenses (*Misdemeanors*) to youth who have committed a felony but no sex crimes (*Prior Felony Offense*) and youth who have committed a sex offense (*Prior Sex Offense*).

Analytic Strategy

This section focuses on two main questions. First, how does recidivism risk differ across placement types? To answer this question, we perform logistic regression to determine how placement type impacts recidivism (controlling for placement length, demographics, diagnoses, and offending history). Next, we examine whether the differences found in these analyses are

actually the result of placement type or are due to underlying differences in the youth placed in different types of facilities. All analyses in this section are conducted using Stata 16.1.

Table 6: Recidivism Sample Descriptive Statistics (*N*=507)

	Percent/Mean(SD)
Recidivism (within 1 year)	51.08%
Placement Type	
Corrections (reference category)	26.43%
Residential Group Home	15.19%
Residential Treatment Facility	26.43%
Therapeutic Group Home	31.95%
Placement Length (weeks)	23.33 (20.54)
Male	71.60%
Age (years)	14.81 (1.08)
Race	
White (reference category)	72.58%
Native American	19.72%
Other Race	7.69%
Mental Health and Substance Use	
No Diagnosis (reference category)	20.71%
Mental Health Diagnosis	64.30%
Substance Use Diagnosis	1.58%
Dual Diagnosis	13.41%
Offending History	
Prior Misdemeanors Only (no sex offenses)	51.28%
Prior Felony (no sex offenses)	39.25%
Prior Sex Offense	9.47%

Results

The sample characteristics are shown in Table 6. In this section, we are using a sample of 507 youth. These youth are predominantly male (71.6%) and White (72.6%), with 19.7% Native American youth and 7.7% youth of other races. The average age of these youth is 14.8 years old. For mental health and substance use diagnoses, around one-fifth have no diagnoses (20.7%), just under two-thirds have only a mental health diagnosis (64.3%), very few have only a substance use diagnosis (1.6%), and several have both a mental health and substance use diagnosis (13.4%). Around half of the youth have only non-sexual misdemeanors on their records (51.3%), while 39.3% had previously committed non-sexual felonies and 9.5% had committed sexual offenses. Regarding placement type, 26.4% of these youth were placed in corrections, 15.2% in residential group homes, 26.4% in residential treatment facilities, and 31.9% in therapeutic group homes. The average length of these placements was 23.3 weeks. Finally, around half of the youth committed a recidivating offense within one year (51.1%). In this section, we examine what separates the recidivating youth from the non-recidivating youth. Next, we explore how recidivism risks differ based on where a youth was placed.

How Does Recidivism Risk Differ Across Placement Types?

We use logistic regression to examine the impact of placement type on recidivism risk within one year. The coefficients in the models have been exponentiated to show odds ratios. These results are presented in Table 7.

Using corrections as the baseline category, we find that youth in residential group homes and residential treatment facilities are much more likely to recidivate within one year. Youth in residential group homes are almost 2.4 times as likely to recidivate ($p \leq .01$), while youth placed in residential treatment facilities are almost 2.6 times as likely to recidivate after release ($p \leq .01$). The risk of recidivism is not statistically different for youth in therapeutic group homes and youth in corrections.

Examining the control variables, we find that length of placement, demographics, and mental health/substance use diagnoses do not impact the risk of recidivism. Offending history does influence recidivism. Compared to youth with only non-sexual misdemeanors on their records, youth with prior non-sexual felonies are 40% less likely to recidivate ($p \leq .05$) and youth with a prior sex offense are 64% less likely to recidivate ($p \leq .01$).

Table 7: Logistic Regression of Recidivism within 1 Year on Placement and Controls (*N*=507)

	e^b
Placement Type (Corrections = Reference Category)	
Residential Group Home	2.36 **
Residential Treatment Facility	2.58 **
Therapeutic Group Home	1.53
Placement Length (Weeks)	1.00
Male	1.23
Age	1.04
Race (White = Reference Category)	
Native American	1.35
Other Race	0.53
Mental Health and Substance Use (No Diagnosis = Reference Category)	
Mental Health Diagnosis	0.79
Substance Use Diagnosis	1.22
Dual Diagnosis (Both Mental Health and Substance Use Diagnosis)	0.62
Offending History (Misdemeanors, no sex offenses = Reference Category)	
Prior Felony Offense (no sex offenses)	0.60 *
Prior Sex Offense	0.36 **
Model Fit	
Nagelkerke R^2	

Note: *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

Though we find that youth placed in residential group homes and residential treatment facilities have much higher risks of recidivism than youth placed in corrections, there are reasons to be cautious in assuming that corrections placement, in and of itself, causes a reduction in recidivism.

As we found in the first section of this report, youth are more or less likely to be placed into private and public placements based on certain characteristics. The characteristics that caused their specific placements may be the real cause for differences in recidivism rather than the placement themselves. Factors that influence one or more independent variables and at the same time affect the dependent variable is known as a "confounding factor." To further explore the relationship between placement and recidivism, we use propensity score matching, which enables us to determine whether the difference in recidivism risk associated with different placements is the result of the placements themselves or underlying characteristics of youth who are placed in these facilities.

Are the Differences in Recidivism Risk Caused by Placement or Underlying Differences?

We perform propensity score matching analyses to further examine the impact of corrections placement on recidivism.[3] First, we estimate the propensity scores for each youth based on the 12 matching covariates. These scores represent the probability that youth would be placed in corrections, rather than a private facility, regardless of where they were ultimately placed. Next, we match youth placed in corrections with youth placed in private facilities who had similar prosperity to be placed in corrections. Our matching procedure is nearest neighbor one-to-one matching with a caliper of .05 (Apel & Sweeten, 2010). This means that each youth in corrections is matched with a private facility youth with the nearest propensity score. A corrections youth is dropped from the analyses if there are no private facility youth with a propensity score within +/- .05 (this happened with 1 out of 134 corrections youth in our sample, indicating only a minor loss of data). To ensure that the matching procedure is successful, we take the matched sample and

Table 8: Balancing Corrections and Private Placement Youth on Covariates: Pre- and Post-Matching *t*-Tests and Standardized Biases Using Nearest Neighbor Matching

