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The Economic Consequences of Decriminalizing Sex Work in Washington, DC—A Conceptual Model

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Abstract: (1) Under repressive policies, sex workers are at disproportionate risk for violence and sexually transmitted infections. The decriminalization of sex work provides increased social and health benefits to both sex workers and society. This is the first research that complements human rights-based messages with a quantifiable economic impact of such a law and a model for future calculations. (2) This research assesses the potential economic consequences of decriminalizing sex work in the District of Columbia (DC) in three areas: (A) income tax revenue, (B) criminal justice system savings, and (C) health sector savings (due to averted cases of violence, HIV, gonorrhea, and herpes). (3) An economic model is developed and utilized based on data from a literature search and agency records. (4) Decriminalizing sex work in DC will generate USD5348.68 per sex worker and USD2.53 per client annually, plus USD20,118.48 in criminal justice system savings a year. Per sex worker, USD5058.08 will be gained from income tax revenue, and USD290.60 will be generated through health sector savings (USD274.65, 0.02, 15.64, and 0.29 from averted cases of violence, HIV, gonorrhea, and herpes, respectively). Per client, decriminalization will generate USD0.05, 2.32, and 0.16 from averted cases of HIV, gonorrhea, and herpes, respectively, or USD8462.35 annually, after considering the total number of clients. Estimates are reported in 2020 USD. (5) The potential economic impact of decriminalizing sex work is widespread. The presented model, in conjunction with a rights-based foundation, should urgently be used by advocates, sex workers, decision makers, and other researchers.



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1. Introduction

1.1. Legal Models of the Commercial Sex Industry

Human rights violations are consistently documented in places where policies criminalize sex work [1,2]. Globally, five main models can be identified to define what is legally permissible between consenting adults: full criminalization, partial criminalization, criminalization of the purchase of sex, regulatory models, and full decriminalization [1]. With the exception of decriminalization, all legal models reinforce risky behaviors, challenge bodily autonomy, and undermine public health goals. Where the practice is partially or fully criminalized, sex workers are less likely to carry condoms out of fear that they could be used as evidence for an arrest, disincentivizing safer sexual practices [2]. Clients may also pressure sex workers to not use condoms [3]. Sex workers can be vulnerable to blackmail, bribes, and violence, including violence from police [4]. Interviews with sex workers reveal that some have been coerced into giving police sexual services to avoid being arrested or harassed [5]. Many models penalize sex workers for working together or organizing to ensure each other's safety [6]. While the Nordic model only criminalizes the buyer rather than the seller, sex workers must often leave the safety of their workspaces and visit their

clients' homes, potentially compromising their wellbeing [1,6]. Full legalization often creates high and unattainable standards, contributing to a two-tiered system [7]. Legalization still criminalizes those who cannot or will not fulfill various bureaucratic responsibilities, perpetuating the cycle of incarceration [8]. It also disproportionately excludes sex workers who are already marginalized, such as those who use drugs or who are undocumented, making their situation more precarious [8].

Repressive policies, such as recent arrest, jail, displacement from a workplace, extortion or violence by officers, are associated with poorer health and wellbeing [1]. According to a systematic review by Platt et al., sex workers in repressive environments face a higher risk of condomless sex (Odds Ratio (OR) = 1.42) and an almost two-fold higher risk of HIV/sexually transmitted infections (STIs) (OR = 1.87) compared to sex workers who avoided these repressive practices [1]. Most notably, the risk of sexual or physical violence under repressive policing triples (OR = 2.99) [1].

Decriminalization has long been advocated for by sex workers and their allies [9–12]. It removes criminal penalties for all sex work between consenting adults and retroactively eliminates these offenses from people's records [7]. Under decriminalization, all sex work industry employees and clients benefit from full labor rights and protections, access to police and court protection from violence and mistreatment, and the ability to communicate boundaries [13]. Decriminalization begins to eliminate structural problems facing the sex trade rather than abolishing the industry [14]. It advances racial justice, LGBTQ+ justice, and gender equity [15]. Follow-up studies in places with decriminalization policies report that sex workers feel supported by the laws and experience fewer incidents of violence and HIV/STIs [1,11,16]. For these reasons, decriminalization is backed by the World Health Organization (WHO), the Joint United Nations Program on HIV/AIDS, The Lancet medical journal, Open Society Foundations, Human Rights Watch, and Amnesty International [17].

1.2. Economic Potential of Decriminalization

Based on the academic work of Segal, there are three main spheres in which criminalization affects sex workers and the economy: income tax revenue lost (due to the underground industry), criminal justice system costs (due to sex work-related arrests), and health care costs (due to health injuries/diseases related to sex work) (Figure 1) [13]. With the passage of decriminalization, sex workers, clients, and the economy will benefit from increased revenue gains, criminal justice system savings, and health sector savings. Sex workers will be able to support other industries and have the option to pay income taxes. A shifted role in law enforcement responsibility will lower the number of arrests for voluntarily selling or soliciting sex, resulting in fewer incarcerations in an already overcrowded criminal justice system. Clients will be aware that they can be reported and arrested for physical violence or rape, so they will be less likely to commit these crimes; those that do will more often be reported to the police because sex workers will not fear arrest [18]. When sex workers and their clients are more likely to use condoms, both will suffer from fewer STIs and cases of HIV. Sex workers will also feel more comfortable working together for safety and guiding minors or victims of trafficking to protection [10].

