

LEGALIZING SEX INDUSTRIES OR NOT? A COMPARISON OF THE
GROWTH RATE OF SEXUAL CRIMES AND STDS AMONG CHINA
MAINLAND, HONG KONG AND TAIWAN

by
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Abstract

Existing research rarely establishes the relationship between the legitimacy of sex industry and the growth rate of sexual crimes and STDs. I conducted a research on the subject of China mainland, Hong Kong and Taiwan, because the laws towards sex industry in these three places are different: illegal in China mainland, partly legal in Hong Kong (prostitution is legal, but organizing prostitution is illegal) and legal in Taiwan after 2011; while other variables, such as culture and demographic structure, are similar. First, I compared the growth rate of sexual crimes and STDs in Taiwan before and after 2011. Then, I compared the difference in rate between Taiwan and China mainland before and after 2011. At last, I compared the difference in rate between Taiwan and Hong Kong before and after 2011. Partially legalizing sex industries is not significantly different from illegalizing sex industries in the average growth rate of sexual crimes but is significantly lower than illegalizing sex industries in the growth rate of STDs incidence. On the other hand, generally legalizing sex industries is significantly lower than illegalizing sex industries in the growth rate of sexual crimes but is not significantly from illegalizing sex industries in the growth rate of STDs incidence. In conclusion, legalizing sex industries is significantly lower than illegalizing sex industries in the growth rate of both sexual crimes and STDs incidence. Further research is needed to figure out how to design policies about sex industries to reach the lowest possible growth rate of sexual crimes and STDs incidence.

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Introduction

Nowadays, different countries have different policies and laws for sex industries. For example, prostitution and pornography are basically prohibited in China. However, sex industries never vanish in China. It instead goes underground. Chinese government never stops to perish sex industries.¹ Indeed, hundreds of brothels and clubs have been shut down and thousands of pornography websites have been cleared, but the massive sexual desire is still there. So, it is not surprised to find illegal hustlers and prostitutes in private parties and illegal pornography websites close and open. Large funding and force have been put on preventing illegal sex industries, but there's no trait shows that these operations make any progress. So, I wondered that is it better to keep sex industries illegal or to make them legal?

Briefly speaking, legalizing sex industries in a country means brothels and pornography are officially censored by the government. However, for the consequences of the official censorship, people divide into two opposite parties. For the pros, legalizing sex industries means prostitutes have to pass periodic health examination to obtain the permission to work, brothels have to reach certain sanitary standard to obtain the permission to do business, and censored pornographies are easily accessed. Therefore, the chance of brothel customers infecting STDs through prostitution and the possibility of criminals conducting sexual crimes due to sexual desire both decreases. For the cons, legalizing sex industries means people are more likely to have sex with prostitutes than do before and have to pay more for sex than before due to the expense of official censorship. Therefore, the chance of people

¹ For example, the anti-vice operation for Tian Shang Ren Jian in 2010, Hai Tian Sheng Yan in 2013, Dong Guan in 2014 and Bai Ma Hui Suo three months ago.

infecting STDs through prostitution and the possibility of criminals conducting sexual crimes due to poverty both increases.

There has never come to a conclusion for whether sex industries should be legalized or not. I believe sex industries should be legalized, because sexual desire is one of our basic needs like we need food and water. We should have a way to “buy sex”, like we can buy food in restaurants and buy bottled water in groceries. However, my claim helps little in legalizing sex industries in the real world. Solid reasons are required. But the good news is, this article shows legalizing sex industries is significantly lower than illegalizing sex industries in the growth rate of both STDs incidence and sexual crimes in a place. In order to examine these hypotheses, I conduct a comparison among China mainland, Taiwan and Hong Kong for their annual rate of AIDs incidence and reported rape cases.

I choose these three places as my research objects for three reasons. First, they have similar population structure and social structure, so the difference in data caused by different culture background and ethnicity can be diminished. Second, they have different laws and policies towards sex industries, so I can conduct a cross-sectional measure upon them. Third, Taiwan legalized sex industries after 2011, so I can conduct a time-series measure of Taiwan before and after 2011.

Literature Review

It is generally taken for granted that sex industries are closely connected to sexual crimes and STDs incidence. However, there has never been a conclusion for whether or not should legalize sex industries, because few scholars have systematically revealed the difference in the growth rate of sexual crimes and STDs incidence between legalizing and not legalizing sex industries. But, clues and traits for the relationship between legitimacy of sex industries and the growth rates of

sexual crimes and STDs incidence can be found from the scholarly literatures I selected.

Sexual crimes including forcing to have sex and being raped unconsciously often happen on sex workers. First, in China mainland, where sex industries are illegal, Zhang's work shows that about half (50.3%) of sex workers, who take his survey, report having sex while feeling drunk at least once in the past week, of whom 56.4% report this act was unprotected.² Most of the respondents in his research do venue-based business. Which means, they at least have certain protection from the people who manage the venue. Even in this safe working environment sex workers have such a high risk of being sexual assaulted, it is not hard to image the danger faced by sex workers who hold their business by themselves. In 2010, China mainland's government held a national crackdown operation towards sex industries, and a large number of sex-work venues were closed. The sex workers were fined and detained and the police patrols of red-light districts were expanded. Under this social environment, sex workers who had to hold their own business have to face violence and threats both from police and clients. Besides, during this crackdown operation, while there was increased police action and more severe punishments for sex industries overall, police are not enough to cover the whole duty. Therefore, a lot of volunteers were recruited, and some of these volunteers were responsible for several sexual crimes toward sex workers.³ Next, in Hong Kong, where sex industries are partially legal, sex workers also face the risk of involving sexual crimes. According to Li's work, sexual crimes towards sex workers are usually purposeful. Because sex

² Zhang, Xu-Dong, Marleen Temmerman, Yan Li, Wei Luo, and Stanley Luchters. "Vulnerabilities, Health Needs and Predictors of High-Risk Sexual Behaviour among Female Adolescent Sex Workers in Kunming, China." *Sex Transm Infect* 89, no. 3 (2013): 237-244.

³ Huang, Yingying and Suiming Pan. "Government Crackdown of Sex Work in China: Responses from Female Sex Workers and Implications for their Health." *Global Public Health* 9, no. 9 (2014): 1067-1079.

workers usually carry cash and dress sexy, they are easily targeted by criminals with economic purpose, sexual purpose or both. Fortunately, sex workers are accessible to legal protection in Hong Kong. Therefore, practical improvement of social context, police practice and community dynamics could significantly reduce the crimes towards sex workers. Li lists some suggestions in her article. First, in the neighborhood where sex workers concentrate educating the neighbors on why sex workers should be respect. Therefore, neighbors will naturally pay attention to them. Second, it is worth considering enhancing the security around places where sex workers hold their business. Finally, sex workers are entitled to receive help on learning how to defend themselves.⁴ Compared to sex workers holding business at home, street workers face much larger opportunity on involving in sexual crimes. Although prostitution is not illegal in Hong Kong, activities connected with are usually not. These include, for example, soliciting, advertising, and using premises for commercial sex. In order to avoid being arrested due to these illegal activities, street workers usually choose to not call the police when they are robbed or raped. Therefore, even though street workers are legally protected by the police, the police are hard to perform their duty.⁵ At last, in Taiwan, where sex industries are generally legal before 1997 and after 2011, sex crimes towards sex workers were well controlled during this period while burst during the years from 1997 to 2011. For example, there was a history in Taiwan that many children were trafficked and sent to brothels to become sex workers. In 1987, Taiwan government began to crack down on

⁴ Li, Jessica CM. "Violence Against Chinese Female Sex Workers in Hong Kong: From Understanding to Prevention." *International Journal of Offender Therapy and Comparative Criminology* 57, no. 5 (2013): 613-631.