	Unmatched Sample Means (N=507)				Matched Sample Means (n=266)			
	Corrections	Private	*t*-value	SB	Corrections	Private	*t*-value	SB
Male	0.83	0.68	3.39 ***	35.9	0.83	0.90	-1.80	-17.6
Age	15.03	14.73	2.77 **	29.9	15.02	15.05	-0.22	-2.3
Race								
White	0.69	0.74	-1.19	-11.8	0.69	0.77	-1.53	-18.3
Native American	0.25	0.18	1.66	16.3	0.24	0.20	0.89	11.0
Other Race	0.07	0.08	-0.49	-5.1	0.07	0.03	1.42	14.3
Mental Health and Substance Use								
No Diagnosis	0.21	0.21	0.06	0.6	0.21	0.22	-0.15	-1.8
Mental Health Diagnosis	0.49	0.70	-4.31 ***	-42.5	0.50	0.51	-0.24	-3.1
Substance Use Diagnosis	0.02	0.01	0.71	6.8	0.02	0.01	1.01	11.3
Dual Diagnosis	0.28	0.08	5.80 ***	51.8	0.27	0.26	0.14	2.0
Offending History								
Misdemeanors (no sex offenses)	0.16	0.64	-10.34 ***	-110.2	0.17	0.18	-0.32	-3.5
Prior Felony (no sex offenses)	0.68	0.29	8.45 ***	84.4	0.68	0.61	1.28	16.3
Prior Sex Offense	0.16	0.07	2.88 **	26.6	0.15	0.21	-1.27	-19.0

Note: *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

[3] These analyses are conducted using the "psmatch2" program (Leuven & Sianesi, 2003) in Stata 16.1.

use *t*-tests to compare the means values for the corrections youth and the private facility youth on the 12 covariates.[4] These results are presented in Table 8. The match was successful: no significant differences exist between corrections and private placement youth in the matched sample.

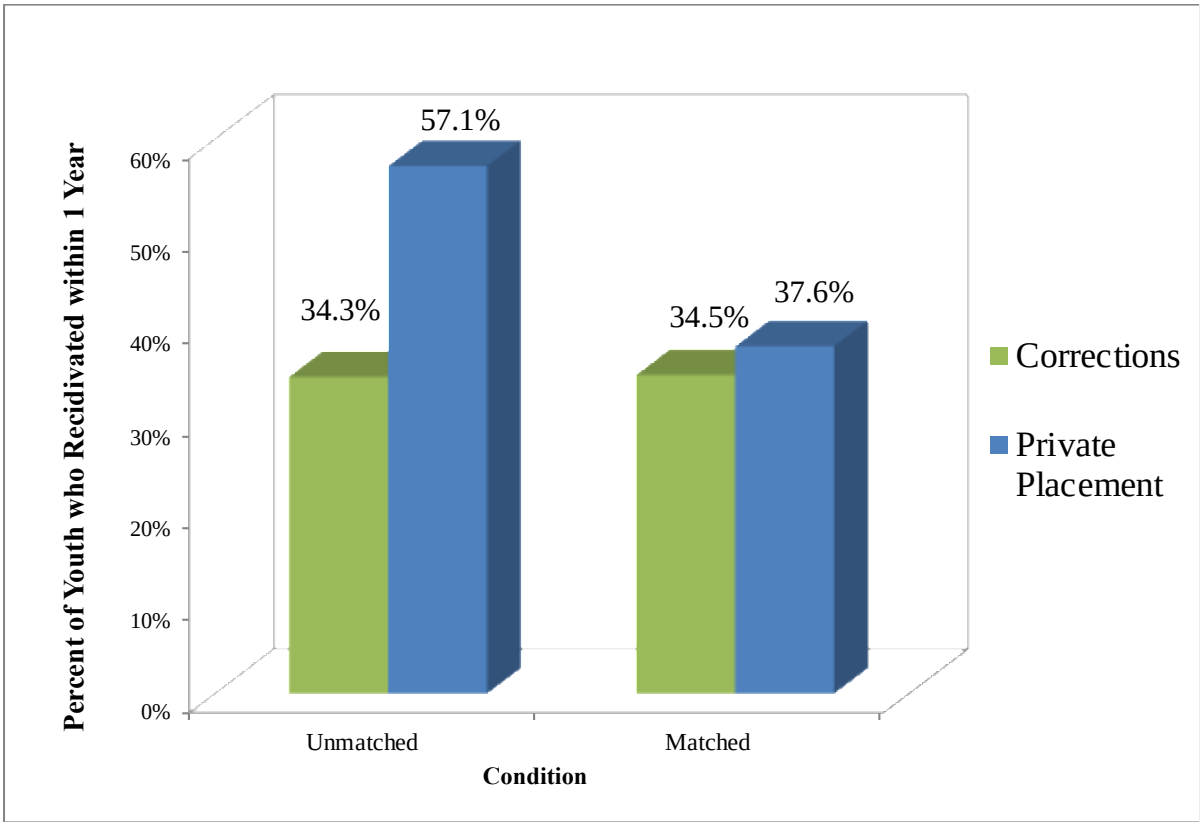


***Figure 1*:** Causal effect of placement type on recidivism within 1 year.

As shown in Table 8, in the unmatched sample, youth placed in corrections: are more likely to be male, are older, are less likely to have a mental health diagnosis, are more likely to have a dual diagnosis, are less likely to have only committed misdemeanors, and are more likely to have prior felonies or sex offenses. These differences are evidence of sample heterogeneity between youth placed in corrections and youth placed in private facilities, suggesting the possibility of a spurious association between corrections placement and recidivism, and therefore, the usefulness of a propensity score model. As discussed above, after matching, none of these differences are significant, indicating that the matching procedure was successful.

Next, we use our matched sample to determine the impact of corrections placement on recidivism risk. These results are presented in Figure 1 and Table 9. In the unmatched sample, we find that youth placed in corrections are significantly less likely to recidivate compared to youth private placements ($p \leq .001$). There is a 22.8% gap between the recidivism rate for corrections youth (34.3%) and private facility youth (57.1%). However, when we examine the sample balanced on

[4] We also examined the standard bias (SB) of each matching covariate pre- and post-matching. A SB with an absolute value of 20 or above indicates that a covariate is imbalanced across the treated and untreated groups (Cohen, 1988; Rosenbaum & Rubin, 1985). In our matched sample, the standardized biases are all below this cutoff point.

underlying propensity for being placed in corrections, we find that this gap virtually disappears and is no longer statistically significant. In the matched sample, 34.5% of corrections youth recidivate while 37.6% of private facility youth recidivate. The strong relationship between placement and recidivism disappears. This means that the underlying characteristics that caused the type of placement are a confounding factor in the relationship between placement type and recidivism. Youth placed in private facilities are more likely to recidivate, but this is not a result of the placement itself. Rather, the increased risk of recidivism is caused by the same factors that initially lead to private placement instead of corrections.