1.3. Context in the District of Columbia (DC)

With the exception of a few rural counties in Nevada where sex work is regulated through legal brothels, the organizing, buying, and selling of consensual sex work is illegal in the United States (US) [19]. Many cities, including DC, are rallying around efforts to decriminalize sex work. In the summer of 2019, the Community Safety and Health Amendment Act of 2019 was reintroduced in DC and acclaimed among many organizations [20]. It resulted in a 14 h Judiciary Committee hearing in October 2019 but was ultimately not advanced [21]. Nevertheless, community-led groups continue to advocate for decriminalizing sex work, which has only gained renewed interest following the recent COVID-19 pandemic and the murder of George Floyd on 25 May 2020 [21,22].

Advocates highlight the ways in which DC, in particular, breeds conditions that make sex work a necessary option for survival. DC boasts some of the highest rates of STIs and HIV in the country [23,24]. The city surpasses the country in incarceration rate, at one out of every 50 people or double the national average [25]. Poverty rates hover at 20% of the population, with only a 68.5% public high school graduation rate [26]. For many met with homelessness and unemployment, sex work becomes an increasingly attractive alternative.

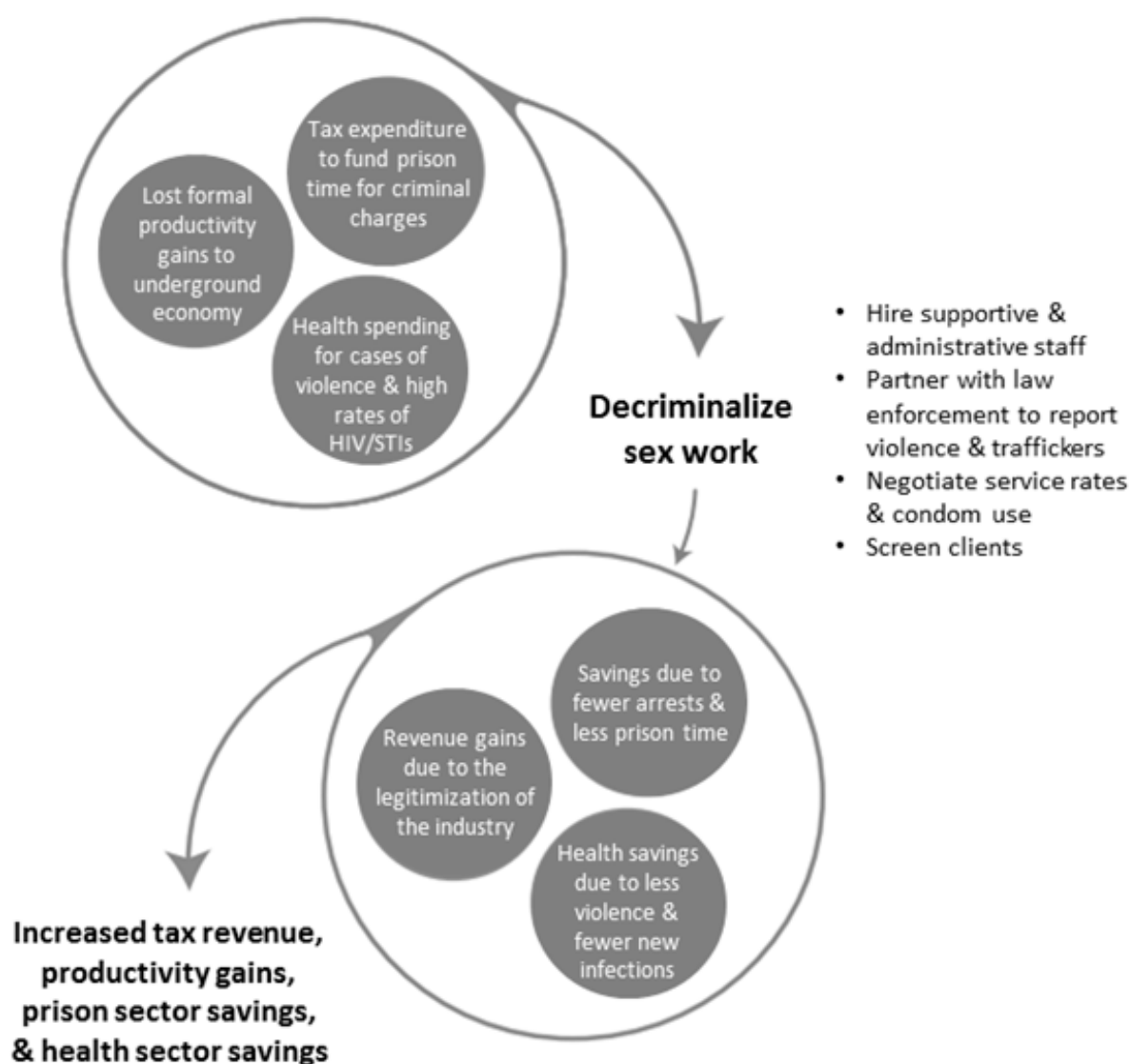


Figure 1. Social and economic consequences of decriminalizing sex work. Authors' own work based on Segal et al. [13].

