

HOME TEAM JOURNAL

by Practitioners, for Practitioners

Issue
no. **10**
May 2021

Service in the time of COVID-19

**How Home Team Departments
continue to keep Singapore safe
and secure during a pandemic**

YELLOW RIBBON

Keeping ex-offenders out of prison

INNOVATION IN THE SINGAPORE POLICE FORCE

DISRUPTING VIOLENT EXTREMISTS ONLINE

CHIEF PSYCHOLOGIST MAJEED KHADER

Titles mean nothing to my autistic son

THE LEADERSHIP INTERVIEW

"CE can stand for chief enabler.
I'm here to enable, to enable
my staff to succeed, to remove
obstacles. ... Because of COVID,
we've had to stand up a lot of
operations, capabilities, go into
new areas, to force-multiply
the Home Team."

CHAN TSAN

Chief Executive, Home Team Science
and Technology Agency

HOME TEAM JOURNAL

The *Home Team Journal* is a publication by the Home Team Academy in collaboration with the Ministry of Home Affairs of Singapore and its departments, which are collectively known as the Home Team. It is a journal by practitioners and researchers for practitioners and specialists in safety and security.

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YELLOW RIBBON SINGAPORE'S IMPACT ON INMATE RECIDIVISM RATES

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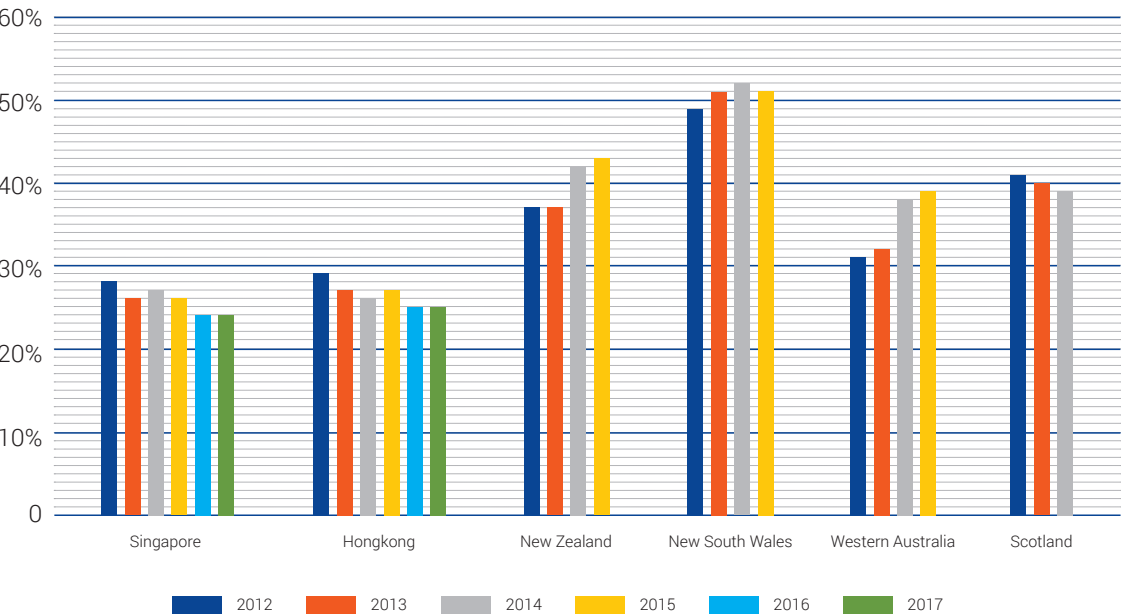
ABSTRACT

This study looks at the impact of Yellow Ribbon Singapore's (YRSG) employment assistance for inmates by quantifying YRSG's value add to society in terms of reducing the recidivism rate, inmates' employment outcomes as well as the potential cost savings and economic returns. A statistical and quantitative methodology was used to estimate the effects of YRSG on the various measures of success based on seven outcomes. The data covered offenders' employment performance within two years after release for the period of 2010 to 2016 in Singapore. The key findings showed that having gone through YRSG employment assistance, i) the recidivism rate was improved, ii) the period of desistance prolonged, iii) the next sentence length shortened, iv) the employment rate improved, v) the time taken to secure a job reduced, vi) the average monthly earnings increased, and vii) the job retention period extended. The findings suggest that YRSG's employment assistance has pronounced positive effects on the recidivism rate and reveal that inmates perform better in the employment market.