Table 9: Recidivism within 1 Year in the Unmatched and Matched Samples

	Unmatched Sample (N=507)			Matched Sample (n=266)		
	Corrections	Private	t-value	Corrections	Private	t-value
Recidivism	0.34	0.57	-4.61 ***	0.35	0.37	-0.28

Note: *$p \leq .05$, **$p \leq .01$, ***$p \leq .001$

Discussion

Regression analyses indicate that youth placed in residential group homes and residential treatment facilities are much more likely to recidivate within one year compared to youth placed in corrections. We found no difference between youth in therapeutic group homes and youth in corrections. Additionally, offending history had a strong influence on recidivism risk: youth who had committed felonies or sex offenses were much less likely to recidivate than youth with only misdemeanors on their records.

Broadly, youth placed in corrections are less likely to recidivate. However, we know from the previous section that many factors influence placement type for youths. It is possible that the factors that influenced their initial placement also impact recidivism. Therefore, we utilized propensity score matching to examine whether the difference in recidivism risk associated with different placements is the result of the placements themselves or underlying characteristics of youth who are placed in these facilities.

Propensity score matching indicated that the difference in recidivism risk across corrections and private placements is due to underlying factors. Once youth were matched based on their likelihood of being placed in corrections, the difference in recidivism disappeared. Yes, youth placed in corrections are less likely to recidivate, but this is not caused by the nature of corrections placement versus private placements. The recidivism risk is caused by the same underlying factors that initially caused the youth to be placed in corrections or private placements. So, the solution for decreased recidivism is not to simply place more youth in corrections. Unfortunately, the relationship is more complicated than that. Certain youth have a higher risk of recidivism due to their personal characteristics (offending history, diagnoses, and demographics), which ultimately impacts their placement type. Overall, these results suggest that placing more youth in private facilities over corrections would not result in an increase in recidivism rates.

In the next section, we examine the financial costs of youth placements.

Part 3. What are the Financial Costs Associated with Placements?

In this section, we examine the costs associated with placement types. How do the average daily costs vary across placement type? Are there differences in these costs for males and females? How do the costs of private placements differ based on location (in Montana or out of the state)? Finally, how do costs of private placements differ across districts?

Methodology

Sample

The study population for the following analyses are all youth placed into public (corrections) and private facilities (residential group homes, residential treatment facilities, and therapeutic group homes) during fiscal year 2017 and fiscal year 2018. The descriptive statistics for the placement sample are presented in Table 10.

A total of 301 youth were placed in public or private facilities during this time period. Forty-nine youth were included in the dataset more than once (duplicate youth) and were left in the data for the following analyses. There were 119 (45.8%) youth placed into public placement and 141 (54.2%) placed into private placements. Private placements were broken down into the following locations: 29 youth were placed into residential groups homes, 28 youth were placed into residential treatment facility, and 84 were placed into therapeutic group homes. Ultimately, 41 youth in private placements did not have costs associated with their placements and were removed from the dataset. The majority of these youth removed were youth placed into residential treatment facilities (34 youth), followed by therapeutic group homes (4 youth), and then residential group homes (3 youth).

Table 10: Cost Sample Descriptive Statistics (*N*=260)

	Percent/Mean(SD)
Placement Type	
Corrections	45.8%
Residential Group Home	11.2%
Residential Treatment Facility	19.8%
Therapeutic Group Home	32.3%
Placement Length (days)	
Male	78.8%
Age (years)	15.6 (1.3)
Race	
White	71.5%
Native American	18.8%
Other Race	9.6%

Measures

Data for the following analyses were queried by the Office of the Court Administrator (OCA) and the Children's Mental Health Bureau (CMHB) for the Criminology Research Group. The data queried by the OCA include the sociodemographic measures of sex, age, and race/ethnicity,

placement type (corrections, residential group home, therapeutic group home, and residential treatment facility), placement date, length of placement, and costs covered by Youth Court Services. Additional data queried by the CMHB included costs of placements covered by Medicaid. The Department of Corrections also provided the CRG with average daily costs broken down by fiscal year for those youth placed into corrections for both male and female facilities. The following section describes how total costs and average costs were calculated for youth in public facilities and youth in private facilities.

Costs of private placement. It is common for Medicaid to cover certain costs of privately placed youth, so youth were matched from the OCA data to the CMHB (Medicaid) data. If Medicaid covered any part of the youth's placement, then the individual youth was located in the CMHB dataset and costs to Medicaid were collected. Once Medicaid data were matched, total costs covered by Youth Court Services were added to total costs covered by Medicaid for each privately placed youth. This created an overall total cost of placement for each youth in the dataset. To calculate average daily cost for each youth, the total cost variable was divided by the total number of days spent at the placement facility. It is important to note that costs covered by the youth's private insurance or organizations such as Child and Family Services were unable to be collected in these data and their impact on the costs of these placements is unknown. The Children's Health Insurance Plan (CHIP), which provides free or low-cost insurance for qualifying families, is likely a large contributor to these costs for Montana youth and, again, these figures are unavailable for the estimates in this report.

After accounting for costs covered by Youth Court Services and Medicaid, 41 youth had a total cost of placement at $0.00. These youth likely had their entire placements covered by private insurance and were removed from the analysis.

Comparing estimates of daily costs. Average daily cost of individual private facilities in Montana were included in a spreadsheet provided to the CRG from Youth Court Services. To check the accuracy and reliability of our estimates used in this report, Figure 2 compares our estimated daily costs for private placements values to the average daily costs of these facilities provided to us. Using the spreadsheet provided, we matched youth in our datafile to the facility they were placed and their associated average daily cost from this spreadsheet. The average daily cost found on this spreadsheet was subtracted from the average daily cost we calculated from Youth Court Service and Medicaid costs. Figure 2 below presents the difference between these two estimates. Values to the right side of the $0.00 mark indicate costs used in this report are more expensive than what was found on the spreadsheet provided and values to the left are the less expensive.