With a USD103 million-dollar commercial sex industry in DC, the stakes are high for sex workers, and criminalizing the trade is not working to promote their rights [4,27]. While previous bills have been drafted in conjunction with sex worker advocates and grounded in public health research, they have lacked an assessment of the financial implications of decriminalizing sex work; arguably, an economic lens could be the push this legislation needs to garner crucial support in the future.

1.4. Objectives

The objectives were to assess the annual economic consequences of the decriminalization of sex work in DC generated through income tax dollars, the savings to the criminal justice system due to less jail time for prostitution-related arrests, and the savings to the health sector due to averted incidents of violence and averted cases of STIs and HIV among

both sex workers and clients. This research adopts a harm reduction and human rights perspective in computing this calculation as a tool for decision-makers.

2. Materials and Methods

2.1. Study Design

A literature search was conducted to determine which sectors would be most impacted by decriminalizing sex work and if there was enough data available to calculate the economic impact in each sector. After evaluating feasibility, an economic model was developed to assess the economic consequences of decriminalization. The total value of money generated due to decriminalization was calculated as the sum of: (1) additional income tax generated, (2) savings to the criminal justice system, and (3) health sector savings.

The health sector would focus on how shifting to decriminalizing policies would lead to safer conditions and increased condom use, resulting in averted cases of violence, HIV, gonorrhea, and herpes. These subcategories were selected based on their high rates in sex working communities and/or due to their high cost to treat.

In addition, a sensitivity analysis was performed to consider the inherent ambiguity of some variables and to test the economic model for validity and accuracy.

The details of the economic model calculations per each of the three areas are presented in the following subsections:

2.1.1. Income Tax Generated

Income tax revenue (ITR) generated from decriminalization was calculated as a sum of the federal income tax, local income tax, and the income taxes under the Federal Insurance Contributions Act (FICA). Available evidence suggests that 9% of sex workers will pay income taxes [28]. Table 1 provides the exact values of this data.

Table 1. Values of data used to calculate income tax generated following decriminalization (monetary values in 2020 USD).

Type of Data		Value
1.	Sex worker annual salary (in DC) ¹	USD161,972.43
2.	Federal income tax rate	USD32,748 + 32% of amount over USD160,725 = 33,147.18
3.	Income tax rate in DC	USD3500 + 8.5% of amount over USD60,000 = 12,167.66
4.	FICA income tax rate	1.45% of all income + 6.2% of income up to USD137,700 = 10,886.00
5.	Estimated share of sex workers paying federal income tax (in San Francisco)	9%

¹ Pimps in DC earned roughly USD11,588 a week (2007 USD) and employed, on average, five sex workers [27,29]. These estimations equated to USD2317.60 of taxable income per sex worker each week, totaling USD129,785.60 a year in 2007, or 161,972.43 a year in 2020.

2.1.2. Criminal Justice System Savings

The total criminal justice system savings were calculated as the marginal cost for one day in jail and multiplied by the number of annual arrests for prostitution. This research assumed that all arrests led to at least one day spent in the criminal justice system, as seen in the 2013 report, “Buy Me Love: Realizing the Economic Potential of Sex Work Decriminalization” [13]. Data was not available on the percentage of prostitution-related arrests that led to time in correctional centers, as opposed to fines or probation. However, this one-day minimum was a reasonable assumption given the extensive length of a sentence and the high incarceration rates in DC correctional centers [25]. See Table 2 for the exact values of this data.

2.1.3. Health Sector Savings

Health sector savings were calculated in the following subareas: violence, HIV, gonorrhea, and herpes. These subareas were selected based on the availability of data and prevalence among sex workers and clients. All savings related to infections were calculated

for both clients and sex workers and did not evaluate indirect costs. The general formula for potential cost savings (CS), defined as costs averted, was as follows, where CUC represented costs under criminalization, and CUD represented costs under decriminalization: $CUC - CUD = CS$.

Table 2. Values of data used to calculate criminal justice system savings following decriminalization (monetary values in 2020 USD).

	Type of Data	Value
1.	Number of prostitution-related arrests in 2020 (in DC)	273
2.	Average daily cost per inmate ¹	USD99.55
3.	Average daily, long-run marginal cost per inmate ²	USD73.95

¹ On average, states paid USD33,274 per inmate in 2015. [30] This total equates to 91.16 per day in 2015 USD, or 99.55 in 2020 USD. ² The per-inmate, long-run marginal cost of Washington state jail equated to 74.3% (USD21,469/28,900) of the average cost; applying this percent to this research generated an average of USD73.95 [31].

