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**Community-Based Rehabilitation's Effectiveness In Reducing Singapore Juvenile
Recidivism**

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RSCH 202: Introduction to Research Methods

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Abstract

Singapore's juvenile recidivism rate has climbed by around 5% since 2013, putting the country at risk of increased youth crime. With several mandatory rehabilitative programmes classified into two categories, Community-Based Rehabilitation (CBR) and Institutional-Based Rehabilitation (IBR), it is unclear whether the mandatory individual rehabilitative programmes for offenders were actually effective in achieving their corrective goals. This proposal would undertake a regression analysis to compare the effectiveness of CBR and IBR programmes utilizing secondary data gathered by the Ministry of Social and Family Development (MSF) and primary data from a survey. The survey will provide previously unstudied insights into the offender's profile, conviction, rehabilitation path, recidivism, and attitudes toward the programmes' effectiveness for a sample of approximately 7,150 Singaporean juveniles who have participated in or are currently participating in MSF's mandatory rehabilitative programmes. The regression analysis will be run to determine which class of programme is more important between IBR and CBR, as well as which specific programmes within those two classes are more effective at reducing reoffending juveniles. Understanding the effectiveness of these programmes may result in additional improvements or the abolition of inefficient mandated rehabilitative programmes that are expensive to implement. Finally, rehabilitation programmes in Singapore should be strengthened in order to preserve and nurture our younger generations, who are crucial to the country's future growth and development.

Keywords: Recidivism, Reoffenders, Singapore, Rehabilitation, Juveniles, Youths

Community-Based Rehabilitation's Effectiveness In Reducing Singapore Juvenile Recidivism

Singapore is one of the many countries that place great emphasis on their juvenile programs, with the strong belief that Singaporean juveniles will play a significant role in Singapore's future (Fu, 2019). However, according to Prison studies (2020), almost 500 Singaporean juveniles are detained, with a further 22% of these juveniles possibly re-offending after their release. Furthermore, according to data collected by Hirschmann (2021), juvenile recidivism rates are on the upwards trend, from 10.1% to 14.9% in 2013 and 2016, respectively. This prompted our study to investigate the effectiveness of Singapore's rehabilitation process, with an in-depth focus on juvenile rehabilitation and its contribution to reducing recidivism among Singapore juveniles.

In collaboration with Singapore Prison Services (SPS) and the Ministry of Social and Family Development (MSF), we will propose exploring the difference in offenders' outcomes between Community-Based Rehabilitation (CBR) and Institutional-Based Rehabilitation (IBR) through a documented survey. An in-depth analysis can then be conducted using both the collected survey data and previously collected secondary data to determine the statistical significance between both rehabilitative programmes (CBR & IBR). Ultimately, reducing recidivism can stabilise the lives of formerly incarcerated people and their families, lower the costs associated with incarceration, and reduce overall crime rates. Solving it would result in generating substantial benefits to society by reducing criminal justice costs to the government, crime victimisation costs, and the costs of incarceration to the re-offenders and their families.

CBR programmes primarily consist of 1) Probation order: Probation is a district court option for offenders where probationers undergo supervision for a span of 6 months to 3 years, following a set of compliance conditions to ensure that subjects behave appropriately

and do not reoffend. 2) Other court ordered options or conditions: Community service order, weekend detention orders, and regular training orders are other options available to the court. 3) Pre-court diversionary programmes: The Guidance Programme is for first-time juvenile offenders who have committed minor offences such as shoplifting, the Streetwise Programme and Enhanced Streetwise Programme are intervention programmes for juveniles with any gang associations or minor involvements and can span from 6 to 12 months, while the Youth Enhanced Supervision (YES) Scheme provides a structured 6-month programme targeted at first-time juvenile drug-consumption offenders. 4) Triage system which assists in the early intervention of juvenile offenders from the criminal justice system for upstream development (Ministry of Social and Family Development, n.d.-b).

IBR programmes primarily consist of 1) general rehabilitation programmes that build better emotional foundation in offenders motivational programmes, befrienders, life skills training, specialised therapy, and socio-emotional development. 2) Holistic programmes that develops the academic knowledge, vocational skills, and personal enrichment of offenders. 3) The Personal Mastery programme which is supported by Youth Guidance Officers (YGOs) in facilitating the building of helpful behaviours and attitudes in offenders. 4) Family involvement programmes which supports the counselling and engagement of parents or other important persons in the lives of the juvenile individual. 5) Community reintegration programme with supervised community access and post-release support by the MSF youth homes for a 1-year period to ensure meaningful facilitation and reintegration back into the community (Ministry of Social and Family Development, n.d.-c).

Literature Review

Existing literature has offered several channels and in-depth assessments of the numerous causes of recidivism among juveniles. This coverage also includes actions done by governmental bodies both locally and internationally to reduce the recidivism rate of the targeted group. Family background, social affiliations, criminal history, societal circumstances, psychological behaviourism, criminal background, and the success of rehabilitation programs are some of the most notable recidivism determinants. However, as detailed as the findings were, most research examined the impacts of these elements on foreign demography, and little has yet been brought to light in the context of Singapore juveniles, and what has been identified is archaic.

Ang and colleagues (2008) provided detailed data collected in 2005 from a random sample of 772 Singapore juvenile offenders. Operationally defined as 18 years of age and below, 151 of the 772 cases were juvenile re-offenders and emphasised the greater influence of parental criminal history, age factor, and the individual's psychological behaviourism on the likelihood of juvenile recidivism in Singapore. The findings were extracted from the Center for Research, e-Novation and Statistics (CReST), Subordinate Courts Singapore. While thorough, the study is a decade old and lacked additional insights on indirect factors such as social circumstances, especially the communal influences in residential areas and participation in secret societies. Alternative literature, such as that of Gibson and Miller (2009), Harris et al. (2011), and Chi et al (2015) has supplemented the absence of which.

Gibson and Miller (2009) confirmed a correlation between local social constructs and crime rates. Juveniles growing up in specific communities are affected by social disorder and collective effectiveness. Gibson and Miller's material was Western-centric, focusing on the causes and effects of communities in the United States. Many models and methodologies

were used in their study to quantify the influence of their discovered factors in connection to the neighbourhoods in which the subjects lived.