⁵ Wong, William CW, Eleanor A. Holroyd, Ann Gray, and Davina C. Ling. "Female Street Sex Workers in Hong Kong: Moving Beyond Sexual Health." *Journal of Women's Health* 15, no. 4 (2006): 390-399.

child trafficking. The National Police Administration set up a project called “Correcting Vice” and subsequently rescued 842 girls from trafficking. The number of trafficked girls has continued to drop (182 in 1988, 20 in 1996, and 7 in 2000) according to National Police Administration statistics. It seems like child prostitution will vanish soon. However, the total number of juveniles found in prostitution has not decreased. Between July 1999 and December 2000, 713 girls were arrested for prostitution. According to the survey conducted by Hwang, the reason for this strange phenomenon is that most of the girls run away from home and become prostitutes voluntarily rather than be trafficked.⁶ Before 1997, almost the only possible way to hold child prostitution business was to traffic children and send to illegal brothels. However, after 1997, all brothels became illegal. So, any business in any brothel is illegal, add child prostitution won’t make things worse. Therefore, illegalizing sex industries revives the market of child prostitution. Kuo’s research shows that besides “Correcting Vice” the Child and Teenage Sex Trade Prevention Act of 1995 also fails to decrease the number of child prostitution. Besides, there is a large number of foreign women from Vietnam, Cambodia, Thailand, Japan, Korea and East European countries trafficked and sent to brothels in Taiwan during 1997 to 2011. Data from the Ministry of the Interior indicate that, from 2001 to 2005, illegal entrants to Taiwan were 8164, with 5097 females, 2224 of whom entered the sex industry. Moreover, another study from the Ministry of the Interior stated that the accumulated number of illegal foreign laborers was about 80,000, of whom at least 10,000 to 20,000 entered prostitution.⁷

⁶ Hwang, Shu-Ling and Olwen Bedford. “Precursors and Pathways to Adolescent Prostitution in Taiwan.” *Journal of Sex Research* 40, no. 2 (2003): 201-210.

⁷ Kuo, Min-Hsun Christine, Siriporn Yamnill, and Gary N. McLean. “The Dilemma of Prostitution in Taiwan and Thailand from an NHRD Perspective.” *Human Resource Development International* 11, no. 5 (2008): 493-505.

It is easy to connect sex industries with sexual transmitted diseases. In China mainland, where sex industries are illegal, sex workers often have a hard time accessing to public service. In Zhang's research, it has been established that adolescent female sex workers who are not accessible to free condom were 2.5 times more likely to have at least one STI than those who are accessible to. Moreover, less educated sex workers are more likely to conduct unprotected sex with any partner and less likely to receive HIV tests when compared to more educated sex workers.⁸ In addition to education, economic reasons also strongly affect sex workers decision on whether or not using condoms. The first reason is earning extra money. If sex workers are hard to access free condoms, cutting the expense on condoms can save them considerable money. The next reason is customers encountering problems with erection. Old customers are more likely to have hard time erecting wearing condoms. If sex workers don't want to lose old customers, they have to compromise. The last reason is having sex with regular clients. The main incomes of sex workers are from regular customers. In order to build a long-term relationship with regular customers, sex workers often choose to conduct unprotected sex with them.⁹ Unfortunately, sex workers in China mainland are generally suffered from low education and poverty. Which means, they indeed have higher risks in infecting STDs than normal people. Besides, the policies that are designed to help sex workers prevent STDs often have ridiculous outcomes when execute. For example, a key indicator collected and reported to monitor implementation of the national AIDS plan is the "percentage of female sex workers who used a condom in the latest commercial sex." However,

⁸ Zhang, Xu-Dong, Marleen Temmerman, Yan Li, Wei Luo, and Stanley Luchters. "Vulnerabilities, Health Needs and Predictors of High-Risk Sexual Behaviour among Female Adolescent Sex Workers in Kunming, China." *Sex Transm Infect* 89, no. 3 (2013): 237-244.

⁹ Hao, Chun, Hongjie Liu, Susan G. Sherman, Baofa Jiang, Xiaojing Li, Yongfang Xu, Zhenxia Jiang, and Chungpeng Zang. "Typology of Older Female Sex Workers and Sexual Risk for HIV Infection in China: A Qualitative Study." *Culture, Health & Sexuality* 16, no. 1 (2014): 47-60.

condom possession is often used as evidence of prostitution for arrest by police, even without legal basis. Another indicator is "the percentage of the high-risk population tested for HIV and aware of their status within the last 12 months." However, because sex workers fear arrest if they provide their identity (a requirement), they avoid free testing and treatment offered by the government. Sex workers are neither easy to receive help from the government, nor from NGOs.¹⁰ China mainland's government has very strict policies towards NGOs. Organizations that advocate for rights protections or justice for victims are often shut down or threatened. Most participants in NGOs that promote human rights and provide free STDs testing for sex workers are arrested.¹¹ Chow's research provides a strong evidence to the ridiculous effects of China mainland's HIV prevention policies towards sex workers. At last sex, condom use with all commercial partners, regular partners and unspecified partners has increased.¹² However, the proportion of sex workers who infect HIV also drastically increases from 3.2% in 2000 to 48.0% in 2011.¹³ This phenomenon indicates that only using condom is not enough, an effective way of preventing HIV is needed for sex workers. There will be severe consequences if sex workers' present situation in preventing STDs cannot be improved. According to Huang's research, among the clients of female sex workers who attended his survey, 85% were married. Which means, if sex workers transmitted STDs to them, they will become a potential bridge population for STDs transmission to their families and the general population.¹⁴ In

¹⁰ No Government Organizations

¹¹ Kaufman, Joan. "HIV, Sex Work, and Civil Society in China." *Journal of Infectious Diseases* 204, no. suppl_5 (2011): S1222.

¹² From 53.7% in 2000 to 84.9% in 2011 with commercial partners, from 15.2% to 40.4% with regular partners and from 38.6% to 82.5% with unspecified partners.

¹³ Chow, Eric PF, Kathryn E. Muessig, Lei Yuan, Yanjie Wang, Xiaohu Zhang, Rui Zhao, Peng Sun, Xiaoshu Sun, Joseph D. Tucker, and Jun Jing. "Risk Behaviours among Female Sex Workers in China: A Systematic Review and Data Synthesis." *PLoS One* 10, no. 3 (2015): e0120595.

¹⁴ Huang, Z. J., W. Wang, M. C. Martin, E. J. Nehl, B. D. Smith, and F. Y. Wong. "'Bridge Population': Sex Workers Or their Clients?—STI Prevalence and Risk Behaviors of Clients of Female Sex Workers in China." *AIDS Care* 23, no. sup1 (2011): 45-53.

Hong Kong, where sex industries are partially legal, researches about STDs incidence among sex workers have well conducted and STDs prevention are totally available to them. In Lau's research on sex workers, 76.5% respondents had not received HIV antibody testing, 70.9% reported not receiving regular STDs checkups while 70.2% had not received any STD/HIV prevention services in the last 6 months. Although from his report, we cannot conclude that sex workers' STDs preventing situation in Hong Kong is better than in China mainland, we at least can tell sex workers are legally accessible to public health services.¹⁵ Besides, there exist specialist outreach clinics for female sex workers in Hong Kong. In Wong's research, for example, his data are collected through such a specialist outreach clinic named "Well-women". Specialist outreach clinics can provide firsthand data about sex workers and offer STDs related services. Data from these clinics can be used to do further research on how to improve sex workers health condition while services are intendedly suitable for sex workers' time schedule.¹⁶ When compared to NGOs' harsh situation in China mainland, specialist outreach clinics in Hong Kong function effectively and thus provide sex workers a strong protection against STDs.