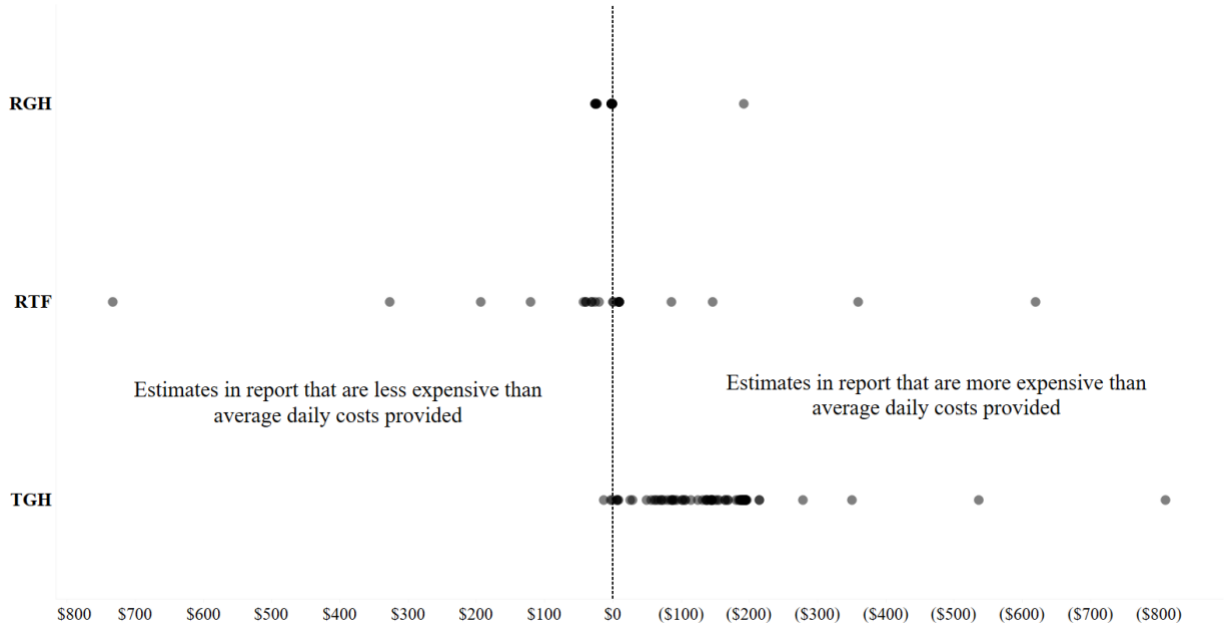


Figure 2**:** *Comparison of average daily costs for private facilities based on estimates provided and estimates calculated.*

In general, average daily costs between these two estimates are similar. The costs based on Medicaid and Youth Court Services are found to cost $48 more per day than the daily costs provided on the spreadsheet. As shown in Figure 2, residential group home costs are very similar between these estimates with the average difference under ten cents ($0.096). Estimated costs for residential treatment facilities are, on average, $15.30 a day more expensive on the spreadsheet of average daily costs than what is used in this report. Finally, therapeutic group home costs are the least similar with the average daily cost used in this report being $150.97 more expensive per day than what was found on the provided spreadsheet. Because we are unable to collect certain placement costs (e.g., private insurance), we anticipated that values used in this report would be significantly lower than the average daily values provided to us. However, we find that values, in general, are similar, which lends a little more confidence in our estimates. Additionally, values used in this report are typically more expensive than values found on the spreadsheet, which is evidence that we are not missing a significant portion of placement costs due to the inability to collect private insurance and other entities that would cover such costs.

Costs of public placement. Costs of correction placements are not covered by Youth Court Services or Medicaid, and because of this, costs of correction placement could not be calculated in the same way. As discussed above, the Department of Corrections provided the average daily cost of each facility based on fiscal year. With this information, each youth placed into corrections is matched with their respective average daily cost. These costs are multiplied by their total number of days placed to calculate total cost of correction placement.

Analytic Strategy

In the following analyses, we examine the distributions of average daily costs by facility. Box plots are utilized throughout this section to present these distributions. Boxplots help visualize entire distributions of values instead of relying on single measurements of central tendency (e.g.,

mean or median) which can, at times, be misleading. Figure 3 illustrates how boxplots are constructed and interpreted.

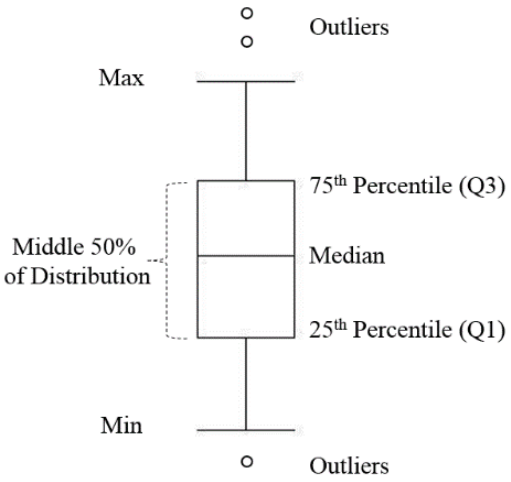


Figure 3: *Interpreting boxplots.*

Results

Figure 4 presents the average daily cost distribution for all facilities. Residential group homes (RGH) are shown to have the lowest average daily costs for all facilities with a median of $119. Residential group homes also show low variability, with daily costs ranging from $100 to $200 a day. Therapeutic group homes (TGH) have the next lowest daily costs, with a median cost of $219. Average daily costs for therapeutic group homes typically range between $75 and $327, with a few outlying values at significantly greater costs ($439, $585, and $859 respectively). Residential treatment facilities (RTF) and corrections facilities are similar in median values, with residential treatment facilities being slightly less expensive at $327. Residential treatment facilities have the most variability in daily costs, ranging between $49 and $659 a day. This high variability is in part due to the smaller sample size of residential treatment facilities. Finally, corrections facilities (COR) show the highest median value out of all placement facilities at $339. Corrections have low variability, ranging between $300 and $425. Low variability is due to the way in which correction costs were calculated, unlike those costs for private placements.

Total costs of youth placements in fiscal year 2017 and 2018 are presented in Figure A in the Appendix. In fiscal years 2017 and 2018, $7.6 million was spent on corrections, $3.6 million on therapeutic group homes, $901,500 on residential treatment facilities, and $677,000 on residential group homes. The total estimated costs for all placements in fiscal years 2017 and 2018 was $12,798,366. This overall estimated total does not include the 41 youth removed from the sample who had no associated costs in the dataset.