Harris et al. (2011) did a study using models with 7,166 juvenile cases, focusing on the neighbourhoods in Philadelphia. They also collected data on a total of 321,785 crime events between the year 2000 and 2002 and categorised them into 8 types of crime: homicide, robbery, assault, burglary, theft, vehicle theft, weapon violation, and drug crime. The model used by Harris and team included various descriptive statistics on juveniles such as age, number of arrests, education level, family background, offence types, ethnicity and public assistance provided. Harris and team concluding that juvenile re-offending is significantly influenced by spatial dependence, in terms of opportunities, constraints, and pressures present in the juvenile's residing neighbourhood, spatial concentration of reoffences, and the geographical definition of the neighbourhood.

Chi et al. (2015) focused their research on the causes of gang affiliations, which have an important influence on the recidivism rates of Singapore juveniles. The desire to develop and keep friendships was stated as the top motive for entering a gang by gang-affiliated youngsters. Youths who left their group reported evolving beyond this desire and their gang's activities. Early exposure to gangs through parental gang relationships, local pressures, and low educational participation increased the probability of youths joining a gang.

The aforementioned works are provided to emphasise the direct drivers; nevertheless, the publications by Wee (2019) and Yang (2017) were significant in highlighting the current methods of decreasing recidivism rates. As a result, these two studies assist the government and the public in Singapore and throughout the world. These strategies include corrective measures, rehabilitation efforts, and public assistance to dissuade ex-offenders from re-offending in the future.

Wee (2019) conducted research focused on the Singapore prison systems and effectiveness in preparing offenders for their reintegration into society using data obtained from reputable official government figures. The paper did not publish any numerical figures for the population of those who went through the rehabilitation program and only cited resources from the government sources in percentages through the year 2018. The paper, however, discussed the various programs used throughout the initiative, with the most effective being Employment, Education & Employability Skills Training, Art & Personal Development Program, Religion, Family Service & Programs, Community Volunteering, Community-based Programs, and the Halfway Home Scheme. Unfortunately, because some of the information may have been sensitive, it may have been difficult to obtain numerical statistics on the success of various initiatives.

Yang (2017) anchored her study on public assistance in lowering recidivism rates in the United States and covered the population of offenders in 43 states, 4,885,754 to be exact, from 1992 to 2014. The study's findings revealed that offenders post-release who had access to government-provided welfare assistance and food stamps had a significantly lower likelihood of recidivism. This likelihood was attributed to the rationale that public assistance assists ex-offenders in making ends meet post-release when other economic prospects are bleak, relieving the stress caused by reintegration.

Mendel (2011) composed a report detailing six pervasive flaws identified in America's juvenile corrections facilities. The report referenced various studies conducted in America, notably a national study conducted by the federal Bureau of Justice Statistics (BJS) to study sexual abuse in youth corrections facilities by surveying 26,650 of youths confined, and data collected from the state juvenile recidivism study. The studies collectively revealed that these juvenile correction facilities were dangerous, ineffective, unnecessary, obsolete, wasteful, and inadequate. The report also provided possible solutions to improving youth

recidivism and correction rates in six different stages of priority. Even though these resources are not based in Singapore, their findings and recommendations can be applicable to Singapore's youth correctional system.

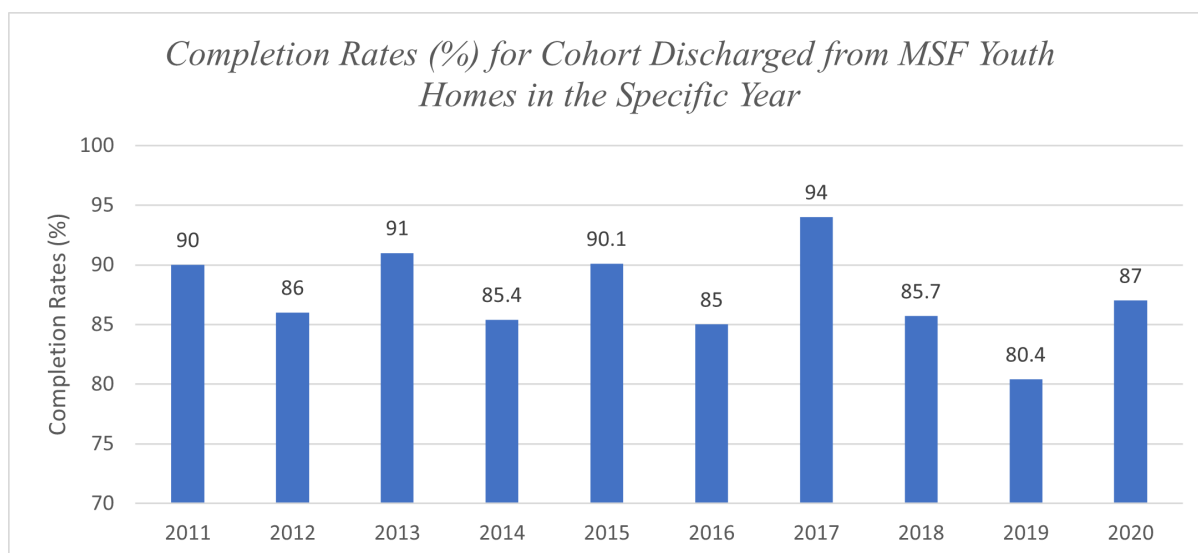
Ministry of Social and Family Development (2021a, 2021b, 2021c) have been collecting quantitative descriptive data annually since 2010 on the outcome of offenders who underwent its rehabilitative process. Even though most of the data presented by MSF was in a non-numerical, aggregated percentage of the entire population, the substantial amount of data can still be used as our secondary source of information due to its credibility. The data referenced are as follows:

Institutional-Based Rehabilitation (IBR)

Any data representing IBR programme(s) will be illustrated in blue throughout the paper.