Existing scholars have provided plenty of data and explanations on sexual crimes and STDs towards sex workers. Each of these articles discusses the situation under certain legal status of sex industries. However, none of them examines the different situations of sexual crimes and STDs under different legal statuses of sex industries. Perhaps the questions raised in these articles might be solved by just legalizing, illegalizing or partially legalizing sex industries. Therefore, my research is

¹⁵ Lau, Joseph TF, H. Y. Tsui, Shara PY Ho, Eric Wong, and X. Yang. "Prevalence of Psychological Problems and Relationships with Condom use and HIV Prevention Behaviors among Chinese Female Sex Workers in Hong Kong." *AIDS Care* 22, no. 6 (2010): 659-668.

¹⁶ Wong, William CW, Yuet Lin Yim, and Henry Lynn. "Sexually Transmitted Infections among Female Sex Workers in Hong Kong: The Role of Migration Status." *Journal of Travel Medicine* 18, no. 1 (2010): 1-7.

going to focus on the difference in growth rate of sexual crimes and STDs incidence under different legal status of sex industries.

Data and Methods

As I seek to analyze the relationship between the legitimacy of sex industries and the growth rate of sexual crimes and STDs incidence, I'm using a time-series cross-sectional data set which comprises information of official records of reported rape cases and AIDS incidence in China mainland, Hong Kong and Taiwan from 1999 to 2016. I couldn't find a data set that contains all the information I need, so I collected and compiled my data set from multiple sources. I found China mainland's record of reported rape cases and AIDS incidence from *China Statistical Yearbook*, Hong Kong's record of reported rape cases from *Hong Kong Annual Digest of Statistics*, Hong Kong's record of AIDS incidence from *Annual HIV/AIDS Statistics by Hong Kong Department of Health*, Taiwan's record of reported rape cases from *National Police Agency Ministry of the Interior Republic of China (Taiwan)* and Taiwan's record of AIDS incidence from *Taiwan Centers for Disease Control*.

I have six independent variables in my analysis of the relationship between legitimacy of sex industries and the growth rate of sexual crimes and STDs incidence. For the part of sexual crimes, I offer the growth rate of reported rape cases from China mainland, Hong Kong and Taiwan in 10,000 persons per year. For the part of STDs, I offer the growth rate of AIDS incidence from China mainland, Hong Kong and Taiwan in 100,000 persons per year.

Year	China Mainland	Hong Kong	Taiwan
1999	0.314	0.138	0.775
2000	0.283	0.156	0.792
2001	0.318	0.141	0.967
2002	0.297	0.140	1.034
2003	0.310	0.103	1.096

2004	0.278	0.134	0.935
2005	0.258	0.145	0.989
2006	0.246	0.140	0.994
2007	0.241	0.154	1.089
2008	0.228	0.150	1.011
2009	0.249	0.194	0.901
2010	0.251	0.158	0.848
2011	0.247	0.129	0.776
2012	0.250	0.169	0.651
2013	0.251	0.146	0.437
2014	0.244	0.077	0.406
2015	0.218	0.096	0.317
2016	0.201	0.097	0.234

Table 1 – Reported Rape Cases in 10,000 Persons

Year	China Mainland	Hong Kong	Taiwan
1999 ~ 2000	-0.0309	0.0183	0.0165
2000 ~ 2001	0.0355	-0.0148	0.1749
2001 ~ 2002	-0.0207	-0.0013	0.0672
2002 ~ 2003	0.0128	-0.0371	0.0624
2003 ~ 2004	-0.0319	0.0308	-0.1608
2004 ~ 2005	-0.0205	0.0116	0.0535
2005 ~ 2006	-0.0117	-0.0053	0.0057
2006 ~ 2007	-0.0048	0.0145	0.0947
2007 ~ 2008	-0.0135	-0.0040	-0.0778
2008 ~ 2009	0.0217	0.0437	-0.1108
2009 ~ 2010	0.0019	-0.0357	-0.0527
2010 ~ 2011	-0.0039	-0.0298	-0.0716
2011 ~ 2012	0.0025	0.0405	-0.1251
2012 ~ 2013	0.0007	-0.0230	-0.2146
2013 ~ 2014	-0.0063	-0.0688	-0.0308
2014 ~ 2015	-0.0264	0.0185	-0.0885
2015 ~ 2016	-0.0170	0.0008	-0.0833
Average	-0.0066	-0.0024	—
Average Before 2011	—	—	0.0001
Average After 2011	-0.0093	-0.0064	-0.1085

Table 2 - Growth Rate of Reported Rape Cases in 10,000 Persons

Year	China Mainland	Hong Kong	Taiwan
1999	NA	0.923	0.834
2000	0.010	1.005	0.824
2001	0.030	0.892	0.760
2002	0.050	0.781	0.817

2003	0.080	0.823	1.054
2004	0.227	0.712	1.198
2005	0.430	0.939	2.597
2006	0.510	1.065	3.463
2007	0.740	1.141	4.686
2008	0.761	1.376	3.899
2009	1.000	1.085	4.384
2010	1.197	1.118	4.779
2011	1.530	1.160	4.744
2012	2.930	1.203	5.541
2013	3.120	1.170	6.131
2014	3.330	1.494	5.924
2015	3.690	1.509	6.144
2016	3.930	1.172	5.998

Table 3 - AIDS Incidence in 100,000 Persons

Year	China Mainland	Hong Kong	Taiwan
1999 ~ 2000	NA	0.0819	-0.0095
2000 ~ 2001	0.0200	-0.1130	-0.0646
2001 ~ 2002	0.0200	-0.1113	0.0578
2002 ~ 2003	0.0300	0.0422	0.2361
2003 ~ 2004	0.1465	-0.1112	0.1440
2004 ~ 2005	0.2034	0.2274	1.3995
2005 ~ 2006	0.0803	0.1252	0.8661
2006 ~ 2007	0.2298	0.0761	1.2231
2007 ~ 2008	0.0213	0.2352	-0.7871
2008 ~ 2009	0.2388	-0.2907	0.4846
2009 ~ 2010	0.1973	0.0326	0.3950
2010 ~ 2011	0.3326	0.0418	-0.0343
2011 ~ 2012	1.4000	0.0432	0.7963
2012 ~ 2013	0.1900	-0.0327	0.5904
2013 ~ 2014	0.2100	0.3238	-0.2072
2014 ~ 2015	0.3600	0.0148	0.2203
2015 ~ 2016	0.2400	-0.3364	-0.1459
Average	0.2450	0.0146	—
Average Before 2011	—	—	0.3259
Average After 2011	0.4800	0.0025	0.2508

Table 4 - Growth Rate of AIDS Incidence in 100,000 Persons

This analysis applies unpaired two sample t test to examine the significance of difference in mean for the following variables:

1. Growth rate of reported rape cases from 1999 to 2016 in China mainland vs. in Hong Kong.
2. Growth rate of reported rape cases in Taiwan before 2011 vs. after 2011.
3. Average Growth rate of reported rape cases after 2011 in Taiwan vs. in China mainland.
4. Growth rate of reported rape cases after 2011 in Taiwan vs. in Hong Kong.
5. Growth rate of AIDS incidence from 1999 to 2016 in China mainland vs. in Hong Kong.
6. Growth rate of AIDS incidence in Taiwan before 2011 vs. after 2011.
7. Growth rate of AIDS incidence after 2011 in Taiwan vs. in China mainland.
8. Growth rate of AIDS incidence after 2011 in Taiwan vs. in Hong Kong.