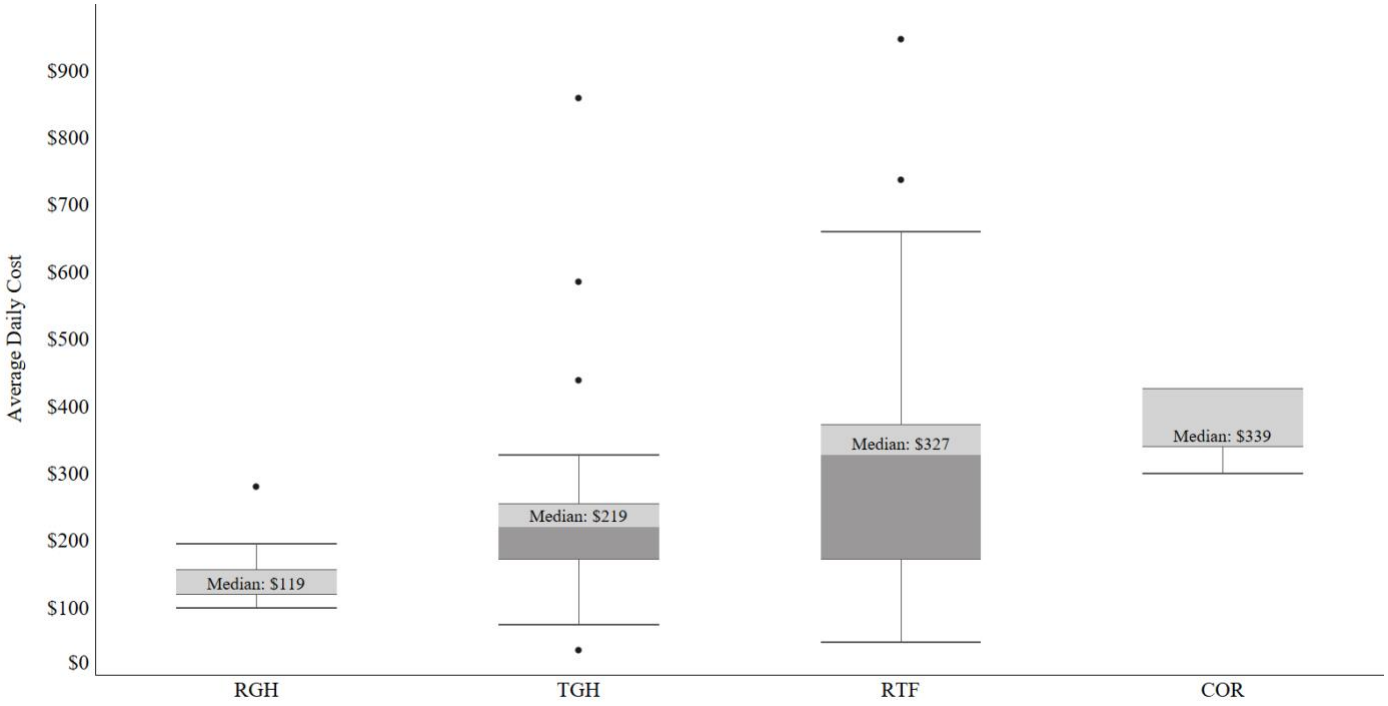


Figure 4: *Distribution of average daily cost by facility.*

Figure 5 explores differences is average placement costs for males and females. Overall, average daily costs shown in Figure 5 demonstrate the same pattern for each facility as shown in Figure 4. On average, residential group homes have the lowest costs, followed by therapeutic group homes, residential treatment facilities, and finally, corrections. In general, residential group home and therapeutic group home costs are similar for both males and females. While residential treatment facilities' median values are similar for females and males ($297 and $327 respectively) both sexes present large variation in average daily costs. Males are shown to have more outlying values, with one male placed in a residential treatment facility costing $947 a day. Correction placement costs more for males, ranging between $339 and $425 compared to $300 and $328 for females.

Figure 6 presents the costs of private facilities based on whether the facility was located locally in Montana. Whether the facility is located in or outside of Montana, residential group homes are shown to be the least expensive placement type. Residential group homes located out of state are more expensive, ranging from $156 to $175, compared to those in state at $99 to $145 a day. Therapeutic group homes, in general, were found to have similar costs whether they were located in or outside of Montana, with values falling close to the overall mean of $219 a day. Residential treatment facilities are shown to differ the most for all facilities based on whether the facility was located in the state. As shown in Figure 6, over 75% of all Montana residential treatment facilities' average daily costs fall below the total residential treatment facilities' average of $341 a day. Meanwhile, for residential treatment facilities located outside of Montana, over 75% of all average daily costs fall above that same value.