Figure 1

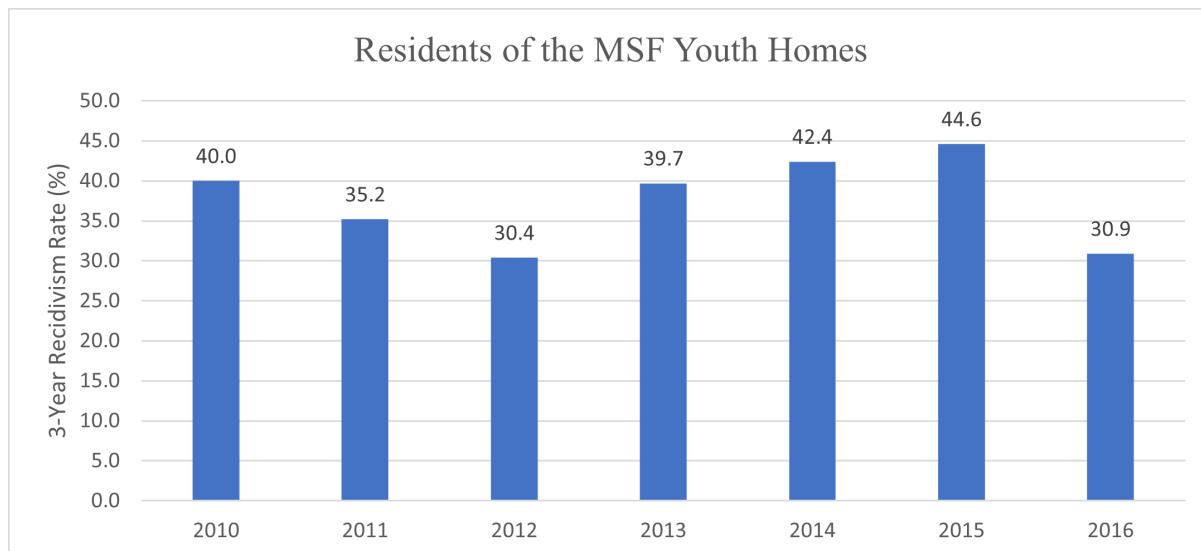
Completion Rates (%) for Cohort Discharged from MSF Youth Homes in the Specific Year



Note: Non-completion comprises of youths who re-offended during the term of residence at the Homes and are sentenced to Reformatory Training or Prison as a result, and youths who breach their orders from unruly behaviour in the Homes. Data referenced and re-illustrated from Ministry of Social and Family Development (2021c).

Figure 2

3-year Recidivism Rates (%) for Residents Aged Below 21 Years at the Point of Admission to MSF Youth Homes and who were Discharged in the Specified Year



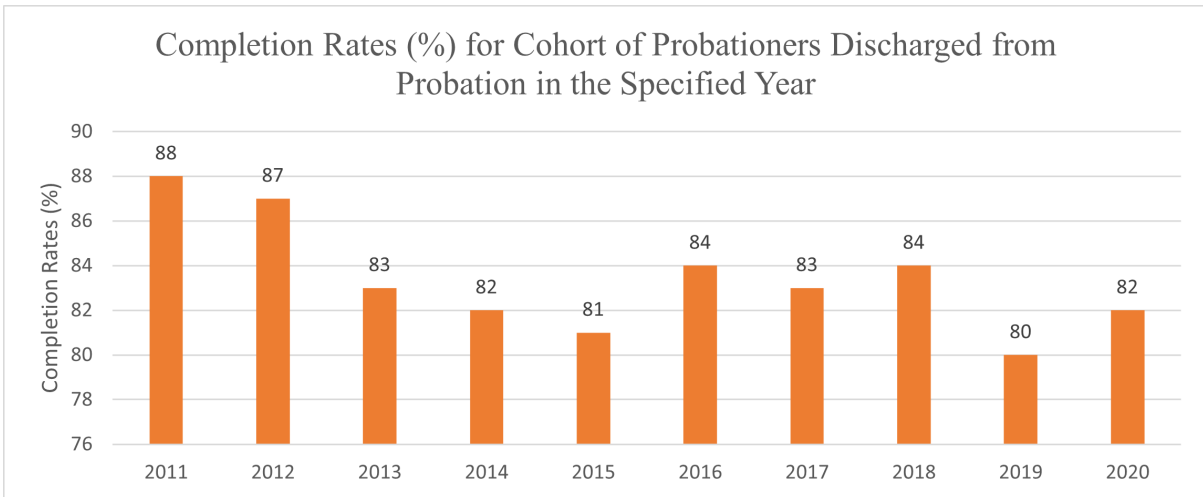
Note: Data referenced and re-illustrated from Ministry of Social and Family Development (2021c).

Community-Based Rehabilitation (CBR)

Any data representing CBR programme(s) will be illustrated in orange throughout the paper.

Figure 3

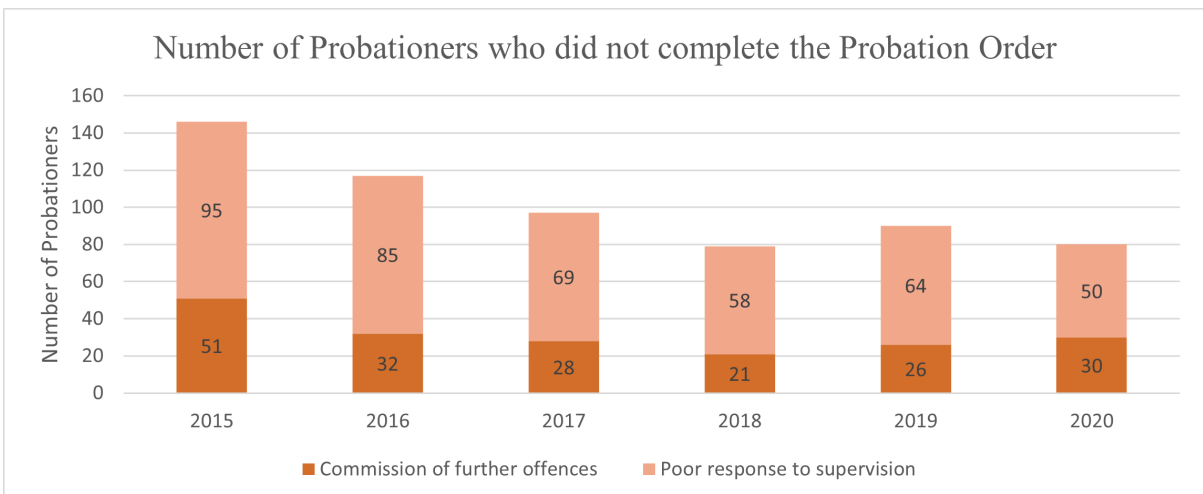
Completion Rates (%) for Cohort of Probationers Discharged from Probation in the Specified Year



Note: Data referenced and re-illustrated from Ministry of Social and Family Development (2021b).