INTRODUCTION

Recidivism rate is defined as the percentage of inmates in every cohort released who re-offend

and subsequently return to prison within two years. Singapore's recidivism rate remains low and stable over the years, and consistently achieved better results compared to many international counterparts.



Note: CY2015, CY2016 and CY2017 recidivism rates are not available for all countries.

Figure 1. Recidivism Rates

Due to the severe consequences of crimes, it is essential to understand measures that can lower the crime rate and the rate of recidivism. However, related policy guidance is rare, especially for Asian countries. One important reason is the data limitation; we usually require a panel dataset for prisoners' criminal behaviours and demographic factors. In this report, we try to address this question by exploiting a unique dataset from the Singapore Prison Service (SPS) and YRSG, which contains a detailed record of the universe of ex-offenders in Singapore released between 2010 to 2016. We used rich controls and sub-segment analysis to alleviate the selection issues, although even with rich information on inmates, the endogeneity problem may still be of concern as inmates are not randomly sent to prison.

Singapore is well known as one of the safest places around the world. Many people attribute Singapore's low crime rates to its strong arm of the law and severe penalties. What is lesser known is the effort the Singapore government has put into helping inmates' successful reintegration into society after release. Employment is a crucial factor in the successful reintegration of offenders. YRSG's employment assistance aims to help inmates realise their career potential and strengthen their career mobility. Key components of YRSG's employment assistance include: i) job profiling, ii) skills training, iii) job placement ,and iv) job retention support. In this report, we evaluate the

effectiveness of YRSG's employment assistance in lowering the reoffending rate and enhancing the employment performance of inmates.

Data Sources and Descriptive Statistics

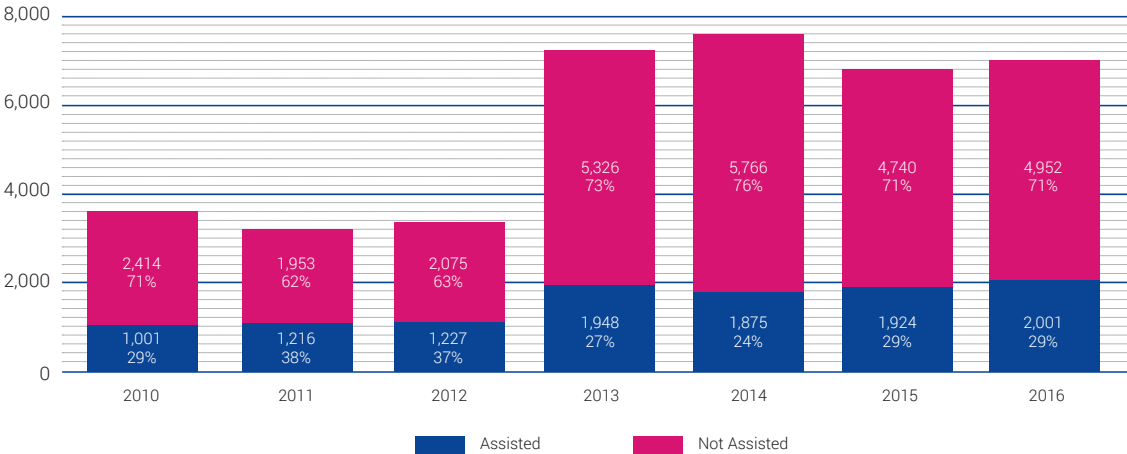
The dataset contains all inmates' employment performance within two years after release from 2010 to 2016, along with their demographic factors. It is a cross-sectional data, tracking ex-offenders' performance for two years after release. If individuals reoffend after two years, they will re-enter the dataset but assigned with a new ID.

Table 1 reports the descriptive statistics of inmates released from prison from 2010 to 2016 in Singapore. Around 90% of inmates are male, 80% lowly-educated with education levels equal to or below secondary school, and at the prime-working-age on average. Three points are noteworthy. First, the YRSG programme participation rate is around 42.1%. It is not a small number but there is still some room for improvement. Second, the average recidivism rate in Singapore is stable at 26.5%, much lower than in many other developed countries, such as 42.2% in New Zealand, 37.8% in Western Australia, 38.9% in Scotland, and so on, according to the data from SPS. Third, most ex-offenders assisted by YRSG (93.8%) successfully secured a job after release, which is vital for them to integrate into society.