	1	2	3	4	5	6	7	8
<i>t</i>	-0.494	2.625	-3.200	-2.851	2.511	0.285	-0.752	1.109
<i>p</i>	0.626	0.024	0.030	0.026	0.020	0.781	0.474	0.309
<i>Significant?</i>	NO	YES	YES	YES	YES	NO	NO	NO

Table 5 - Results of Unpaired Two Sample T Test

Results

China mainland, Hong Kong and Taiwan have different laws and policies towards sex industries. In China mainland, both of prostitution and pornography are illegal; in Hong Kong, prostitution is legal, but organizing prostitution is illegal and pornography is legally available for adults; in Taiwan, both of prostitution and pornography were illegal before 2011, but generally legal after 2011. So, I choose China mainland to represent the countries where sex industries are illegal, Hong Kong to represent those where are partially legal and Taiwan to represent those where are generally legal. Therefore, in order to figure out the relationship between the

legitimacy of sex industries and the growth rate of sexual crimes and STDs, I conduct a research on the officially reported rape cases and AIDS incidence from China mainland, Hong Kong and Taiwan.

For the average growth rate of reported rape cases, there is no statistically significant difference between China mainland and Hong Kong, but it is statistically significantly lower in Taiwan than in rest two places after 2011. Besides, in Taiwan, the average growth rate of reported rape cases statistically significantly decreases after legalizing sex industries. For the average growth rate of AIDS incidence, Taiwan's average growth rate after 2011 falls between China mainland's and Hong Kong's, and there is no statistically significant difference between China mainland's and Taiwan's and so is the difference between Hong Kong's and Taiwan's. However, the average growth rate in Hong Kong is statistically significantly lower than in China mainland. Besides, in Taiwan, there is no statistically significant difference in the average growth rate of AIDS incidence before and after legalizing sex industries.

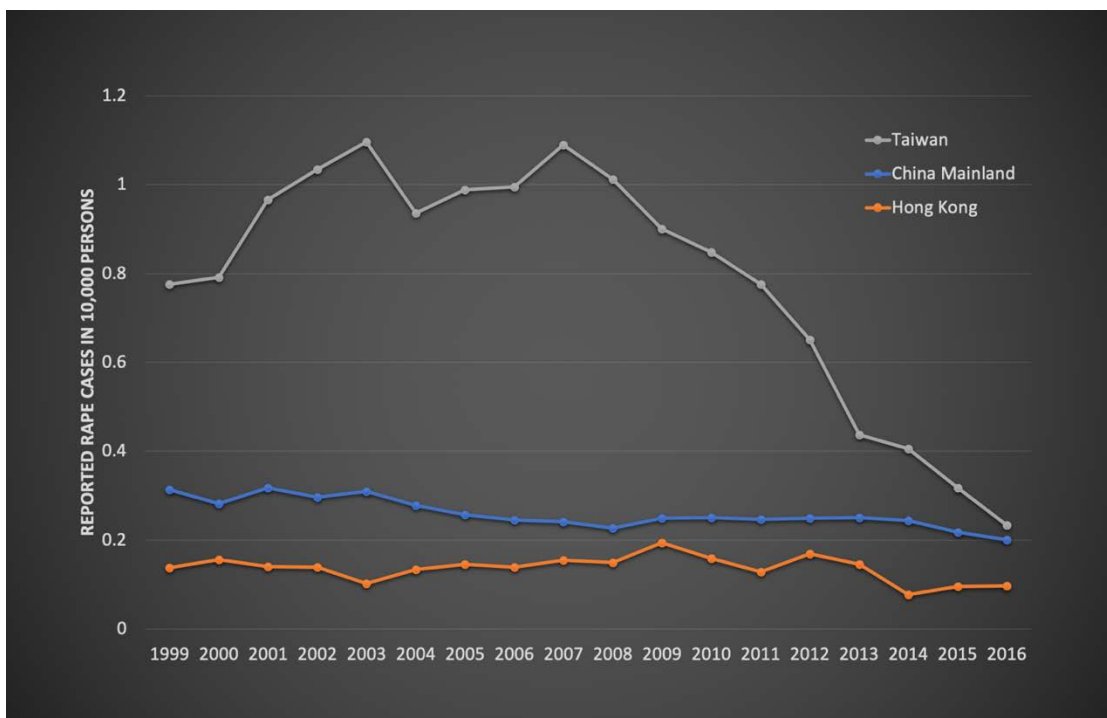


Figure 1 - Reported Rape Cases in China Mainland, Hong Kong & Taiwan from 1999 to 2016

This figure shows the pattern of officially reported rape cases in China mainland, Hong Kong and Taiwan from 1999 to 2016. The grey line represents the records in Taiwan, blue line represents China mainland and orange line represents Hong Kong. Each dot on a line indicates the number of recorded rape cases in 10,000 persons for the corresponding year. From this figure, although it's hard to tell the difference in the average growth rate of reported rape cases between China mainland and Hong Kong, it is easy to see that there is a drastic drop of the number of reported rape cases in Taiwan after 2007, and the growth rate of reported rape cases stays in negative after 2011. This phenomenon demonstrates two things: first, the average growth rate of reported rape cases in Taiwan is lower than in China mainland and in Hong Kong after 2011; second, the growth rate of reported rape cases in Taiwan after 2011 is lower than before 2011.

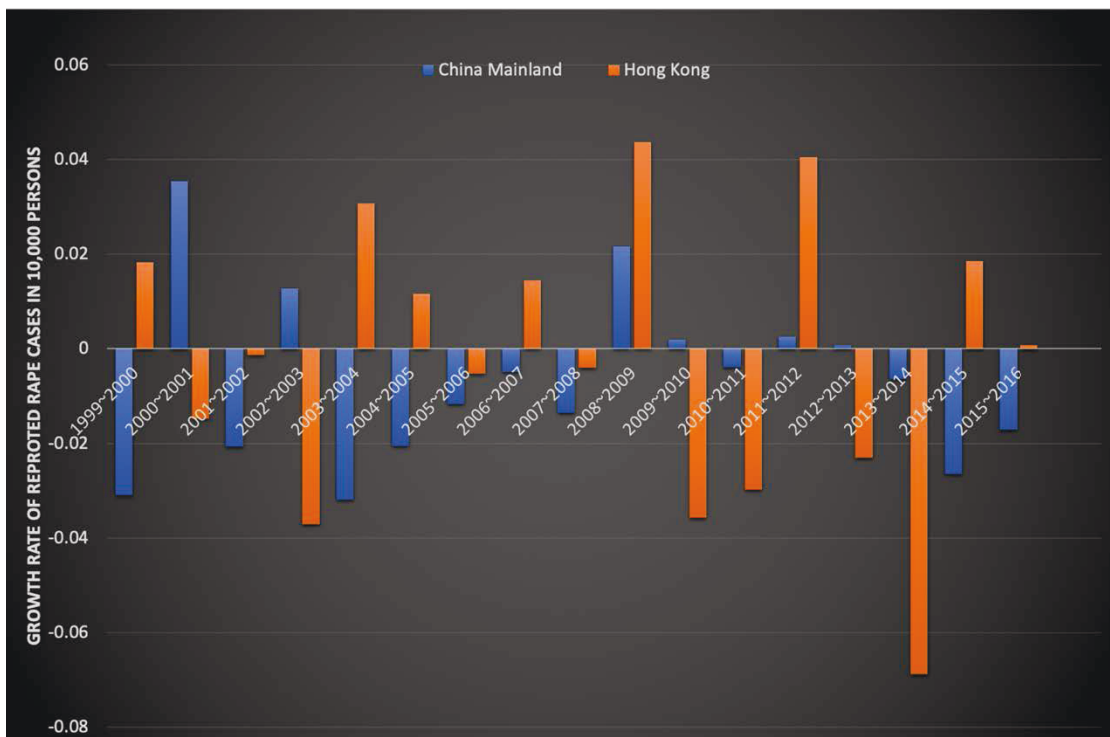


Figure 2 - Growth Rate of Reported Rape Cases by Year in China Mainland & Hong Kong from 1999 to 2016

This figure shows the growth rates of reported rape cases between adjacent years from 1999 to 2016 in China mainland and Hong Kong. The blue columns represent the growth rates of reported rape cases in China mainland for the corresponding interval of two adjacent years while the orange columns represent Hong Kong. From this figure it is hard to tell whose average growth rate is higher and whose is lower. This phenomenon is consistent with my result that there is no statistically significant difference in the average growth rate of reported rape cases between China mainland and Hong Kong.