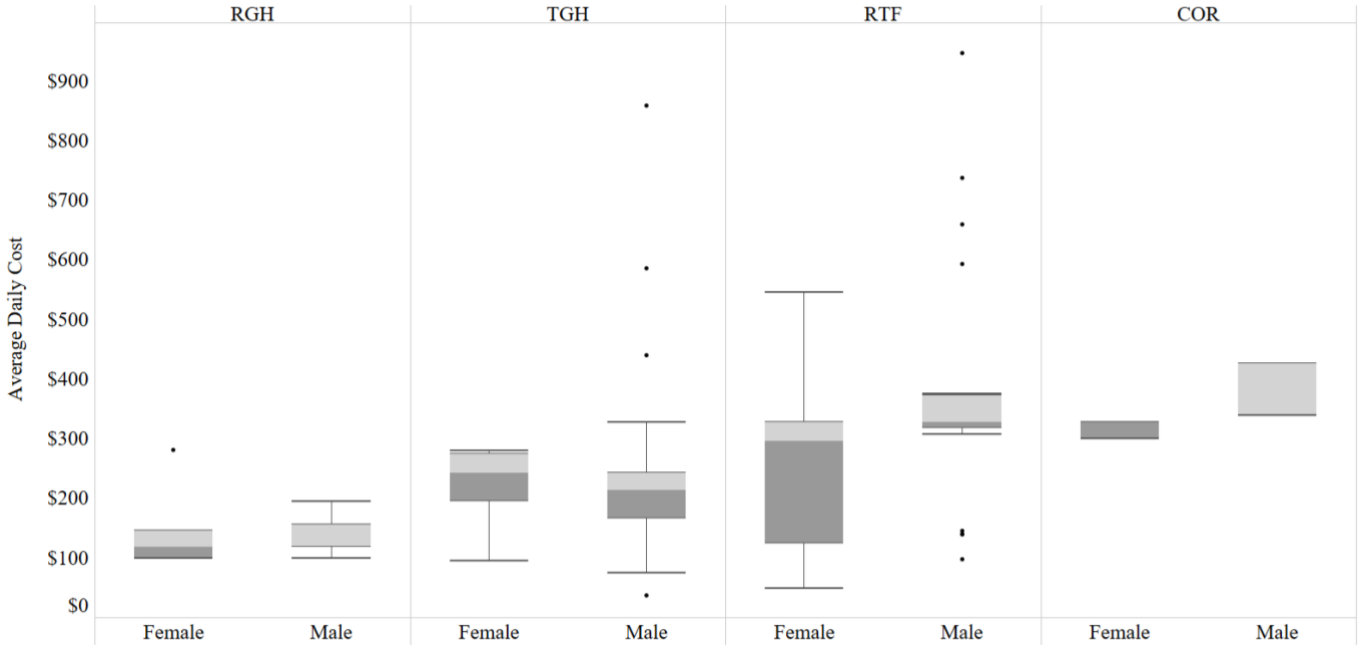


Figure 5: *Distributions of average daily costs by facility and sex.*

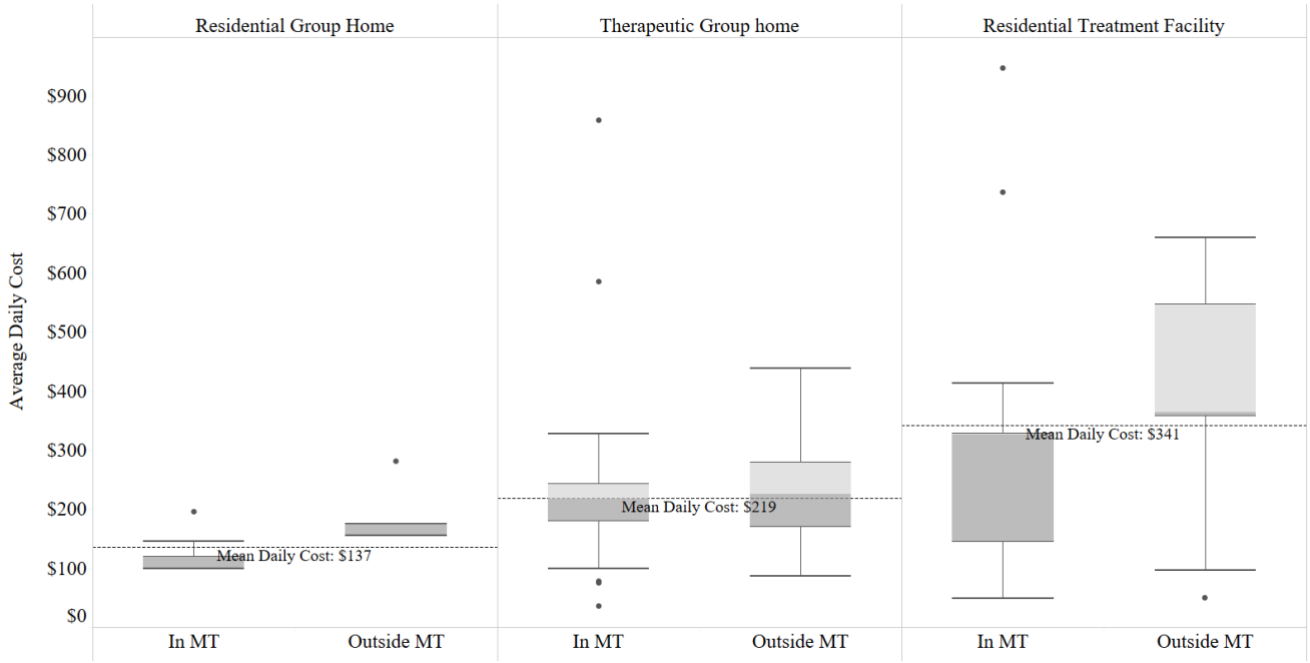


Figure 6: *Distributions of average daily costs by facility and location.*

Finally, Figure 7 presents the average daily cost for private placement type from fiscal years 2017 and 2018 based on judicial district. District 6 and 21 had no private placement during this time and are omitted from Figure 7. As shown in the figure, there are cost variations between districts for the same placement type. This means that it costs one district more or less for the same type of facility when compared to another judicial district in Montana. Therapeutic group homes and residential treatment facilities have the greatest variation in cost. Meanwhile, residential group homes are relatively consistent in cost between districts. Once again, it is important to note that these differing costs may be due to private insurance or other entities picking up costs not accounted for in our data.

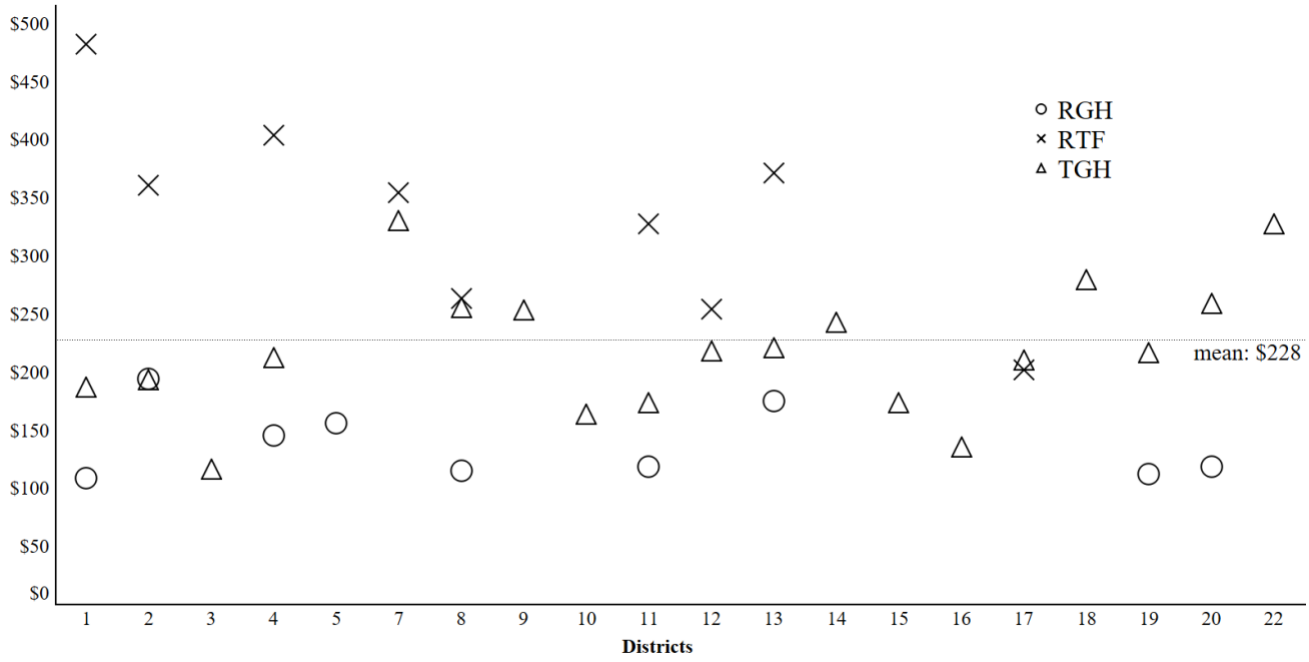


Figure 7: Average daily cost of private placement facilities for each youth in Montana by district.