Figure 4

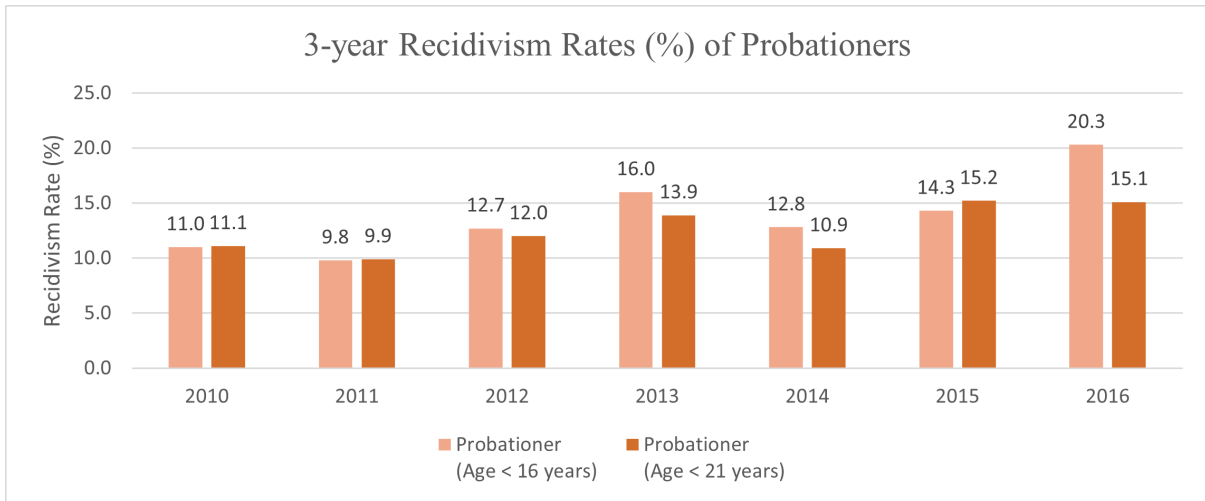
Number of Probationers who did not Complete the Probation Order, by Year and Specified Reason



Note: Poor response to supervision refers to probation orders that were revoked as the probationer repeatedly fail to comply with the conditions of the probation order. Data referenced and re-illustrated from Ministry of Social and Family Development (2021b).

Figure 5

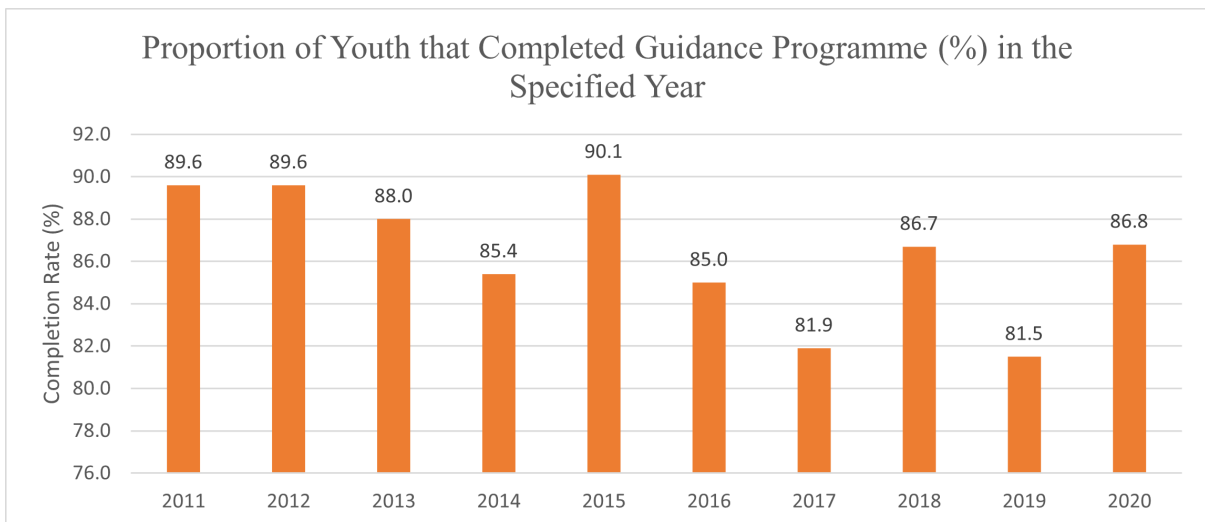
3-year Recidivism Rates (%) of Probationers at the Point of Commencing Probation and who were Discharged in the Specified Year



Note: Data referenced and re-illustrated from Ministry of Social and Family Development (2021b).

Figure 6

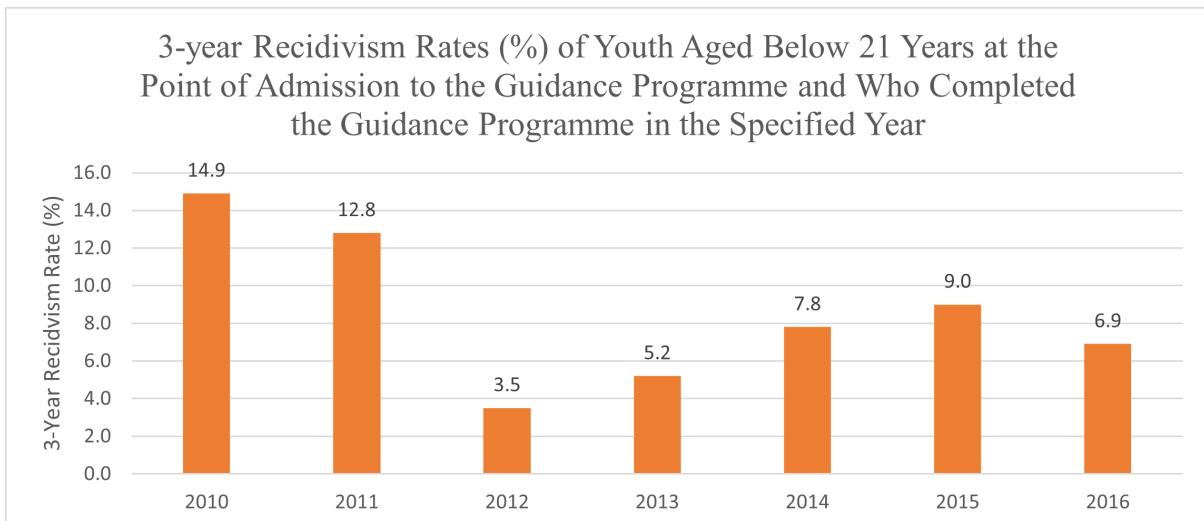
Proportion of Youth that Completed Guidance Programme in the Specified Year



Note: Data referenced and re-illustrated from Ministry of Social and Family Development (2021a).