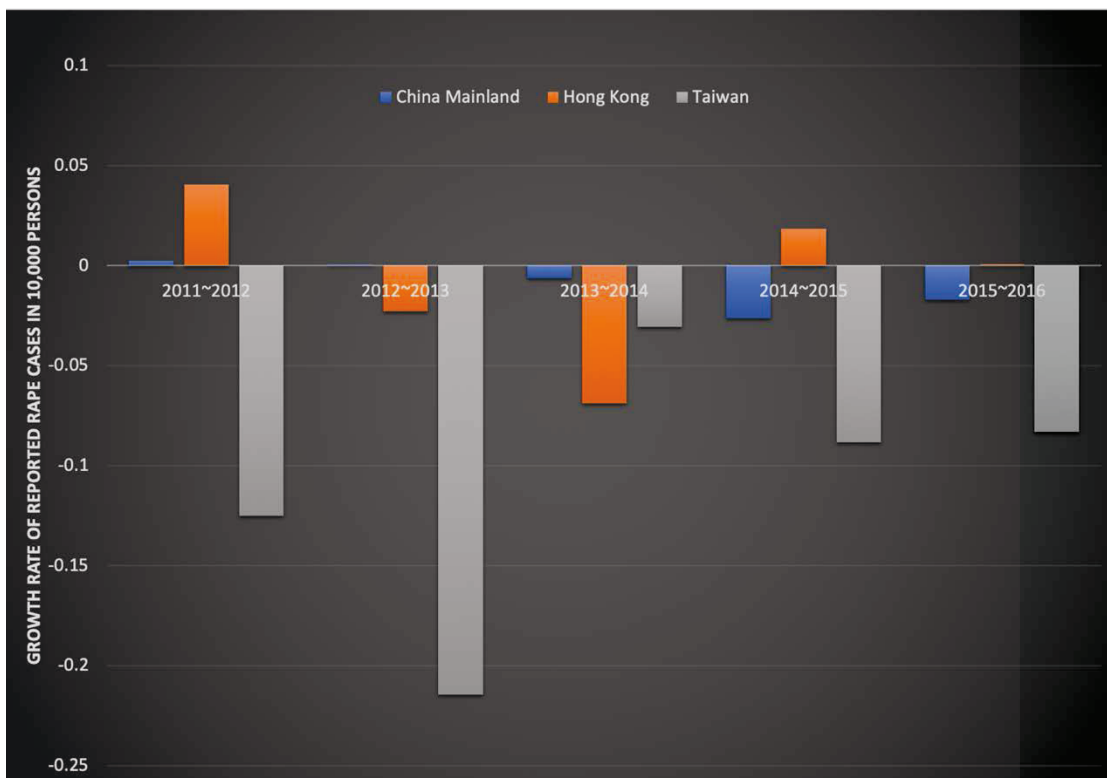


Figure 3 - Growth Rate of Reported Rape Cases by Year in China Mainland, Hong Kong & Taiwan from 2011 to 2016

This figure shows the growth rates of reported rape cases between adjacent years from 2011 to 2016 in China mainland, Hong Kong and Taiwan. The blue columns represent the growth rates of reported rape cases in China mainland for the corresponding interval of two adjacent years, the orange columns represent Hong Kong while the grey columns represent Taiwan. From this figure it is easy to observe

that all the growth rates of Taiwan are negative and larger than those of China mainland and Hong Kong in absolute value on average. This phenomenon demonstrates my result that the average growth rate of reported rape cases in Taiwan is statistically significantly lower than in China mainland and in Hong Kong after 2011.

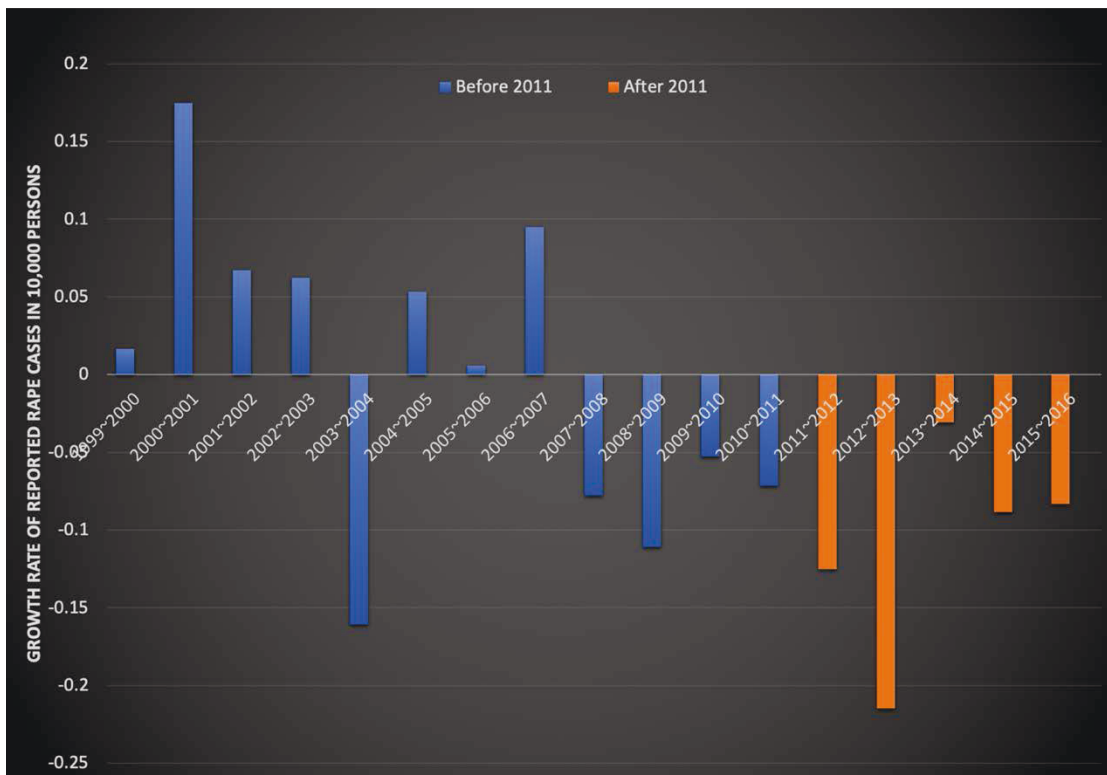


Figure 4 - Growth Rate of Reported Rape Cases by Year in Taiwan before & after 2011

This figure shows the growth rates of reported rape cases between adjacent years from 1999 to 2016 in Taiwan. The blue columns represent the growth rates of reported rape cases before 2011 for the corresponding interval of two adjacent years while the orange columns represent growth rates after 2011. From this figure it is easy to observe that growth rates before 2011 float between positive and negative numbers and it's hard to tell if the average absolute value of positive growth rates is larger than the average absolute value of negative growth rates while growth rates after 2011 are sheerly negative. This phenomenon demonstrates my result that the average growth

rate of reported rape cases after 2011 is statistically significantly lower than before 2011 in Taiwan.