Table 1. Data Profile

VARIABLES	(1) N	(2) Mean	(3) SD	(4) min	(5) max
Male=1, Female=0	38,418	0.894	0.308	0	1
Education	38,418	1.861	0.709	0	3
Age at Year of Release	38,418	39.220	11.900	15	86
YRSG programme participation (Y=1, N=0)	38,418	0.421	0.494	0	1
Recidivate (Y=1, N=0)	38,418	0.265	0.442	0	1
Employment (Y=1, N=0)	38,418	0.938	0.241	0	1

Notes: Education is defined as: No formal education=0, Primary=1, Secondary=2, Above secondary=3.
Employment is defined as the individual having at least one record of monthly salary. According to YRSG, zero denotes employment with zero payment.



Note: 11,424 inmates released from 2010-2012 were excluded from the research study as their risk profiles were not classified.

Figure 2. Overall Participation of YRSG's Employment Assistance

Key Trends of Offenders' Participation

In this section, we aim to study the profiles of inmates who tend to participate in YRSG's employment assistance. We first demonstrate how the number of released inmates and the rate of inmates' participation in YRSG employment assistance evolve with time. As shown in Figure 2, the blue bars denote the size and the share of assisted inmates in certain years, while the pink bars represent the statistics for inmates who were not assisted. In 2016, 29% of the released inmates were assisted by YRSG.

We then explored how the inmates assisted by YRSG vary by the demographic factors including risk levels, age, and education levels. If we can better understand their characteristics, specific actions could be designed to increase the participation rate.

First, in Figure 3, we find inmates assisted belong to the moderate risk group (32.2%), followed by the high risk group (25.5%) and the low risk group (25.4%). The SPS uses the Risk-Needs-and-Responsivity (RNR) Model, an internationally recognised model for treatment and assessment of offenders, to assess criminogenic risks and rehabilitation needs of each inmate, and charts appropriate programmes for intervention based on their identified risks and needs (Wee, 2019). Suitable and eligible inmates may be emplaced on SPS's Community-based Programme, where employment is compulsory. YRSG's employment assistance is open to all inmates, regardless of their risk levels.

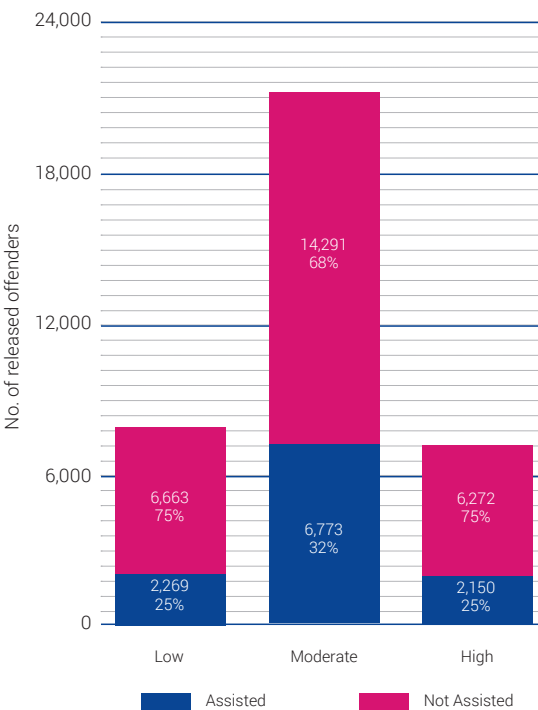


Figure 3. By Risk Level

Regarding the education level of inmates, we find, as shown in Figure 4, that around 60% of those assisted have primary or secondary school education. More inmates with secondary education (32%) have been assisted by YRSG. Finally, in Figure 5, we find that the numbers assisted in different age groups ranging from 20-59 years is about 30% each.