Figure 7

3-year Recidivism Rates (%) of Youth Aged Below 21 Years at the Point of Admission to the Guidance Programme and who Completed the Guidance Programme in the Specified Year



Note: Data referenced and re-illustrated from Ministry of Social and Family Development (2021a).

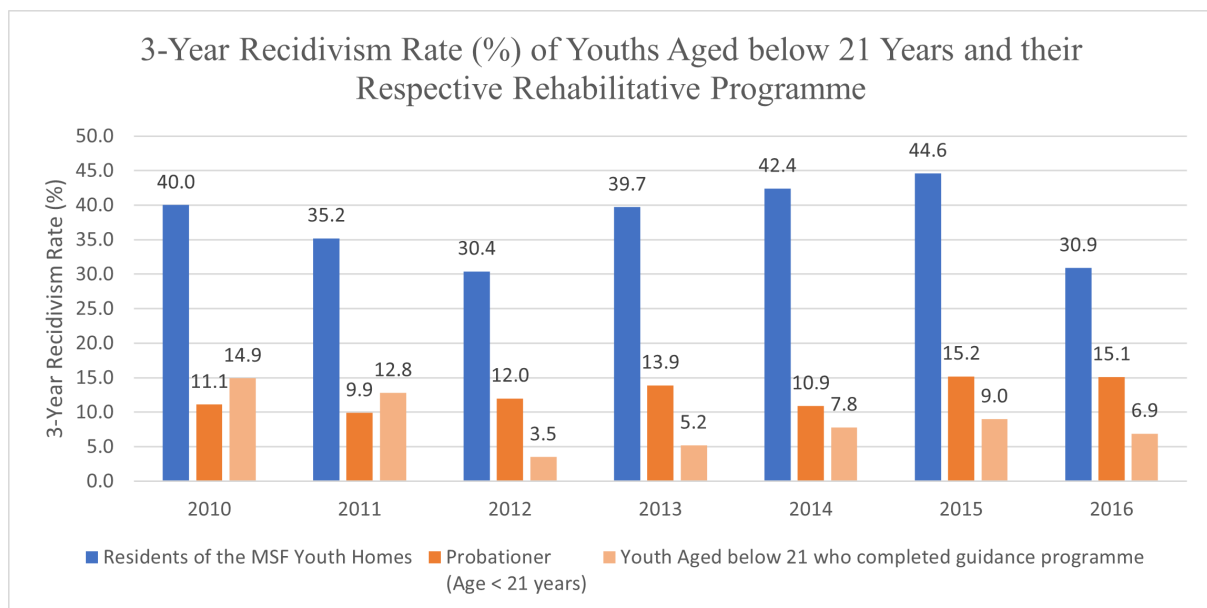
Key Findings of Literature Review

The underlying variables raised by current literature span a wide variety of characteristics that have a substantial influence on the recidivism rate of local and international populations for both adult and juvenile offenders. However, with the context of Singapore juvenile recidivism, the existing literature and its vast coverage do not contextualise and evaluate the influence of causative variables on the recidivism rate of Singapore juveniles. Accessible data have allowed us to identify certain efficacies in some rehabilitation programmes, instead of the classes of rehabilitation programmes in their entirety, and all of the individual programmes within each class. Hence, our research attempts to supplement and continue to build on the foundation that has been laid.

As a start, we referenced our most credible and relevant source, Ministry of Social and Family Development (2021a, 2021b, 2021c), collated and illustrated a comparable bar graph that depicts the difference in 3-year recidivism between IBR and CBR, as presented in Figure 8 below.

Figure 8

3-Year Recidivism Rate (%) of Youths Aged Below 21 Years and their Respective Rehabilitative Programme



Note: Data referenced, collated, and re-illustrated from Ministry of Social and Family Development (2021a, 2021b, 2021c).

Based on what was accessible to us from Ministry of Social and Family Development (2021), we noticed a consistent trend of IBR (in blue), yielding a higher 3-year recidivism rate for adolescents in comparison to CBR (in orange) by a significant amount. However, due to the lack of data presented on other rehabilitative programmes in both IBR and CBR, this illustration may not represent the true effectiveness of either rehabilitative process and will require further investigation or resort to primary data collective means. The figure, however, gives us a good perspective of our area of interest for our research.

Moving forward, the following independent variables will widely include static and dynamic elements that will affect the recidivism rate in Singapore juveniles. The independent variables are categorised as follows: a) Rehabilitation and reintegration programmes; b) Offenders' profiles; and c) Social conditions. Considering the lack of substantial research in the field of juvenile rehabilitation efforts in the context of Singapore, our study paper will delve deeper into the available rehabilitation and reintegration programmes, with the goal of

shedding light on its efficacy in discouraging juveniles from re-offending, thereby emphasising the relationship of it and the rate of recidivism in the Singapore juvenile population.

Rehabilitation and Reintegration Measures

According to the Ministry of Social and Family Development (n.d.-a), the present rehabilitation and reintegration initiatives consists of CBR programmes and institutional-based rehabilitation (IBR) programmes.

The Ministry of Social and Family Development (n.d.-b) states as well that the implemented CBR programmes available include supervised probation orders that span between 6 months to 3 years, pre-court diversionary programmes (Guidance Programme, Streetwise Programme, Enhanced Streetwise Programme, and Youth Enhanced Supervision Scheme), the triage system, and other court-ordered options (Community Order, Weekend Detention Order, Periodic Training Order).

Whereas, IBR programmes purposed to reduce recidivism are confined to in-house counselling sessions that provide general rehabilitation (through motivational programmes, befrienders, life skills training, specialised therapy, and socio-emotional development), holistic education and development programmes, the Personal Mastery programme, family involvement programmes and the community reintegration programme. (Ministry of Social and Family Development, n.d.-c).

With the plethora of programmes that are available in facilitating the rehabilitation and reintegration of offenders back into the community, available data reflecting the effectiveness of programmes are only limited to a selected few areas, namely, the total effectiveness of IBR, the Guidance Programme and Probation Orders.

Offenders' Profile

Individual profiling of criminals is one of the most important elements in recidivism.

Because each offender has a unique set of profiles, the proclivity for an offender to re-offend varies widely depending on their Biological Factor, Psychological Factor, Criminal History, and Family Profile, which will be explored in the following phases.

Biological factors

Age of First Conviction. According to Ang and Huan (2008), one of the strongest predictors of juvenile recidivism is the age at which the offender was initially sentenced. The study discovered that younger offenders, aged 7 to 12, were more likely than 17 to 18-year-old juveniles to re-offend with a more serious or violent felony following their original release. This conclusion was consistent across several observations of various samples.