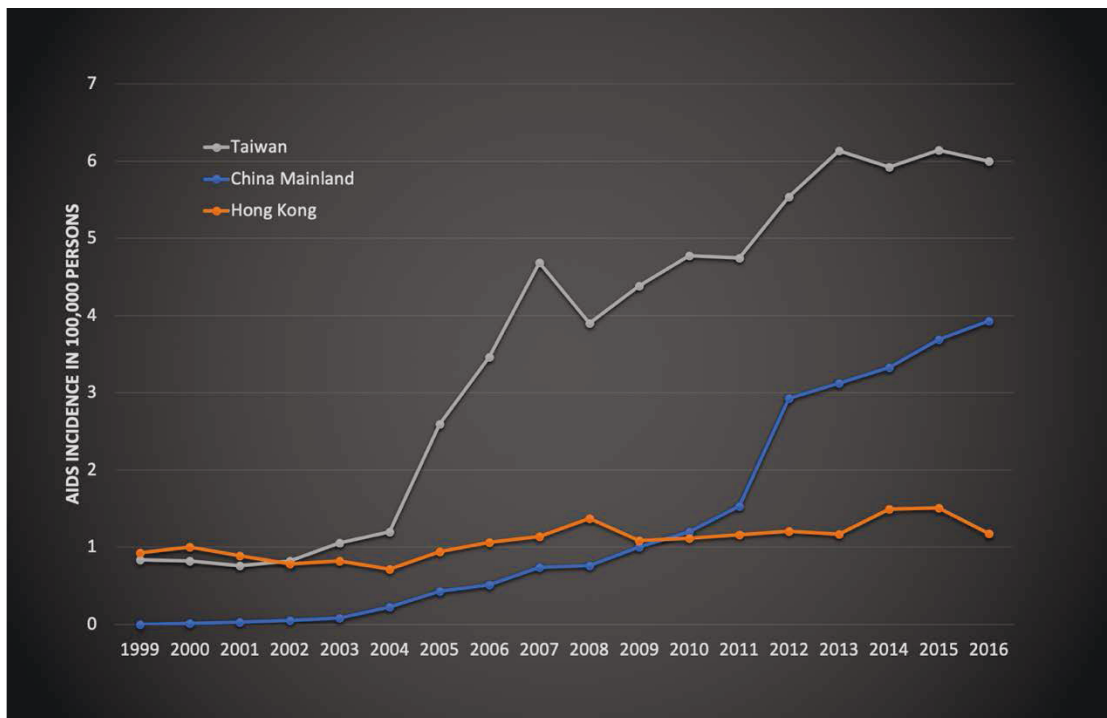


Figure 5 - AIDS Incidence in China Mainland, Hong Kong & Taiwan from 1999 to 2016

This figure shows the pattern of AIDS incidence in China mainland, Hong Kong and Taiwan from 1999 to 2016. The grey line represents the records in Taiwan, blue line represents China mainland and orange line represents Hong Kong. Each dot on a line indicates the number of recorded rape cases in 100,000 persons for the corresponding year. From this figure it is obvious that AIDS incidence in China mainland continuously increases while incidence in Hong Kong almost remains on a same level. This phenomenon demonstrates my result that average growth rate of AIDS incidence in Hong Kong is statistically significantly lower than in China mainland.

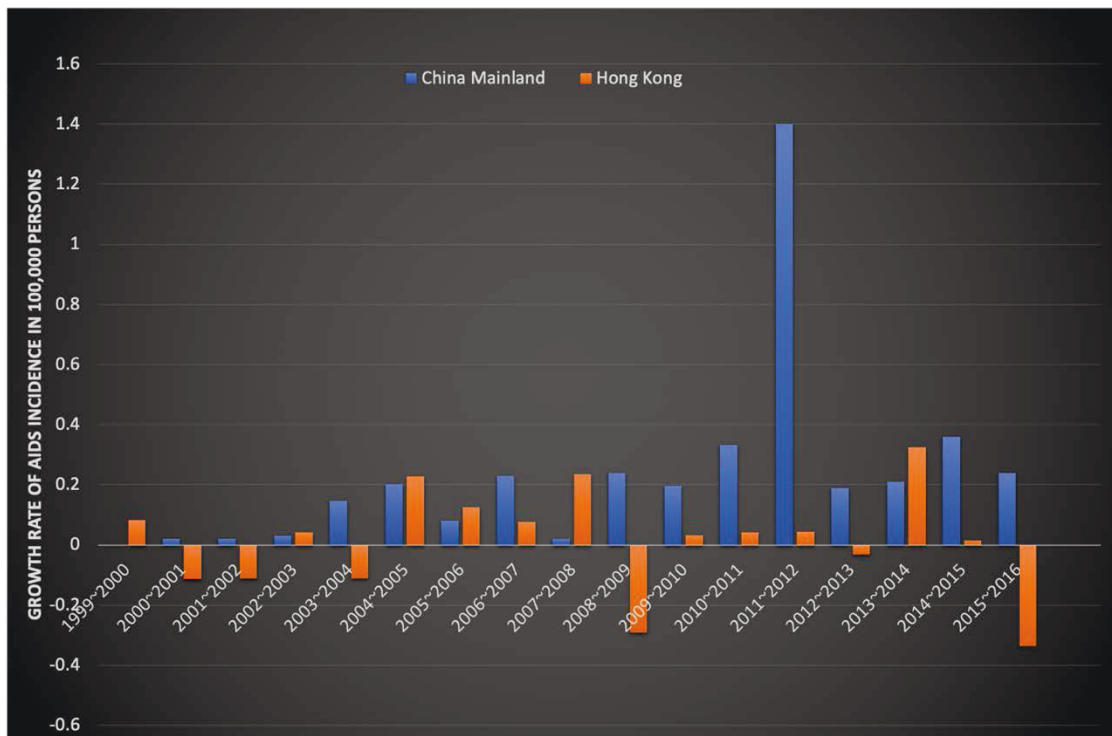


Figure 6 - Growth Rate of AIDS Incidence by Year in China Mainland & Hong Kong from 1999 to 2016

This figure shows the growth rates of AIDS incidence between adjacent years from 1999 to 2016 in China mainland and Hong Kong. The blue columns represent the growth rates of AIDS in China mainland for the corresponding interval of two adjacent years while the orange columns represent Hong Kong. From this figure, it is easy to find that all the growth rates of AIDS incidence in China mainland are positive while the growth rates in Hong Kong contains both positive and negative numbers. Besides, it is also obvious that the average value of the positive growth rate in Hong Kong is smaller than in China mainland. This phenomenon demonstrates my result that the average growth rate of AIDS incidence in Hong Kong is statistically significantly lower than in China.