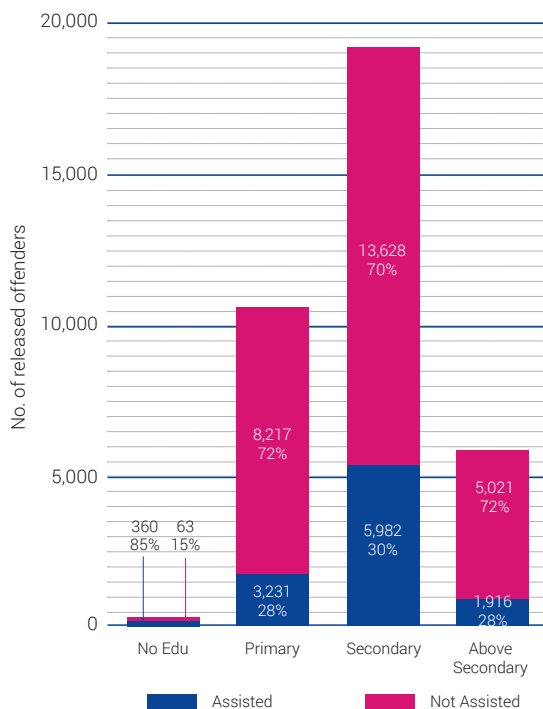


Figure 4. By Education Level

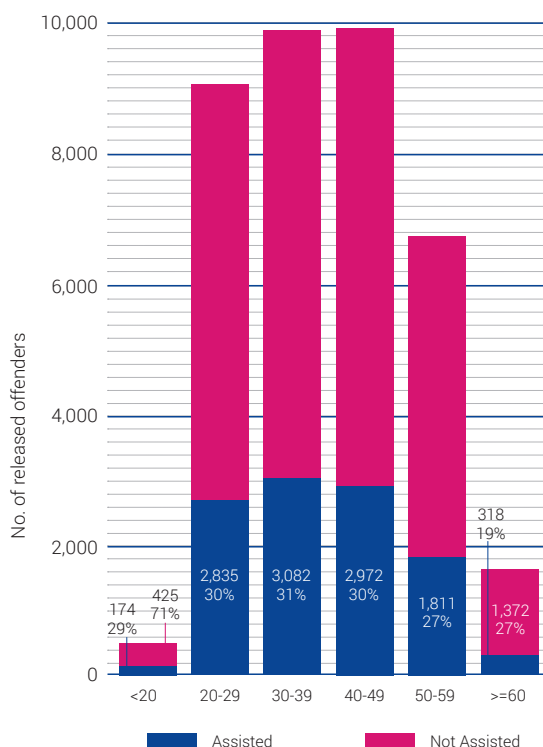


Figure 5. By Age

METHODOLOGY: REGRESSION ANALYSIS

To evaluate the impact of YRSG's employment assistance, we exploit a linear model. Formally, the specification can be written as:

$$Y_i = \beta YRSG_i + \Theta X_i + Y_d + \epsilon_{id}$$

Where Y_i are the recidivism outcomes and the employment outcomes of inmate i , including the recidivism rate, the period of desistance, the next sentence length, the employment rate, the time taken to secure job, the average monthly earnings, and the job retention period. $YRSG_i$ donates the variable of interest, equalling to 1 if inmate i participated in the programme, or otherwise zero. The term X_{id} is a vector of individual i 's pre-determined characteristics, including gender, risk level, education and age attainment. Since the employment assistance may change contents across years, we include the year fixed effects, denoted by Y_d . The coefficient of interest is β , which represents the effects of inmates participating in YRSG's employment assistance.

We first estimated the equation using the full sample, and then conducted sub-segment analysis based on the risk levels of inmates.

SUMMARY OF TOPLINE FINDINGS

Through the research study, seven topline findings are observed:

Recidivism Outcomes	
Finding 1	Recidivism rate decreased by 3.2% points
Finding 2	Period of desistance prolonged by 2.03 months
Finding 3	Next sentence length shortened by 10.42 months
Employment Outcomes	
Finding 4	Employment rate improved by 7.2% points
Finding 5	Time taken to secure job reduced by 0.64 months
Finding 6	Average monthly salary increased by \$135.24
Finding 7	Job retention period extended by 0.95 months

Each topline finding is further elaborated below. The impacts on inmates' risk and education levels were also analysed for each finding.¹

Finding 1: Recidivism Rate

YRSG's employment assistance has helped to reduce the probability of reoffending by 11.95% (effect size), which decreased the recidivism rate by 3.2%. The impact is largest for inmates of high risk and above secondary level education.

Categories	Recidivism Rate	Impact
Risk	8.3% points lower for High Risk	17.33%
Education	3.5% points lower for Above Secondary	18.65%

Finding 2: Period of Desistance

YRSG's employment assistance has helped to increase the probability of offenders remaining crime and drug free by 16.36% (effect size), which increased the period of desistance by 2.03 months. The impact is largest for inmates of high risk, and primary level education.