Gender. Although Ang and Huan's (2008) study found no significant difference in risk variables between male and female re-offenders, other studies have found that males tend to be at a higher risk of re-offending.

Psychological Factors

Juvenile Health Risk Behaviour. The juvenile health risk behaviour refers to the specific categories of health-risk behaviours that the offenders are noted for: History of theft, running away from home, keeping late nights, aggression, sexual activity, and drug inhalation, alcohol consumption, and/or tobacco use. These categories are used to distinguish and characterise offenders based on the juvenile's previous experience or engagement in the activity, which can be useful in forecasting the likelihood of recidivism.

Psychological Behaviour. Examining the juvenile's mental health history or current information can help assess the juvenile's psychological conduct. According to research by Sahlin (2018), jail worsens mental health symptoms, which might potentially lead to recidivism. People who undergo mental health therapy during and after their release from prison for their offenses (violent, property, sexual, drug-related, and other) are less likely to re-offend (Sahlin, 2018). As a result, the offender's mental health, for example, the intensity

of drug addiction or impulsive violence, has a substantial role in the offender's proclivity of re-offending.

Criminal History

Type of Offences. According to Alper et al. (2018) 's follow-up study on recidivism in the United States, 83 percent of offenders released in 2005 across 30 states were arrested at least once in the nine years after their release. The survey also discovered that 68 percent of released criminals committed new crimes within three years of their release, and 79 percent of released offenders were arrested within six years of their release. Despite the fact that the majority of re-offenses occur within a three-year period, the study found a minimal link between the original kind of crime and second offenses.

Family Profile

Juvenile family ties, or elements in the family, are environmental variables that are the most immediate and fundamental social environment for personal growth and are recognised to have a significant impact on human development. Juveniles from low-income families may lack experience or stimulation, contributing to family worry and a lack of proper care for them in their adolescence. Furthermore, it is well recognised that the greater the parents' educational background, the lesser problem behaviours are observed in juveniles. Consequently, delinquent conduct, particularly aggressive behaviour, is more significant in single-parent households than in general households.

Social Conditions

Gang Affiliations

Gang activity has a significant influence on ex-convict recidivism. Individuals who are gang-affiliated or have previously been gang-affiliated might be affected by gang affiliation. According to research, gang-affiliated juveniles have a greater chance of recidivism than non-gang-affiliated juveniles. This is related to the primary reasons why

youngsters join gangs, which include social security, peer pressure, income, a desire to be loved and desired by others, and other factors. As a result, when juveniles are released, they return to seek those comforts unless convinced otherwise. Furthermore, because juveniles tend to reside in the same neighbourhood and encounter the same individuals, especially in Singapore, the rate of being forced to join gangs is high.

Neighbourhood Factor

According to research, neighbourhoods do have an influence on recidivism. Juveniles residing in low-income and unequal neighbourhoods have a greater recidivism rate because it increases their chances of engaging in criminal activity. In the case of Singaporean youngsters, unless their parents opt to relocate them, they will remain in the same neighbourhood, and if they do not relocate, they will have a possibility of associating with the same bad company as previously (Chu et al., 2010).

Provision of Further Education

It has demonstrated that the difficulties released young criminals encounter in integrating into the community and society are due to a lack of skills and knowledge to live in a competitive culture. According to research, providing education for juvenile criminals to pursue their studies has significantly reduced recidivism rates because individuals aligned with a goal and purpose, can be as competitive as non-offenders given the right opportunity. This demonstrates that a provision of education to younger offenders can reduce the proclivity of re-offending.

Research Question

Are Community-based Rehabilitation (CBR) programmes more effective in reducing recidivism amongst Singapore juveniles as compared to Institutional-based rehabilitation (IBR) programmes?

Theoretical Framework

The main objective of this research is to identify the variety of CBR and IBR programmes implemented by Singapore and investigate the significance of their individual impacts on juvenile recidivism. Existing studies have shown that the profile of individual offenders, social conditions of offenders, as well as the rehabilitation and reintegration measures offenders undergo have a significant impact on the proclivity of offenders re-offending. However, there was limited research done venturing into the study of juvenile recidivism and even less so that encompasses studying the effectiveness of the individual rehabilitation programmes. Therefore, the purpose of this research is to discover the effectiveness of CBR and IBR, as well as the effectiveness of the respective programmes in CBR and IBR individually.

Hypotheses

H₀: Community-based Rehabilitation programmes are not more effective in reducing Singapore juveniles from reoffending than Institution-based rehabilitation measures.

H₁: Community-based Rehabilitation programmes are more effective in reducing Singapore juveniles from reoffending than Institution-based Rehabilitation programmes.

Data

The type of data that we intend to collect for the stated hypotheses will be a compilation of primary and secondary data and will be used for the panel data analysis. The panel data analysis will include a regression analysis to analyse the statistical difference between the dummy variables, CBR programmes and IBR programmes, as well as the statistical differences between the dummy variables of respective programmes within CBR and IBR, such as supervised probation orders, the triage system, pre-court diversionary programmes (Guidance Programme, Streetwise Programme, Enhanced Streetwise Programme, and Youth Enhanced Supervision Scheme), other court ordered options (Community Order, Weekend Detention Order, Periodic Training Order), MSF Rehabilitation

Programmes, Holistic Education, Personal Mastery, the Family Involvement Program and the Reintegration and Post Care Support.

Population and Sample

The requirements for the analysis will include the creation and dissemination of two different surveys to a selected sample of 7,150 male and female youth offenders, comprising of juveniles who have and have not re-offended within 3 year of post-release from both CBR and IBR programmes. The estimated sample size will be selected through stratified sampling from a total number of 33,778 collective male and female youth offenders recorded by MSF from the years 2010-2020, between the ages of 7-20. Due to practical reasons, we will only be able to access 10 years' worth of data. Stratified random sampling (SRS) will be utilised for the purpose of consolidating a much more elaborate and accurate representation of the population of juvenile offenders and will consider a minimum number of 325 subjects from each individual groups of offenders, those that have re-offended and those that have not, for each respective year in 2010 through 2020.