Discussion

Examining costs associated with youth placements in Montana is complicated due to the fact that no government agency or organization keeps track of total placement costs for each individual youth. Instead, placement costs are shared between Department of Corrections, Youth Court Services, Medicaid, private insurance (especially CHIP), and possibly other government agencies such as Child and Family Services. The analyses above attempted to estimate these disconnected placement costs with the available data. The inability to determine costs paid by private insurance and any other entities stands as the most significant limitation to these analyses. However, we believe these estimates to be relatively accurate, as most youth costs are paid by Youth Court Services, Department of Corrections, and Medicaid.

Correction placement is consistently shown to be the most expensive placement option for youth in Montana. Residential treatment facility placement, on average, is the second most expensive option, but costs are much more variable than any other placement type. Certain residential treatment facilities exceed $600 a day, doubling the median daily cost of corrections. Therapeutic group homes are the second least expensive option, with a median value of $219 a day (a $120 savings from the median cost of corrections). Finally, residential group homes are the least expensive placement option, with a median cost of $119 a day and low variability.

Based on the analyses above, there are only small differences between the cost of placement between males and females. Correction placement stands as the greatest costs difference between sex with the placement of males being greater compared to females.

Placing youth in private facilities outside Montana increases the cost for residential group homes and residential treatment facilities. This difference is greatest for residential treatment facilities. Residential treatment facilities outside Montana cost significantly more than those located within Montana. Costs for therapeutic group homes are similar whether the facility is located in or out of state.

Finally, there does not appear to be consistency in placement costs between districts for the same type of private placement. One district may pay an additional $100 or more a day for the same placement type. Differing costs between district may reflect the costs our data were unable to account for.

Conclusion

Summary of findings

In this study, we examined several main questions: (1) where do youth get placed and why, (2) how does placement impact recidivism, and (3) what are the financial costs associated with different type of placements?

We found that several factors influence placement, including age, diagnoses, and offending history. Youth placed in private facilities are younger, less likely to have a dual diagnosis, and have less serious offenses on their records than youth placed in corrections. Mental health diagnoses had different effects depending on the type of private placement. Compared to youth placed in corrections, youth in residential group homes are less likely to have a mental health diagnosis, whereas youth placed in therapeutic group homes or residential treatment facilities are more likely to have mental health diagnoses.

We found some gender differences in the factors influencing placement. Regarding residential group homes, females placed in residential group homes are younger than females placed in corrections, but age doesn't impact placement for males. Males placed in residential group homes are less likely to have both mental health and substance use diagnoses, whereas dual diagnoses do not affect placement for females. Finally, both males and females placed in residential group homes are less likely to have felonies on their records, but the impact is stronger for females than for males. Additionally, we found racial differences based on gender in placement in therapeutic group homes or residential treatment facilities (versus corrections). Females placed in these facilities are more likely to be white (both Native American females and females in the "other" racial categories are less likely to be placed here compared to corrections). Race does not impact placement for males.

We examined the causes of the gender and racial disparities in placements, in which males are Native American youth are more likely to be placed in corrections over private facilities. The gender disparity is caused by the fact that males are more likely to have more serious offenses on their records than females, and having previous felonies or sex offenses greatly increases the likelihood that a youth is placed in corrections. The racial disparity is due to differences in offending history and diagnoses between Native American youth and youth of other races. Native American youth are more likely to have a dual diagnosis and more likely to have a felony on their record, which in turn, greatly increases their risk of being placed in corrections.

We examined differences between sex offenders and non-sex offenders. Controlling for a a number of factors, we found that sex offenders are much more likely to be placed in corrections over private placements. We also found that sex offenders were much less likely to recidivate within one year compared to chronic misdemeanor offenders. Finally, we found that sex offenders were less likely to be Native American and they were less likely to have a substance use diagnosis (though this latter difference was fairly small).

When examining recidivism, we found that several factors influenced the risk of recidivism within one year. Placement type seemed to matter: youth placed in residential group homes or residential treatment facilities were much more likely to recidivate compared to youth placed in corrections. Additionally, youth with more serious offending histories were much less likely to recidivate

compared to chronic misdemeanor offenders. Overall, youth in private placements are more likely to recidivate compared to youth in corrections; however, additional analyses revealed that it was not the actual placement that impacted recidivism. Instead, it was the factors that influenced placement in corrections or private placement initially that caused the differential risks of recidivism (e.g., demographics, diagnoses, and offending history). Therefore, simply placing more youth in corrections instead of private placements should not be expected to reduce recidivism.

Finally, we found that the financial costs associated with corrections placements were higher than the costs of private placements. Though there is variability in cost within each category, residential group homes have the least expensive average daily costs, followed by therapeutic group homes, then residential treatment facilities, and finally corrections. Costs associated with these placements are relatively similar for males and females, though corrections placements cost somewhat more for males than for females. Some private placements located out of state are more expensive than facilities in Montana. Therapeutic group homes located in state or out of state are similar in cost, but residential group homes in Montana are cheaper than out of state alternatives. We find the largest gap in average daily costs when comparing residential treatment facilities located out of Montana to those located in state. Finally, average daily costs for placements vary by district for the same placement type, with therapeutic group homes and residential treatment facilities showing the greatest variation.

Limitations

We want to acknowledge several limitations in this research. The first relates to the limited sample size. Though the overall sample sizes for the placement sample and the recidivism sample were adequate, we were limited by the sample size for particular subgroups. Specifically, we faced data limitation with sex offenders, females, Native American females, and Black, Hispanic, and Asian youth. The smaller sample sizes for these groups restricted the types of analyses that we were able to conduct. Additionally, we faced some limitations with the type of data that were available. Though we had information on a youth's previous offenses, we were not able to know which offense that lead to the placement. We could not assess the impact of services during placement on a youth. Limited post-discharge outcome data meant that we were only able to focus on recidivism rather than a wider range of outcomes. Finally, though we were able to account for most of the costs associated with placement, we know that some cost data were unavailable. We discuss possible ways to address these data limitations in the recommendations below.