For each subarea mentioned above, the current costs to treat new cases under criminalization were calculated as follows, where I was the percentage of DC residents with health insurance, C was the direct medical cost per person, and IUC was incidence under criminalization: $I \times C \times IUC = CUC$.

The cost under decriminalization was calculated with the same method, using incidence under decriminalization rather than incidence under criminalization.

Violence among sex workers was defined according to Platt et al. and comprised a spectrum of sexual and physical assault including, but not limited to, rape, coercion, robbery, kidnapping, and violent pushing, shoving, slapping, and choking [1]. The incidence of violence referred to the number of people who experienced a new episode of violence in a defined period of time. Only data on the prevalence among sex workers was available, so the incidence among sex workers was assessed based on proportions of prevalence to incidence in the general population. Table 3 provides details on the exact values, and Figure A1 (Appendix A) outlines the calculation of incidence.

Table 3. Values of data used to calculate health sector savings due to averted cases of violence following decriminalization (monetary values in 2020 USD).

	Type of Data	Value
1.	Incidence of violence in sex workers (in the UK)	37.5%
2.	Annual direct medical cost of intimate partner violence per case	USD1374.04
3.	Odds ratio of violence when exposed to repressive policing	2.99
4.	Percent of people enrolled in health insurance (in DC) ¹	96.1%

¹ The percentage of DC residents enrolled in health insurance was assumed to be the percentage of people who would seek health care services [31].

To calculate health sector savings due to HIV/STI transmission, the probability of transmission needed to be determined. Therefore, for each of the three infections, two probability trees were created, one under criminalization and the other under decriminalization. The probability tree determining risk of transmission under criminalization reflected current condom use, while the probability tree under decriminalization was based on an increased rate of condom use derived from the OR value for condomless sex. The rate of condomless sex was “1—the percentage of those who always used condoms during vaginal sex” [32]. Other data included in the probability trees were the probability of the

sex worker and client being infected and the risk of transmission when a condom is and is not used, which were sourced from the literature.

Across the health sector, when calculating averted cases among sex workers, the projected incidence was based on a calculation with the current incidence and the OR for violence and condomless sex. However, among clients, the projected incidence of HIV/STIs was determined by the calculations utilizing the associated probability values and the OR value for condomless sex. Tables 4 and 5 provide the exact values of the data, Figure A2 (Appendix A) calculates the prevalence of condomless sex after decriminalization, Figure A3 (Appendix A) calculates the incidence, and Figures A4–A17 (Appendix A) outline the risk of transmission.

Table 4. Values of data used to calculate health sector savings due to averted cases of HIV, gonorrhea, and herpes in sex workers following decriminalization (monetary values in 2020 USD).

Type of Data		HIV	Infection Gonorrhea	Herpes
1.	Prevalence in the general population	0.489%	0.67%	0.197%
2.	Incidence in the general population	0.00003%	0.744% ¹	0.002%
3.	Prevalence among sex workers	8.7%	12.4%	34.3%
4.	Per-act, unprotected transmission rate from a man to a woman ²	0.08%	60%	1.7%
5.	Per-act condom effectiveness in preventing transmission from a man to a woman ²	95%	58% ³	96%
6.	Per-act, protected transmission rate from a man to a woman ²	0.004%	25.2%	0.068%
7.	Annual direct medical cost per case	USD25,563.03	USD1725.79 ⁴	USD523.55 ⁵
8.	Condom use as measured by percent of sex workers who “always used a condom” during vaginal sex (in San Francisco)		44%	
9.	Percent of people who have health insurance (in DC)		96.1%	
10.	Risk of condomless sex		1.42	

¹ Gonorrhea data was only available on a local (DC) level. ² This analysis assumed that sex workers were women and clients were men. ³ No research was available on per-act condom effectiveness in preventing gonorrhea; the next closest approximation was condom effectiveness over a three-month period [33]. ⁴ The annual direct medical costs to treat gonorrhea were 1046.84 million in 1994 USD [34]. Divided by the estimated 1,059,345 cases, the cost per case equaled 988.20, or 1725.79 in 2020 USD [34]. ⁵ An estimated 3.1 million cases of herpes were reported, costing 984 million or 317.40 per case in 1996 USD and 523.55 in 2020 USD [35].

Table 5. Values of data used to calculate health sector savings due to averted cases of HIV, gonorrhea, and herpes in clients following decriminalization (monetary values in 2020 USD).

Type of Data		Infection		
		HIV	Gonorrhea	Herpes
1.	Per-act, unprotected transmission rate of HIV from a woman to a man ¹	0.04%	20%	1.7%
2.	Per-act condom effectiveness in preventing HIV transmission from a woman to a man ¹	95%	58% ²	65%
3.	Per-act, protected transmission rate of HIV from a woman to a man ¹	0.002%	8.4%	0.595%
4.	Men who have paid for sex in the last year		1%	
5.	Number of male, DC residents		334,213.8	

¹ This analysis assumed that sex workers were women and clients were men. ² Due to lack of available gonorrhea data in per-act condom effectiveness, the research utilized condom effectiveness over the course of three months [33].