Category	Period of Desistance (months)	Impact
Risk	Increased by 2.3 months for High Risk	20.85%
Education	Increased by 2.32 months for Primary Education	19.36%

Finding 3: Next Sentence Length

YRSG's employment assistance has helped to decrease the length of next sentence by 25.55% (effect size), which reduced the next sentence length by 10.42 months. The impact is largest for inmates of low risk and secondary level education.

Category	Next Sentence Length (Months)	Impact
Risk	Reduced by 9.197 months for Low Risk	33.45%
Education	Reduced by 14.89 months for Secondary	37%

Finding 4: Employment Rate

YRSG's employment assistance has helped to increase the inmates' probability of being employed by 7.68% (effect size), which improved the employment rate by 7.2% points. The impact is largest for inmates of low risk and primary level education.

Categories	Employment Rate	Impact
Risk	Improved by 11.7% for Low Risk	12.62%
Education	Improved by 6.3% for Primary	6.83%

Finding 5: Time taken to Secure Job

YRSG's employment assistance has helped to decrease the time taken by inmates to secure jobs by 35.73% (effect size), which reduced the overall time taken to secure job by 0.64 months. The impact is largest for offenders of low risk. The impact is also similar across all education levels.

Category	Time taken to Secure Jobs (Months)	Impact
Risk	Reduced by 1.11 months for Low Risk	65.16%
Education	Reduced by 0.50 months for Primary	33.22%
	Reduced by 0.53 months for Secondary	37.01%
	Reduced by 0.51 months for Above Secondary	38.93%

Finding 6: Average Monthly Salary

YRSG's employment assistance has helped to increase the average monthly earnings of inmates by 13.91% (effect size), which increased the earnings by \$135.24. The impact is largest for offenders of high risk, primary level and secondary level education.

Category	Average Monthly Earnings	Impact
Risk	Increased by \$104.48 for High Risk	65.16%
Education	Increased by \$129.81 for Primary	20.15%
	Increased by \$136.87 for Secondary	15.24%

¹The regression tables for the various findings are available from YRSG. Please write to Wee Zi TAN at corpcomms@yellowribbon.gov.sg.

The finding also highlights the salary gap among risk levels (see table below for the mean monthly salary²). Among the risk levels, there is a huge salary gap between low risk and the higher risk levels (both high and moderate risk).

Risk	Low Risk	Moderate Risk	High Risk
	\$1,824.13	\$807.23	\$488.13

Finding 7: Job Retention Period

YRSG’s employment assistance has helped to increase inmates’ length of employment 4.55% (effect size), which extended the overall job retention period by 0.95 months. The impact is largest for offenders of moderate and low and primary level education.

Category	Job Retention Period (months)	Impact
Risk	Increased by 1.25 months for Moderate Risk	65.16%
	Increased by 1.10 months for Low Risk	5.68%
Education	Increased by 0.85 months for Primary	4.19%

IMPLICATIONS

The findings of this study can help to sharpen YRSG’s focus in providing employment interventions for offenders. Three proposed implications are considered:

- a. Expanding the numbers of high risk inmates assisted;
- b. Future proofing the employability of inmates; and
- c. Calculating the estimated social and economic returns

Expand Numbers of High Risk Inmates Assisted

The findings have shown that high risk inmates have benefited from YRSG’s employment

assistance. The specific impact on high risk inmates is as shown below:

Recidivism Outcomes for High Risk	
Finding 1	Recidivism rate decreased by 8.3% points
Finding 2	Period of desistance prolonged by 2.30 months
Finding 3	Next sentence length shortened by 11.76 months
Employment Outcomes for High Risk	
Finding 4	Employment rate improved by 4.5% points
Finding 5	Time taken to secure job reduced by 0.35 months
Finding 6	Average monthly earnings increased by \$104.48
Finding 7	Job retention period extended by 0.57 months

The findings have also revealed that YRSG has only assisted a smaller proportion (25%) of high risk inmates released from 2010 to 2016. The recidivism rate of inmates has remained stable at 26.5% in recent years. Targeting a large proportion of high risk inmates for employment assistance will help to reduce the overall recidivism rate in future. YRSG can consider prioritising its resources to expand the number of high risk inmates for employment, over the next few years. To better support this group, YRSG would need to work closely with SPS in developing a throughcare approach and institute a “wrap around” reintegration support to enable high risk inmates to remain gainfully employed.