Variables and Measures

Dependent variable

Juvenile recidivism

Independent variables

Control variables

- 1) Offenders' Profile
 - a. Biological Factors
 - b. Psychological Factors
 - c. Criminal History
 - d. Family Profile
- 2) Social Conditions

- a. Gang Affiliations
- b. Neighbourhood Factor
- c. Provision of Further Education

Key independent variable

1) Rehabilitation and Reintegration Measures

- a. Community-based Rehabilitation Programmes
 - i. Probation orders
 - ii. Pre-court diversionary programmes (Guidance Programme, Streetwise Programme, Enhanced Streetwise Programme, Youth Enhanced Supervision Scheme)
 - iii. Triage system
 - iv. Other court ordered options (Community Order, Weekend Detention Order, Periodic Training Order)
- b. Institution-based Rehabilitation Programmes
 - i. MSF Rehabilitation Programmes
 - ii. Holistic Education
 - iii. Personal mastery
 - iv. Family programmes
 - v. Reintegration and Post Care Support

Measures

The method of primary data measurement of the above mentioned dependent and independent variables, which we intend to proceed with, will include the creation of surveys to obtain results from: youth offenders who have completed IBR programmes, and youth offenders who have completed CBR programmes. The control variables will account, as much as possible, for the population of offenders with similar demographics and

sociocultural characteristics to be able to provide greater accuracy in the analysis of rehabilitation programme efficacies. Whereas, by detailing the key independent variable—variations of programmes made available to youth offenders—we can analyse the effectiveness of the individual programmes and its resultant impact on the recidivism rate of Singapore juveniles.

Measurement of Primary Data

With considerations on confidentiality and sensitivity, surveys will be conducted physically and distributed directly to respondents. Through the contacts and connections made dispensable to our team, we will seek approval from the relevant authorities to visit the various available rehabilitation centres for the purpose of identify young offenders of both genders who have committed more than one offence. In addition, Youth Guidance Outreach Services (YGOS), a non-profit charitable organisation has been serving youths for over 24 years by supporting youths to reach their potential through timely preventive, early intervention, and remedial programmes, led by research, theories, experience, and professional excellence. We will be able to reach out to them to aid us with this research as it will help promote community-based rehabilitation and prove its effectiveness just like what YGOS aims to achieve.

This collation of responses will be accomplished by first gaining the approval from the relevant authorities to access archived records of previous youth offenders from SPS with the help of YGOS and our connections before our team contacts and engages with both male and female juvenile ex-offenders who have completed either IBR or CBR to collate their responses. Through our survey, juveniles will be able to indicate the form of rehabilitation they have been assigned, either IBR or CBR. Following that, the survey questionnaires from the various groups will be collected for data collation. Correspondingly, we will poll teenagers who have committed crimes but have not re-offended as well.

For repeat juvenile offenders, questionnaires will be conducted during their visiting hours or free time. For juvenile ex-offenders, the poll will take place after business hours on weekdays and in the afternoon on weekends. Once again, the surveys will not be done online due to sensitive and confidential information being shared in the survey. Within three to four months, all survey data will be compiled.

The respective surveys can be referred to in Appendix A of this paper and will explicitly obtain information that will include, basic demographical information of the respondent, the type of offence first committed, the programme assigned for rehabilitation purposes, the effectiveness of the rehabilitation programme assigned based on a 4-point scale, and commitment of second offence if any.

Measurement of Secondary Data

Secondary data from MSF and SPS can aid us in ascertaining the number of juveniles who have committed crimes and the number of juveniles who have re-offended despite having completed IBR or CBR programmes. According to recent public information, the most recent publicly available data spans from the years 2010 to 2016. We will seek assistance from MSF in gathering the information required for our research to gain more data that is currently unavailable on the MSF website. The data will disclose the number of minors who have committed offences in a particular year, the number of minors in a specific programme as well as the percentage of repeat offenders in the specific programme. Conjointly, the data will contain the types of rehabilitation processes assigned to offenders and their participation. This data will help us in identifying the rate of re-offenders from each respective programme.

Research Methodology

Based on the types of data that we are intending to collect, a regression analysis would be the most befitting test to evaluate the impact of the identified variables on juvenile recidivism in Singapore. Given that the multiple variables such as the social connections of the reoffender, the profile of the reoffender, the type of rehabilitation programme, and the rehabilitation programme itself that were assigned to the reoffenders have a direct influence on juvenile recidivism, a regression analysis will be used. In our case it will first be the impact IBR and CBR has on juvenile recidivism in Singapore. Secondly, regression will be used to compare the impact of individual programmes in both IBR and CBR on juvenile recidivism in Singapore. The test is purposed to evaluate and determine the difference in impacts of rehabilitation programmes on recidivism in Singapore juveniles and provide the direction for justifications of any statistical difference in recidivism of reoffenders who have completed the rehabilitation programmes in the community as compared to that of institutions.

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Legend:

Y: Juvenile recidivism

β : Constant

ε : Error term from residuals

X_1 : Class of rehabilitation programme (CBR/IBR)

X_2 : Rehabilitation programme underwent

X_3 : Social Conditions

X_4 : Offenders' Profile

Conclusion

With the lack of quantitative data published in the context of Singapore, we propose to collaborate with MSF to survey the sample population of 7,150 convicted juveniles that can give insight into Singapore's rehabilitation process and its effectiveness. A regression analysis should be run with the appropriate independent variables that influence juveniles' recidivism rate. Based on previous literature, the Offenders Profiles, Social Conditions, and Route of Rehabilitation and Reintegration Programmes directly influence recidivism rates and thus, will be noted as the independent variables in our regression test. When completed, our proposed regression model identifies the interactions between the classes of programmes and the interactions between the different respective programmes assigned to the offender to effectively determine the effectiveness of the programme in reducing juvenile recidivism.

The findings and insights from our regression model can make way for further studies to develop a new rehabilitation programme, improve existing rehabilitation programmes' effectiveness, or remove ineffective or detrimental rehabilitation programmes altogether. Ultimately, our proposed research aims to safeguard the next generation of Singaporean youths by reducing juvenile recidivism rates in Singapore through effective rehabilitation.

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Appendix A

Figure A1

Survey on the effectiveness of CBR programmes

Community-Based Rehabilitation

Name: _____

Age: _____ Gender: _____ Male / Female

Ethnicity: _____ Religion: _____

Contact: _____ School: _____

Residential Address: _____

Name of Next-of-Kin: _____

Contact of Next-of-Kin: _____

Rehabilitation Survey 2022

This survey seeks to collect statistical data of convicts incarcerated in the Singapore Prison Service to investigate the effectiveness of the various rehabilitation programmes made mandatory. With respect to the sensitive nature of the survey, your response will remain strictly confidential and will be reviewed by the researchers for data collection only. The researchers may contact you for an interview several years after the end of your sentence for an anecdote of your personal experience through the rehabilitative process of the Singapore Prison Service. Your response will give unique insights to curb recidivism rates among adolescents in Singapore.