2.1.4. Sensitivity Analysis

The inherent ambiguity of several variables was taken into account in a sensitivity analysis. The parameters of three variables, (a) sex worker income, (b) share of sex workers paying income taxes, and (c) share of insured sex workers seeking medical services when needed, were identified as carrying the most uncertainty. Variables (a) and (b) would impact potential revenue gains through tax dollars, and variable (c) would affect potential health sector savings related to averted cases of violence and HIV/STIs in sex workers. In the sensitivity analysis, variables (a) and (b) were both increased and decreased by 30%, while variable (c) was decreased by 30% and increased to 100%.

2.2. Data Sources

An extensive literature search was conducted to identify data needed to assess the economic impact of decriminalization. When multiple data sources were available for a particular variable, the data was assessed and selected for relevance and quality. When data was not available for the year 2020, data from the most recent year was assumed to be reliable and accurate. Data on monetary values was adjusted based on the Consumer Price Index (CPI) from the US Bureau of Labor Statistics and presented in 2020 USD (see Table 6) [36,37].

Table 6. CPI-adjusted prices in 2020 USD.

	Variable	Price in Base Year	Base Year	CPI from Base Year to 2020	Price in 2020 USD
1.	Sex worker salary	USD129,785.60	2007	24.8%	USD161,972.43
2.	Average daily cost of prison per inmate	USD91.16	2015	9.2%	USD99.55
3.	Average daily, long-run marginal cost per inmate	USD60.83	2009	20.6%	USD73.95
4.	Direct medical cost per case of rape and physical assault	USD809.21	2005	69.8%	USD1374.04
5.	Direct medical cost per case of HIV	USD19,912	2006	28.4%	USD25,563.03
6.	Direct medical cost per case of gonorrhea	USD988.20	1994	74.6%	USD1725.79
7.	Direct medical cost per case of herpes	USD317.40	1996	65.0%	USD523.55

The tables below present the sources of data used to calculate the economic impact of decriminalization in income tax revenue (Table 7), criminal justice system savings (Table 8), and health sector savings (Tables 9–11).

Table 7. Sources of data used to calculate income tax generated following decriminalization.

	Type of Data	Source
1.	Sex worker annual salary (in DC)	Dank et al., 2014 [27]
2.	Federal income tax rate	TurboTax, 2021 [38]
3.	Income tax rate in DC	DC Office of Tax and Revenue, 2018 [36]
4.	FICA income tax rate	Social Security Administration, 2018 [39]
5.	Estimated share of sex workers paying federal income tax (in San Francisco)	Lutnick and Cohan, 2008 [40]

Table 8. Sources of data used to calculate criminal justice system savings following decriminalization.

Type of Data	Source
1. Number of prostitution-related arrests in 2020 (in DC)	Metropolitan Police Department, 2020 [41]
2. Average daily cost per inmate	Vera Institute of Justice, 2017 [29]
3. Average daily, long-run marginal cost per inmate	Vera Institute of Justice, 2013 & 2017 [29,30]

Table 9. Sources of data used to calculate health sector savings due to averted cases of violence following decriminalization.

Type of Data	Source
1. Incidence of violence in sex workers (in the UK)	Church et al., 2001 [42]
2. Annual direct medical cost of intimate partner violence per case	Max et al., 2004 [43]
3. Odds ratio of violence when exposed to repressive policing	Platt et al., 2018 [1]
4. Percent of people enrolled in health insurance (in DC)	America's Health Rankings, 2018 [31]

Table 10. Sources of data used to calculate health sector savings due to averted cases of HIV, gonorrhea, and herpes in sex workers following decriminalization.

Type of Data	Infection		
	HIV	Gonorrhea	Herpes
1. Prevalence in the general population	IMHE, 2017 [44]	Centers for Disease Control and Prevention, 2013 (in DC) [45]	IMHE, 2017 [44]
2. Incidence in the general population	IMHE, 2017 [44]	DC Health Matters, 2017 (in DC) [46] ¹	IMHE, 2017 [44]
3. Prevalence among sex workers	St. James Infirmary, 2006 (in San Francisco) [32]	St. James Infirmary, 2006 (in San Francisco) [32]	St. James Infirmary, 2006 (in San Francisco) [32]
4. Per-act, unprotected transmission rate from a man to a woman ²	Boily et al., 2009 [47]	Centers for Disease Control and Prevention, 2013 [45]	Schiffer et al., 2015 [48]
5. Per-act condom effectiveness in preventing transmission from a man to a woman ²	Pinkerton and Abramson, 1997 [49]	Warner et al., 2004 [33] ³	Magaret et al., 2016 [50]
6. Per-act, protected transmission rate from a man to a woman ²	Calculated by the author, based on available data	Calculated by the author, based on available data	Calculated by the author, based on available data
7. Annual direct medical cost per case	Gebo et al., 2010 [51]	Siegel, 1997 [34]	Szucs, 2001 [35]
8. Condom use as measured by percent of sex workers who “always used a condom” during vaginal sex (in San Francisco)	St. James Infirmary, n.d. [32]		
9. Percent of people who have health insurance (in DC)	America's Health Rankings, 2018 [31]		
10. Risk of condomless sex	Platt et al., 2018 [1]		

¹ Gonorrhea data was only available on a local (DC) level. ² This analysis assumed that sex workers were women and clients were men. ³ No research was available on per-act condom effectiveness in preventing gonorrhea; the next closest approximation was condom effectiveness over a three-month period [47].