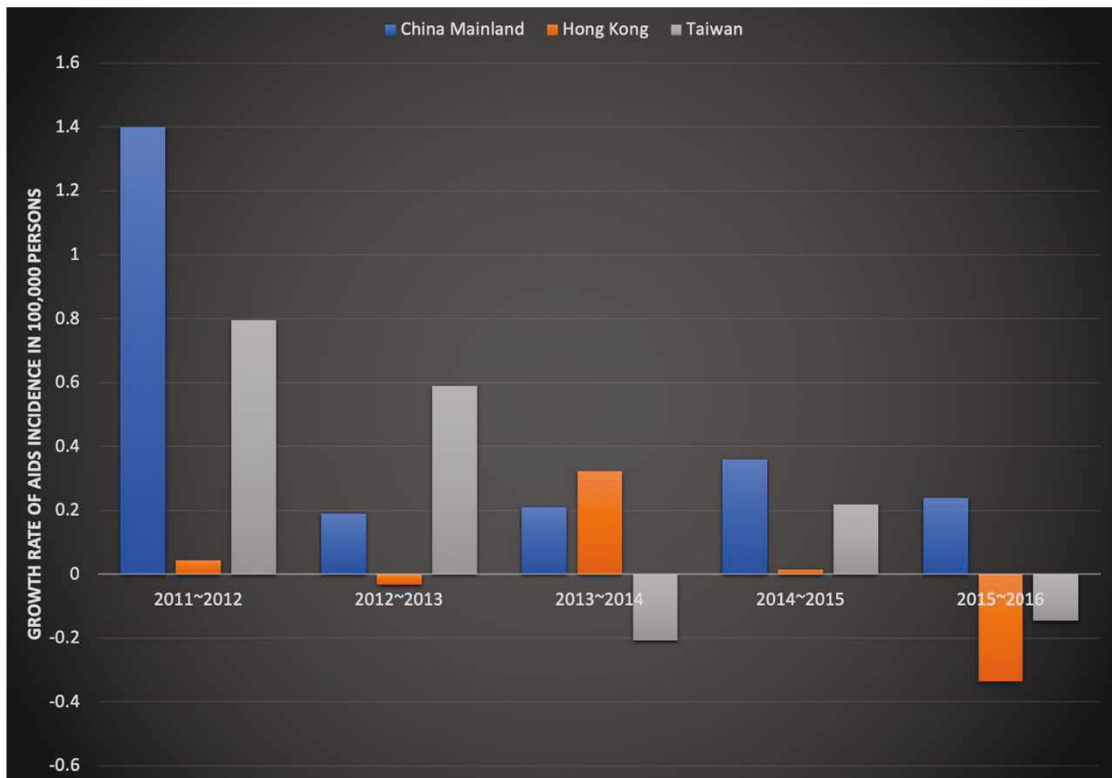


Figure 7 - Growth Rate of AIDS Incidence by Year in China Mainland, Hong Kong & Taiwan from 2011 to 2016

This figure shows the growth rates of AIDS incidence between adjacent years from 2011 to 2016 in China mainland, Hong Kong and Taiwan. The blue columns represent the growth rates of reported rape cases in China mainland for the corresponding interval of two adjacent years, the orange columns represent Hong Kong while the grey columns represent Taiwan. From this figure, we can observe that growth rates of AIDS incidence in Taiwan are generally falls between the growth rates in China mainland and Hong Kong. This phenomenon is consistent with my result that the average growth rate of AIDS incidence in Taiwan is neither statistically significantly different from the growth rate in China mainland, nor different from the growth rate in Hong Kong after 2011.

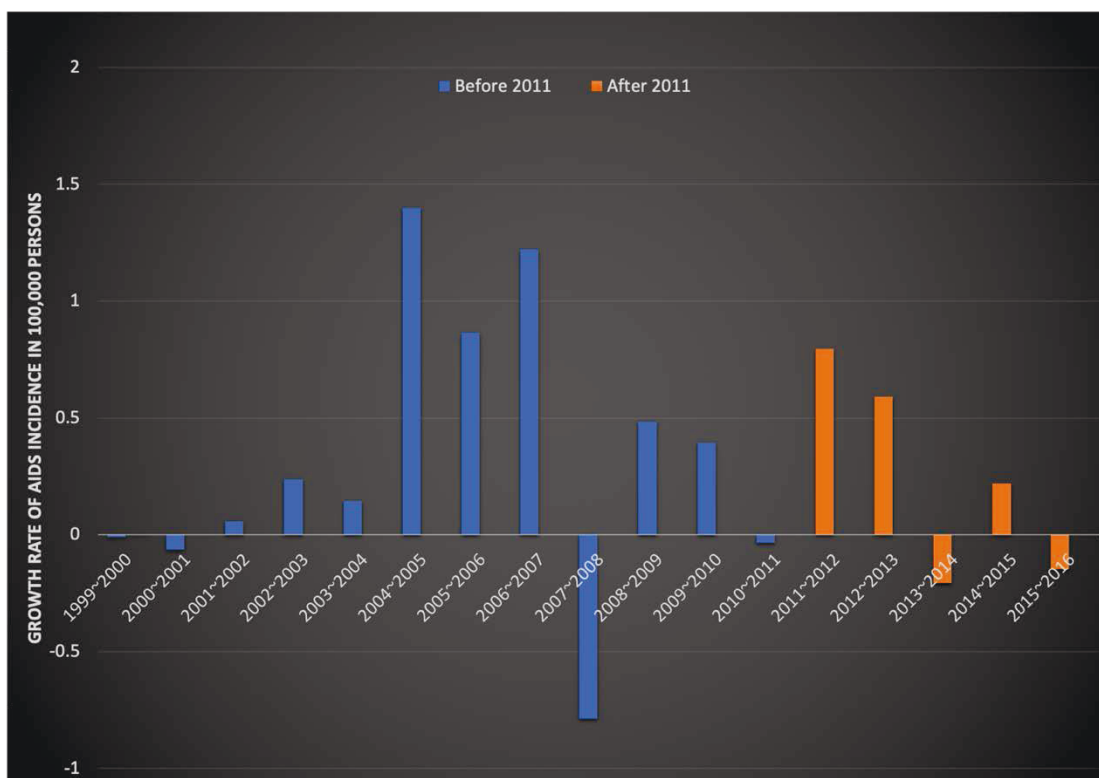


Figure 8 - Growth Rate of AIDS Incidence by Year in Taiwan before & after 2011

This figure shows the growth rates of AIDS incidence between adjacent years from 1999 to 2016 in Taiwan. The blue columns represent the growth rates of AIDS incidence before 2011 for the corresponding interval of two adjacent years while the orange columns represent growth rates after 2011. From this figure it is hard to tell if the average growth rate of AIDS incidence in Taiwan after 2011 is lower than before 2011 or not. This phenomenon is consistent with my result that there is no statistically significantly difference in the average growth rate of AIDS incidence before and after 2011 in Taiwan.

	<i>Partially Legalizing</i>	<i>Generally Legalizing</i>
<i>Sexual Crimes</i>	No Difference	Decrease
<i>STDs Incidence</i>	Decrease	No Difference

Table 6 - Difference in Growth Rates against to Illegalizing Sex Industries

In conclusion, according to the comparison of average growth rate between China mainland and Hong Kong from 1999 to 2016, partially legalizing sex industries is not significantly different from illegalizing sex industries in the growth rate of sexual crimes but is significantly lower than illegalizing sex industries in the growth rate of STDs incidence. On the other hand, according to the comparison of average growth rate among China mainland, Hong Kong and Taiwan from 2011 to 2016, generally legalizing sex industries is significantly lower than illegalizing sex industries in the growth rate of sexual crimes but is not significantly different from illegalizing sex industries in the growth rate of STDs incidence. At last, according to the comparison of average growth rate in Taiwan before 2011 and after 2011, generally legalizing sex industries is significantly lower than illegalizing sex industries in the growth rate of sexual crimes but is not significantly different from illegalizing sex industries in the growth rate of STDs incidence.

Conclusion

Whether or not a country legalizes sex industries, the massive need for sexual pleasure always exists. Sex industries should be legalized, in other words, censored by the government. Because if all the brothels and pornographies available to people are illegal, there is no guarantee for health and safety during the process of obtaining sexual pleasure. I apply unpaired two sample t test to examine the significance of difference in average growth rate of sexual crimes and STDs incidence in China mainland, Hong Kong and Taiwan. The result demonstrates that my claim is right. When compare to illegalizing sex industries in a country, partially legalizing sex industries is not significantly different from it but is significantly lower in the growth rate of STDs incidence; generally legalizing sex industries is not significantly

different from it in the growth rate of STDs incidence but is significantly lower in the growth rate of sexual crimes.

According to a survey for 594,583 Chinese female sex workers in China mainland from 2000 to 2011. Although, the rate of condom using significantly increases¹⁷ while the rate of drug using significantly decreases¹⁸ from 2000 to 2011, the proportion of sampled FSW who reported testing for HIV in the past 12 months significantly increases from 3.2% in 2000 to 48.0% in 2011¹⁹. This strange phenomenon happens for the reason that China mainland contains a mix of both approaches: policies that focus on punishing prostitution (undermining harm reduction programs) together with outreach through grassroots NGOs or government disease control authorities²⁰. On the other hand, in Hong Kong, female sex workers also inconsistently use condoms, but they are officially accessible to various types of HIV prevention services including HIV antibody testing, regular STD checkup, and exposure to HIV/STD-related prevention services²¹. This contrast provides a possible reason for my result that partially legalizing sex industries is significantly lower than illegalizing sex industries in the growth rate of STDs incidence.