Future Proofing the Employability of Inmates

The COVID-19 pandemic has triggered an acceleration in digital adoption, amidst restructuring at both economic and industry sector levels. Most Rank-and-File jobs are expected to disappear or be redesigned, with sustained digital innovation. Job seekers with lower academic qualifications will need greater assistance to upskill and remain relevant in the future economy.

²The salary data used in this study are derived from administrative sources such as contributions to the Central Provident Fund. Actual salaries may thus be higher.

The majority of the inmates possess academic qualifications of secondary education and below. They will face challenges to reintegrate into the workforce, if they are not assisted to remain abreast with the evolving skills and job nature. Given this, YRSG's current employment assistance needs to move beyond helping offenders secure jobs. To keep up with the shifts in the economy, YRSG's assistance should focus on strengthening the career mobility of inmates through:

- a. Developing inmates' career aspirations and identity, so that they can make informed career decisions. Along with this, opportunities to develop careers and continual skills acquisition should be made available for the inmates to adapt and thrive in an evolving job market;
- b. Strengthening the nexus with industry sectors to remain abreast with industry developments and identify "future jobs" in growth sectors, where inmates can be trained and placed; and
- c. Enabling inmates to acquire higher cognitive and digital skills progressively to remain competitive in the labour force.

Estimated Social and Economic Returns

We conclude this work by conducting a back-of-envelope calculation for Singapore. McCollister, French, and Fang (2010) have reported the potential social costs, both tangible and intangible, for each crime type. Specifically, the social costs for a case of assault, rape, murder, robbery, larceny and burglary are US\$66,888, US\$240,776, US\$9 million, US\$42,310, US\$3,532 and US\$6,462. Based on 2016 data, the average cost weighted by crime rates in Singapore is US\$0.22 million per case. Based on our estimates, YRSG employment assistance reduces the recidivism rate by 3.2% per year. According to SPS, the number of inmates released in 2016 was 7,168. The estimated social cost reduced by YRSG per year is thus $7,168 \times 3.2\% \times \text{US\$}0.22 \text{ million} = \text{US\$}50.5 \text{ million}$ (S\$69.19 million, at the exchange rate 1.37).

Apart from the social cost savings, we also calculate the incremental economic gains to the society arising from YRSG's effort to secure employment for released inmates. Using data collected during 2010 to 2016 by administrative sources, we derive the average monthly salary per inmate who works to be S\$885.17, and thus the estimated economic returns contributed by YRSG per year (based on 2016 released cohort) is $7,168 \times 3.2\% \times \text{S\$}885.17 \times 12 = \text{S\$}2.44 \text{ million}$.

Therefore, the total social and economic return is the sum of S\$69.19 million and S\$2.44 million, equalling to S\$71.63 million. In other words, YRSG adds an estimated incremental value of S\$71.63 million to the state per year. This only estimates the direct incremental value. While there is high societal cost savings that cannot be quantified, YRSG is contributing to society beyond its budget allocation.

CONCLUSION

The number of ex-offenders who re-offended within two years of their release has remained low and stable. The overall recidivism rate for the 2016 cohort was then the lowest record in history at 23.7%. This has now been overtaken by the new all-time low of 22.1 per cent for the cohort released in 2018 (SPS, 2021). This achievement is inseparable from the efforts made by SPS and YRSG.

Based on our analysis, we find that YRSG participation has significant impact on released inmates' recidivism and employment outcomes. Overall, we find that the YRSG plays an important role in reducing the recidivism rate in Singapore and helping offenders perform better in the employment market. We acknowledge that these benefits may be partly due to the recovery state from the 2008 financial crisis which resulted in a better employment situation faced by the offenders, but we argue that without YRSG, these positive effects would not have remained strong after the early 2010s.

³The crime rates for assault, rape, murder, robbery, larceny and burglary were 46.8%, 16.0%, 1.60%, 0%, 15.4%, and 20.2%, respectively in Singapore in 2016, according to the Singapore Police Force.

⁴Our BOE calculation is based on 2010 US price data and may be subject to inflation, making our costs underestimated.

ABOUT THE AUTHOR



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Sumit's research is widely cited in leading newspapers and magazines like the *Wall Street Journal*, *New York Times*, *The Economist*, and the U.S President's Report to Congress. He also runs a blog on household financial decision making called *Smart Finance*.

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