Table 11. Sources of data used to calculate health sector savings due to averted cases of HIV, gonorrhea, and herpes in clients following decriminalization.

Type of Data	Infection		
	HIV	Gonorrhea	Herpes
1. Per-act, unprotected transmission rate of HIV from a woman to a man ¹	Boily et al., 2009 [47]	Centers for Disease Control and Prevention, 2013 [45]	Schiffer et al., 2015 [48]
2. Per-act condom effectiveness in preventing HIV transmission from a woman to a man ¹	Pinkerton and Abramson, 1997 [49]	Warner et al., 2004 [33] ²	Magaret et al., 2016 [50]
3. Per-act, protected transmission rate of HIV from a woman to a man ¹	Calculated by the author, based on available data	Calculated by the author, based on available data	Calculated by the author, based on available data
4. Men who have paid for sex in the last year	Monto and Milrod, 2014 [52]		
5. Number of male, DC residents	World Population Review, 2019 [53]		

¹ This analysis assumed that sex workers were women and clients were men. ² Due to lack of available gonorrhea data in per-act condom effectiveness, the research utilized condom effectiveness over the course of three months [33].

3. Results

3.1. Main Results

The decriminalization of sex work in DC will generate USD5058.08 from income tax revenue per sex worker (Table 12). An additional USD20,118.48 in total criminal justice system savings would also be generated per year (Table 13). Approximately USD290.60 would be generated from health sector savings per sex worker (Table 12). The major savings from the health sector stem from averted cases of violence (USD274.65 from violence, USD0.02 from HIV, USD15.64 from gonorrhea, and USD0.29 from herpes) (Table 12). Despite extensively searching and contacting agencies, information on the number of sex workers in DC was not available, so the results were calculated per sex worker.

Table 12. Total annual economic gains per one sex worker following the decriminalization of sex work in DC (monetary values in 2020 USD).

Sex Worker Variable		Revenue/Costs under Criminalization	Revenue/Costs under Decriminalization	Gains/Savings per Sex Worker
Health Sector	Income Tax Revenue	-	USD5058.08	USD5058.08
	Violence	USD486.42	USD216.62	USD274.65
	HIV	USD0.14	USD0.12	USD0.02
	Gonorrhea	USD228.49	USD212.85	USD15.64
	Herpes	USD1.92	USD1.64	USD0.29
			TOTAL/SEX WORKER	USD5348.68

Table 13. Total annual criminal justice sector savings following decriminalization of sex work in DC (monetary values in 2020 USD).

Variable	Costs under Criminalization	Costs under Decriminalization	Savings for All Sex Workers
Criminal Justice System	USD20,118.48	USD0	USD20,118.48
			TOTAL/ALL
			USD20,118.48

Per client, decriminalization will generate USD0.05, 2.32, and 0.16 due to averted cases of HIV, gonorrhea, and herpes, respectively, or USD8462.35 annually, after considering the total number of clients (Table 14).

Table 14. Total annual cost savings from clients following decriminalization of sex work in DC (monetary values in 2020 USD).

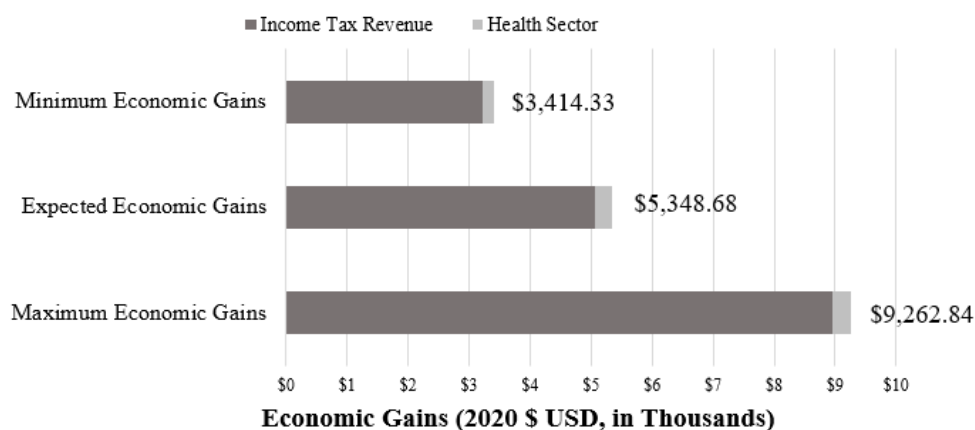
Client Variable		Costs under Criminalization	Costs under De-criminalization	Savings per Client	Estimated Number of Clients	Total Savings
Health Sector	HIV	USD0.47	USD0.42	USD0.05	3342.14	USD167.11
	Gonorrhea	USD29.36	USD27.03	USD2.32	3342.14	USD7753.00
	Herpes	USD2.06	USD1.90	USD0.16	3342.14	USD534.74
TOTAL/CLIENT				USD2.53	TOTAL/ALL	USD8455.61

3.2. Sensitivity Analysis

Table 15 and Figure 2 present the results of the sensitivity analysis. As a result of the modification, sex workers would earn between USD113,380.70 and 210,564.16 annually, rather than their expected USD161,972.43 salary.