In China mainland, because prostitution is illegal, sexual crimes targeted at prostitutes is almost impossible to be regulated by law. stories relating to violence and

¹⁷ From 53.7% to 84.9% with commercial partners, from 15.2% to 40.4% with regular partners and from 38.6% to 82.5% with unspecified partners.

¹⁸ From 10.9% to 2.6%

¹⁹ Chow, Eric PF, Kathryn E. Muessig, Lei Yuan, Yanjie Wang, Xiaohu Zhang, Rui Zhao, Peng Sun, Xiaoshu Sun, Joseph D. Tucker, and Jun Jing. "Risk Behaviours among Female Sex Workers in China: A Systematic Review and Data Synthesis." *PLoS One* 10, no. 3 (2015): e0120595.

²⁰ Kaufman, Joan. "HIV, Sex Work, and Civil Society in China." *Journal of Infectious Diseases* 204, no. suppl_5 (2011): S1222.

²¹ Lau, Joseph TF, H. Y. Tsui, Shara PY Ho, Eric Wong, and X. Yang. "Prevalence of Psychological Problems and Relationships with Condom use and HIV Prevention Behaviors among Chinese Female Sex Workers in Hong Kong." *AIDS Care* 22, no. 6 (2010): 659-668.

threats both from police and clients were often heard from female sex workers²². Another survey conducted in China mainland for female sex workers in 2010 shows that about half (50.3%) of respondents report they were forced to have sex while feeling drunk at least once in the past week, and of whom 56.4% report this act was unprotected²³. On the other hand, in Taiwan, although violence towards prostitutes also exists, because prostitution is generally legal in Taiwan, government policies designed for sex work provide a practical protection against sexual crimes towards sex workers²⁴. This contrast matches my result that generally legalizing sex industries is significantly lower than illegalizing sex industries in the growth rate of sexual crimes.

In conclusion, due to the limitation of time, I'm only able to make comparison among China mainland, Hong Kong and Taiwan. For the part of STDs incidence, I planned to also add the records of Gonorrhoea and Syphilis, but because I couldn't find Taiwan's records for both Gonorrhoea and Syphilis from 1999 to 2005, I had to give up this thought. More data are needed to improve this research. For example, if researchers still concentrate on China mainland, Hong Kong and Taiwan, in order to prevent interactive relationship, they can include new variables such as population, religion, income and so on to make multi-regression tests. On the other hand, if researchers are like to expand this research to a worldwide range, they can divide countries whose data of sexual crimes and STDs incidence are available into three groups according to the legitimacy of sex industries and test the significance of

²² Huang, Yingying and Suiming Pan. "Government Crackdown of Sex Work in China: Responses from Female Sex Workers and Implications for their Health." *Global Public Health* 9, no. 9 (2014): 1067-1079.

²³ Zhang, Xu-Dong, Marleen Temmerman, Yan Li, Wei Luo, and Stanley Luchters. "Vulnerabilities, Health Needs and Predictors of High-Risk Sexual Behaviour among Female Adolescent Sex Workers in Kunming, China." *Sex Transm Infect* 89, no. 3 (2013): 237-244.

²⁴ Chang, Hung-Hao and Yungho Weng. "Working in the Dark: A Look at the Violence Risk of the Street Prostitution Service." *Journal of Social Service Research* 41, no. 4 (2015): 545-555.

difference in the mean of average growth rates. All in all, this article opens the possibility to the systematic study of the relationship between the legitimacy of sex industries and the growth rate of sexual crimes and of STDs incidence. This makes possible the further research on how to design policies about sex industries to reach the lowest possible growth rate of sexual crimes and STDs incidence.

References

- Chang, Hung-Hao and Yungho Weng. 2015. "Working in the Dark: A Look at the Violence Risk of the Street Prostitution Service." *Journal of Social Service Research* 41 (4): 545-555.
- Chow, Eric PF, Kathryn E. Muessig, Lei Yuan, Yanjie Wang, Xiaohu Zhang, Rui Zhao, Peng Sun, Xiaoshu Sun, Joseph D. Tucker, and Jun Jing. 2015. "Risk Behaviours among Female Sex Workers in China: A Systematic Review and Data Synthesis." *PLoS One* 10 (3): e0120595.
- Hao, Chun, Hongjie Liu, Susan G. Sherman, Baofa Jiang, Xiaojing Li, Yongfang Xu, Zhenxia Jiang, and Chunpeng Zang. 2014. "Typology of Older Female Sex Workers and Sexual Risk for HIV Infection in China: A Qualitative Study." *Culture, Health & Sexuality* 16 (1): 47-60.
- Huang, Yingying and Suiming Pan. 2014. "Government Crackdown of Sex Work in China: Responses from Female Sex Workers and Implications for their Health." *Global Public Health* 9 (9): 1067-1079.
- Huang, Z. J., W. Wang, M. C. Martin, E. J. Nehl, B. D. Smith, and F. Y. Wong. 2011. "'Bridge Population': Sex Workers Or their Clients?—STI Prevalence and Risk Behaviors of Clients of Female Sex Workers in China." *AIDS Care* 23 (sup1): 45-53.

- Hwang, Shu-Lin g and Olwen Bedford. 2003. "Precursors and Pathways to Adolescent Prostitution in Taiwan." *Journal of Sex Research* 40 (2): 201-210.
- Kaufman, Joan. 2011. "HIV, Sex Work, and Civil Society in China." *Journal of Infectious Diseases* 204 (suppl_5): S1222.
- Kuo, Min-Hsun Christine, Siriporn Yamnill, and Gary N. McLean. 2008. "The Dilemma of Prostitution in Taiwan and Thailand from an NHRD Perspective." *Human Resource Development International* 11 (5): 493-505.
- Lau, Joseph TF, H. Y. Tsui, Shara PY Ho, Eric Wong, and X. Yang. 2010. "Prevalence of Psychological Problems and Relationships with Condom use and HIV Prevention Behaviors among Chinese Female Sex Workers in Hong Kong." *AIDS Care* 22 (6): 659-668.
- Li, Jessica CM. 2013. "Violence Against Chinese Female Sex Workers in Hong Kong: From Understanding to Prevention." *International Journal of Offender Therapy and Comparative Criminology* 57 (5): 613-631.
- Wong, WCW and Y. T. Wun. 2003. "The Health of Female Sex Workers in Hong Kong: Do we Care?" *Hong Kong Medical Journal*.
- Wong, William CW, Eleanor A. Holroyd, Ann Gray, and Davina C. Ling. 2006. "Female Street Sex Workers in Hong Kong: Moving Beyond Sexual Health." *Journal of Women's Health* 15 (4): 390-399.
- Wong, William CW, Yuet Lin Yim, and Henry Lynn. 2010. "Sexually Transmitted Infections among Female Sex Workers in Hong Kong: The Role of Migration Status." *Journal of Travel Medicine* 18 (1): 1-7.

Wu, J. C., Y. J. Wang, S. J. Hwang, T. Z. Chen, Y. S. Wang, H. C. Lin, S. D. Lee, and W. Y. Sheng. 1993. "Hepatitis D Virus Infection among Prostitutes in Taiwan." *Journal of Gastroenterology and Hepatology* 8 (4): 334-337. doi:10.1111/j.1440-1746.1993.tb01523.x. <https://www.ncbi.nlm.nih.gov/pubmed/8374089>.

Zhang, Xu-Dong, Marleen Temmerman, Yan Li, Wei Luo, and Stanley Luchters. 2013. "Vulnerabilities, Health Needs and Predictors of High-Risk Sexual Behaviour among Female Adolescent Sex Workers in Kunming, China." *Sex Transm Infect* 89 (3): 237-244.