Criminal Offence:				
Type of Criminal Offence(s):	_____			
Date of conviction:	_____			
Age of conviction:	_____			
End of Probationary period:	_____			
Probationary Duration:	_____ Years,	_____ Months,	_____ Days	
Fines:	Yes / No	If Yes, Amount: SGD _____		
Other Punishments:	Yes / No	If Yes, State: _____		
<u>Type of Rehabilitation received/receiving (Tick Applicable):</u>				
Youth Rehabilitation Programme:				
<input type="checkbox"/> Probation Order	<input type="checkbox"/> Other Court-Ordered Options			
<input type="checkbox"/> Guidance Programme	<input type="checkbox"/> Streetwise Programme			
<input type="checkbox"/> Enhanced Streetwise Programme	<input type="checkbox"/> Youth Enhanced Supervision Scheme			
<input type="checkbox"/> Triage System				
Personal Opinion				
The following questions should be answered solely based on your opinion, having experienced the rehabilitative programme(s) stated above. Select the option that best suit your impression of the programme with <u>1 being not effective, 2 being somewhat effective, 3 being effective, and 4 being very effective.</u>				
Rehabilitation Program:	1	2	3	4
Overall effectiveness of Youth Rehab Programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2/2

Note. The survey will include the basic demographical information of the respondent, the type of offence first committed, the programme assigned for rehabilitation purposes, the effectiveness of rehabilitation programme assigned based on a 4-point scale. This survey will be handed out to first-time offenders to measure the effectiveness of CBR programmes upon completion.

Figure A2*Survey on the effectiveness of IBR programmes*

Institutional-Based Rehabilitation

Name: _____

Prison / Institution ID: _____ Prison / Institution Block: _____

Ethnicity: _____ Religion: _____

Gender: Male / Female Contact Number: _____

Residential Address: _____

Rehabilitation Study Survey 2022

This survey seeks to collect statistical data of convicts incarcerated in the Singapore Prison Service to investigate the effectiveness of the various rehabilitation programmes made mandatory. With respect to the sensitive nature of the survey, your response will remain strictly confidential and will be reviewed by the researchers for data collection only. The researchers may contact you for an interview several years after the end of your sentence for an anecdote of your personal experience through the rehabilitative process of the Singapore Prison Service. Your response will give unique insights to curb recidivism rates among adolescents in Singapore.

First Criminal Offence:

Security Classification: _____

Type of Criminal Offence(s): _____

Date of conviction: _____

Age of conviction: _____

Release Date: _____

Sentence Duration: _____ Years, _____ Months, _____ Days

Canning: Yes / No If Yes, Number of Strokes: _____

Fines: Yes / No If Yes, Amount: SGD _____

Other Punishments: Yes / No If Yes, State: _____

Type of Rehabilitation received/receiving (Tick Applicable):**Youth Rehabilitation Program:**

- | | |
|--|--|
| <input type="checkbox"/> Probation Order | <input type="checkbox"/> Other Court-Ordered Options |
| <input type="checkbox"/> Pre-Court Diversionary Programmes | <input type="checkbox"/> Triage System |
| <input type="checkbox"/> Rehabilitation Programmes | <input type="checkbox"/> Holistic Rehabilitation |
| <input type="checkbox"/> Personal Mastery | <input type="checkbox"/> Family Programmes |
| <input type="checkbox"/> Reintegration Programmes | |

Adult Rehabilitation Program:

- | | |
|---|---|
| <input type="checkbox"/> Psychology-based Correctional Programmes | <input type="checkbox"/> Family Programmes |
| <input type="checkbox"/> Religious Programme and Services | <input type="checkbox"/> Vocational Programmes |
| <input type="checkbox"/> Academic Programmes | <input type="checkbox"/> Art Programmes |
| <input type="checkbox"/> Befriending Programme | <input type="checkbox"/> Skills Training for Employment |
| <input type="checkbox"/> Job Coaching & Placement | <input type="checkbox"/> Referral & Case Management |

Second Criminal Offence:

Security Classification: _____

Type of Criminal Offence(s): _____

Date of conviction: _____

Age of conviction: _____

Release Date: _____

Sentence Duration: _____ Years, _____ Months, _____ Days

Caning: Yes / No If Yes, Number of Strokes: _____

Fines: Yes / No If Yes, Amount: SGD _____

Other Punishments: Yes / No If Yes, State: _____

Type of Rehabilitation received/receiving (Tick Applicable):**Youth Rehabilitation Program:**

- | | |
|--|--|
| <input type="checkbox"/> Probation Order | <input type="checkbox"/> Other Court-Ordered Options |
| <input type="checkbox"/> Pre-Court Diversionary Programmes | <input type="checkbox"/> Triage System |
| <input type="checkbox"/> Rehabilitation Programmes | <input type="checkbox"/> Holistic Rehabilitation |
| <input type="checkbox"/> Personal Mastery | <input type="checkbox"/> Family Programmes |
| <input type="checkbox"/> Reintegration Programmes | |

Adult Rehabilitation Program:

- | | |
|---|---|
| <input type="checkbox"/> Psychology-based Correctional Programmes | <input type="checkbox"/> Family Programmes |
| <input type="checkbox"/> Religious Programme and Services | <input type="checkbox"/> Vocational Programmes |
| <input type="checkbox"/> Academic Programmes | <input type="checkbox"/> Art Programmes |
| <input type="checkbox"/> Befriending Programme | <input type="checkbox"/> Skills Training for Employment |
| <input type="checkbox"/> Job Coaching & Placement | <input type="checkbox"/> Referral & Case Management |

Personal Opinion

The following questions should be answered solely based on your opinion, having experienced the rehabilitative programme(s) stated above. Select the option that best suit your impression of the programme with 1 being not effective, 2 being somewhat effective, 3 being effective, and 4 being very effective.

Rehabilitation Program:	1	2	3	4
Overall effectiveness of Youth Rehab Programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Overall effectiveness of Adult Rehab Programme	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4/4

Note. The survey will include the basic demographical information of the respondent, the type of offence first committed, the programme assigned for rehabilitation purposes, the effectiveness of the rehabilitation programme assigned based on a 4-point scale. This survey will be handed out to re-offenders to measure the effectiveness of IBR programmes while undergoing their respective IBR programmes.