Table 15. Annual income tax revenue and health sector savings per sex worker in sensitivity analysis, by variable modified (monetary values in 2020 USD).

Variable Modified	Expected Value	Lower Parameter	Upper Parameter
Sex Worker Income	USD161,972.43	USD113,380.70	USD210,564.16
Sex Workers Paying Income	9%	6.3%	11.7%
Income Tax Revenue	USD5058.08	USD3210.91	USD8960.45
Insured Sex Workers Seeking Medical Services When Needed	96.1%	67.27%	100%
Health Sector Savings	USD290.60	USD203.42	USD302.39

**Figure 2.** Annual economic gains per sex worker in sensitivity analysis (monetary values in 2020 USD).

The minimum and maximum gains of each variable represent the range of alternative economic impacts on overall gains per sex worker, compared to the expected gains.

While the annual prison sector savings and health sector savings related to clients are likely to remain constant, the sensitivity of these previously mentioned variables associated with sex workers results in a wider range of economic possibilities. This sensitivity to change informs stakeholders of how overall economic gains vary in different circumstances, which is valuable information when making a decision or issuing a recommendation.

4. Discussion

4.1. Summary of Results

Our objective was to estimate the economic consequences of decriminalizing sex work in terms of income tax revenue, criminal justice sector savings, and health sector savings based on an economic model. Our findings suggest an additional USD5348.68 of financial resources gained per sex worker, USD2.53 per client, and USD20,188.48 in total criminal justice system savings per year as a result of increasing sex worker safety and empowerment through decriminalization in DC. The results broaden the lens of the human rights-focused argument and add a financial dimension, making this analysis the first study to quantify the impact of decriminalization. This research underlines how broad the economic consequences of decriminalization can be and serves as a model for how these gains and savings can be calculated in other regions.

The dollars earned from collecting income tax dominate the majority of the economic gains. Of the remaining gains, the health sector, and specifically costs related to violence, generates significant funds. Among the selected STIs, gonorrhea constitutes the greatest source of financial savings for both sex workers and clients. This is, in part, due to the high incidence of gonorrhea in sex worker populations and all DC residents. The unprotected, per-act transmission of gonorrhea was also relatively high, which only perpetuated the spread of the infection further. These savings underscore the potential of higher condom use following decriminalization to curb elevated rates of HIV/STIs and generate more cost savings.

4.2. Comparison to Other Studies

Various literature aligns with this research by highlighting the pervasive harm caused by current practices and the widespread benefits of decriminalizing sex work. Policing of sex work in DC has failed to deter violence and improve public safety [5,33]. There is compelling evidence that repressive policing only further marginalizes sex workers and reinforces gender, racial, economic, and sexual orientation-related stigma and inequalities [1,13]. Criminalization of some or all involved parties does not eradicate sex trafficking and denies sex workers protection from the police and access to social services [1]. Entangling people in the criminal justice system does not make sex work disappear nor protect the lives of sex workers, clients, and the community [2]. On the contrary, under decriminalization, all those involved in the sex work industry could take advantage of full labor rights and protections and be able to access police and court protection in cases of violence and mistreatment [13]. For these reasons, the World Health Organization (WHO), the Joint United Nations Program on HIV/AIDS, The Lancet medical journal, Open Society Foundations, Human Rights Watch, and Amnesty International support decriminalization [6].

This is the first study to measure the economic impact of decriminalizing sex work; thus, there is no economic data to directly compare it to. However, the estimates in this research are consistent with patterns in the literature that showcase the positive benefits of decriminalization. Following Rhode Island's temporary decriminalization of indoor sex work, researchers uncovered that reported rape offenses dropped by 30%, and female gonorrhea incidence declined by more than 40% [16]. In 2015, a deterministic transmission model simulated that 39% of cases of HIV/STIs in Vancouver, Canada could be prevented through the decriminalization of sex work over the next decade [54]. The Lancet journal and WHO guidelines suggested that decriminalization removed barriers to accessing services for the prevention, treatment, and care of HIV/AIDS [28,40]. Researchers have also contended that the decriminalization of sex work in Canada would reap social and economic benefits for sex workers, clients, and the community at large [13]. After sex work was decriminalized in New Zealand in 2003, surveyed sex workers noted improved working conditions and a greater ability to negotiate safe-sex practices [10]. Female sex workers in Queensland, Australia working in decriminalized settings reported positive job satisfaction that was comparable with women from the general population [55]. The

passage of decriminalization would not only improve sex workers' quality of life but also decrease stigmatization, in part, by legitimizing the work and decreasing sex workers' vulnerabilities to be exploited [13]. The added health and safety benefits associated with decriminalization would result in substantial and widespread cost savings.