Recommendations

Data Recommendations

As discussed above, some analyses in this study were limited by the existing data. Moving forward, we recommend gathering additional data in order to increase our understanding of youth placement. Regarding the factors causing placement type, it would be useful to know the specific offense that resulted in a youth's placement. In the current data, we can only compare differences in offending history (i.e., comparing chronic misdemeanors to youth who have committed a felony to youth who have committed sex offenses). However, it may be illuminating to see how the specific offense, rather than the youth's entire offense history, influences placement type.

When considering the impact of placement type on a youth, it would be useful to have more data on the youth's experience in placement and their behaviors after discharge. For instance, what services were provided to a youth during placement? We are assuming some consistency in the types of experiences that youth have within particular categories pf placement, but there is likely some unmeasured variation between different facilities within a particular category. There could be different approaches between different facilities. Maybe some residential treatment facilities provide services to their youth that other residential treatment facilities do not. Having measures of particular services would help to assess the impact of these various approaches on youth. It would also be useful to collect more official outcome data. Here, we are limited to examining whether the youth recidivated. However, we are unable to see any positive outcomes. How is the youth adjusting to life following their discharge? What are their education or employment outcomes after discharge? Tracking these data could provide a fuller picture of a youth's behavior following release.

Regarding the costs of placement, one of the most important recommendations that we can stress with confidence is to determine a strategy in the future to continuously collect and monitor total placement costs. The majority of the placement costs for youth in our data are accounted for; however, this was not an easy task, and we know that some costs were not able to be included in the estimates. Having all placement costs—whether the state paid for these or not—collected and stored in the same location would allow for greater scrutiny and accountability of these facilities. There should be some consistency between similar placements—especially within and between districts—and knowing the exact cost of these placements would serve as a starting place for this to occur while adding transparency to this issue.

Policy Recommendations

The results in this report have several policy implications. First, it is important to ensure that gender and racial biases are not impacting placement for youth in Montana. Second, increasing the utilization of private placements should both reduce costs to the state and not negatively impact the recidivism rate of youth following discharge.

Though there are significant gender and racial disparities in corrections versus private placement, these differences are generally caused by differences in offense history and diagnoses. However, we cannot discount the possibility that gender and racial biases in policing or mental health services could lead to these differences, which in turn cause males and Native American youth to be much more likely to be placed in corrections. Maybe law enforcement view males and Native American youth as more dangerous, so they are more likely to charge them with more serious crimes. Similarly, maybe mental health professionals more readily diagnose Native American youth with both mental health and substance use issues. This report does not contain evidence to support or reject these possibilities. We raise them to highlight the possibility that gender and racial biases are still impacting these youth. However, any such biases are upstream of the decision on where to place youth. However, this general point does not apply to non-White females, who do face disparities in placement that are not accounted for by offending history or diagnoses. Non-White females are more likely to be placed in corrections over residential treatment facilities or therapeutic group homes (when holding constant offense history, diagnoses, and other demographics). This is a point of concern, since it suggests the possibility of racial bias impacting non-White female youth. Care should be taken to ensure that racial or gender bias are not hurting youth in the juvenile justice system.

Youth placed in corrections are less likely to reoffend following discharge compared to youth in private placements. However, this difference in recidivism is due to underlying characteristics that impact placement in the first place. So, despite the lower recidivism rate of corrections youth, these findings suggest that placing more youth in private facilities instead of corrections would not necessarily result in higher rates of reoffending. This is promising, given that the costs associated with private placements are lower. Based on our estimates, the most expensive placement option is corrections. If our estimates are accurate, all private placement options would serve as a less expensive alternative and would cut costs for the placement of the state's justice-involved youth. Furthermore, utilizing only private facilities located in Montana would further reduce placement costs. Overall, the results in this report suggest that Montana could, where appropriate, increase the number of youth placed in private facilities. This would result in cost savings without leading to an increase in recidivism.

Placement is an important topic that deserve further inquiry. This report should serve as a starting place from which future questions can be asked and analyzed. For instance, why are non-White females more likely to be placed in corrections over certain private facilities? Beyond recidivism, how does placement in corrections or private facilities impact a youth following discharge? If corrections are in fact the most expensive option for placement, why are these facilities utilized with such great frequency? What are the benefits of correction placements that require this additional cost? Additionally, do youth benefit from being placed into alternatives to corrections and could these alternatives actually save money? Knowing answers to these questions could potentially guide the future of youth placement in Montana, with the goal of increasing positive outcomes in youth, increasing transparency, and reducing costs for the state.

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Appendix

Offenses that require sex offender registration in Montana

- Unlawful restraint, if the victim was less than 18 and the offender is not a parent of the victim, [45-5-301, MCA]
- Kidnapping, if the victim is less than 18 and the offender is not a parent of the victim [45-5-302, MCA]
- Aggravated kidnapping, if the victim is less than 18 and the offender is not a parent of the victim [45-5-303, MCA]
- Sexual assault, if the offender is a professional licensed under Title 37 and commits the offense during any treatment, consultation, interview, or evaluation of a person's physical or mental condition, ailment, disease, or injury [45-5-502, MCA]
- Sexual assault, if the victim is less than 16 and the offender is 3 or more years older than the victim [45-5-502(3), MCA]
- Sexual intercourse without consent [45-5-503(1), (3), or (4), MCA]
- Indecent exposure, third or subsequent conviction [45-5-504(2)(c), MCA]
- Indecent exposure, if the victim is less than 16 and the offender is 4 or more years older than the victim [45-5-504(3), MCA]
- Incest, if the victim is less than 18 and the offender is 3 or more years older than the victim or if the victim is 12 years or younger at the offender is 18 or older at the time of the offense [45-5-507, MCA]
- Aggravated sexual intercourse without consent [45-5-508, MCA]
- Prostitution, if the person patronized was a child and the patron was 18 years or older at the time of the offense, whether or not the patron was aware of the child's age [45-5-601(3), MCA]
- Promoting prostitution, if the person engaging in prostitution was a child and the patron was 18 or older at the time of the offense, whether or not the patron was aware of the child's age [45-5-602(3), MCA]
- Aggravated promotion of prostitution, if the victim was a child [45-5-603(1)(b), (2)(b), or (2)(c), MCA]
- Sexual abuse of children [45-5-625, MCA]
- Sexual servitude [45-5-704, MCA]
- Patronizing a victim of sexual servitude [45-5-705, MCA]

	Mean Daily Cost	Total Cost (FY 2017 2018)
COR	$367	7,582,902
RTF	$341	901,476
TGH	$219	3,637,035
RGH	$137	676,953
Grand Total	$291	12,798,366

Figure A: *Total costs of youth placements in fiscal year 2017 and 2018.*