4.3. Strengths and Limitations

This research is the first study to estimate the potential economic impact of decriminalizing sex work and has generated a model for other regions to follow. While these results project cost savings in DC and cannot easily be extrapolated to other settings without considering the local context, they serve as a guideline. After carefully assessing and incorporating regional data for each sector, a similar pattern of savings would be expected. This change in legislation would grant human rights by enabling sex workers to refuse clients, negotiate condom use, and work together for safety [1,28,29]. These added benefits will reap widespread economic benefits beyond what is captured in this calculation [13].

All results in this study are accompanied by assumptions and limitations both in general and specific to each sector. On the whole, there were particular difficulties obtaining reliable data because of the underground and migratory nature of sex work, which some have claimed drives the "dearth of economic research on the subject of prostitution" [56]. All research specifically studying sex worker populations was based on samples of convenience, and some results relied on self-reported data, which made it vulnerable to sampling and response bias. Other sex worker data, such as the prevalence of gonorrhea and herpes was more reliable because it involved medical screenings; however, they were voluntary and excluded those who opted to not undergo them.

The basis of this research was innately difficult as it did not study naturalistic conditions and projected an estimation of future savings. This research's quantitative analysis primarily utilized the ORs calculated in the Platt et al. study, which compared sex workers around the globe who did and did not experience repressive policing [1]. These negative experiences may not have been wholly representative of the current context in DC. However, criminalization is arguably the most repressive of the various legal models; the inclusion of the other models may have diluted the strength of the ORs and underestimated the negative effects of the repressive policing in DC.

Understandably, other sectors, such as law enforcement, legal services, or social services, would also be impacted economically but were not included. This research did not account for the numerous positive effects on sex workers' health reaped from training law enforcement and medical providers and offering security from police protection. Reducing the city's homelessness through the decriminalization of sex work would also ease the strain on social services and save money spent to house residents in homeless shelters.

With every year following the passage of the law, income revenue and criminal justice sector savings will generally remain constant compared to the baseline year where criminalization is practiced. The health sector will continue to reap financial benefits but at a slower rate than the initial year.

These limitations might be the potential sources for both over- and underestimations in the calculations throughout the study, as presented in Table A1. However, it is clear that these limitations led to conservative estimates of the economic consequences.

4.4. Policy Implications

Armed with these insights, this research joins esteemed and diverse groups in support of decriminalization through a system-wide response. While it may be easy to equate "illegal" with "bad," with the evidence amassed from science, society is beginning to see how the decriminalization of sex work is no longer a moral issue but rather a choice to positively reconstruct communities in a way that generates short- and long-term benefits. Decriminalization unmasksex workers' lived experiences and takes advantage of opportunities to promote their health, safety, and economic security.

Augmenting policy proposals with economic assessments is well documented in the literature [57]. Well-intentioned policymakers must turn to these tools in resource-limited settings when there is public concern for an issue, as there currently is in DC [58]. Historically, the US has called for rigorous, social cost-benefit analyses since the Reagan administration [59]. Assessments were required of proposed regulations that would impact the economy by more than USD100 million annually [59]. Over time, cost-benefit analyses have become firmly entrenched in the regulatory process, and efforts are being made to improve their technique and application [60]. These approaches allow the government to make informed decisions that improve national outcomes and lead to more efficient use of taxpayer dollars [58].

Community-level programs and resources come with a cost, and the financial gains generated from decriminalizing sex work could be reinvested in this supportive programming to strengthen the rights of sex workers, the protection of trafficked minors, and the perpetration of sex traffickers. Sex workers should be integral when developing infrastructure to support a decriminalization policy that improves health outcomes, promotes financial security, and heightens prosperity in DC; all action should be carried out with their input and full inclusivity. Wider political action is also needed to properly tackle the disparities and exclusion that sex workers face in the criminal justice system and in health care, housing, employment, and other sectors.

4.5. Recommendations and Conclusions

In addition to decriminalizing sex work, it is recommended that additional research be conducted. Studies are needed that explore the global rise of decriminalization activism, quantify the health and safety benefits among sex workers in regions that have already decriminalized sex work, and determine the economic impact of decriminalization in other regions. This study offers large implications and many entry points for further research. Upon the passage of decriminalization, it will be more feasible to gather population-level data on HIV/STI risk among sex workers [61]. This change will allow more evidence to be gathered on the rates of HIV/STIs and demographic characteristics specifically among buyers of sex and the incidence of violence and HIV/STIs among sex workers.

In conclusion, this analysis provides scientific and economic evidence for decision makers and serves as a catalyst for further research. Under decriminalization, sex workers would be empowered to refuse clients, insist on condom use, and work together for safety, all amid improved relationships with police and managers. Evidence supports that the economic gains and newly granted, legal authorization under decriminalization would lead to widespread benefits for sex workers, clients, and the community at large.

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Appendix A

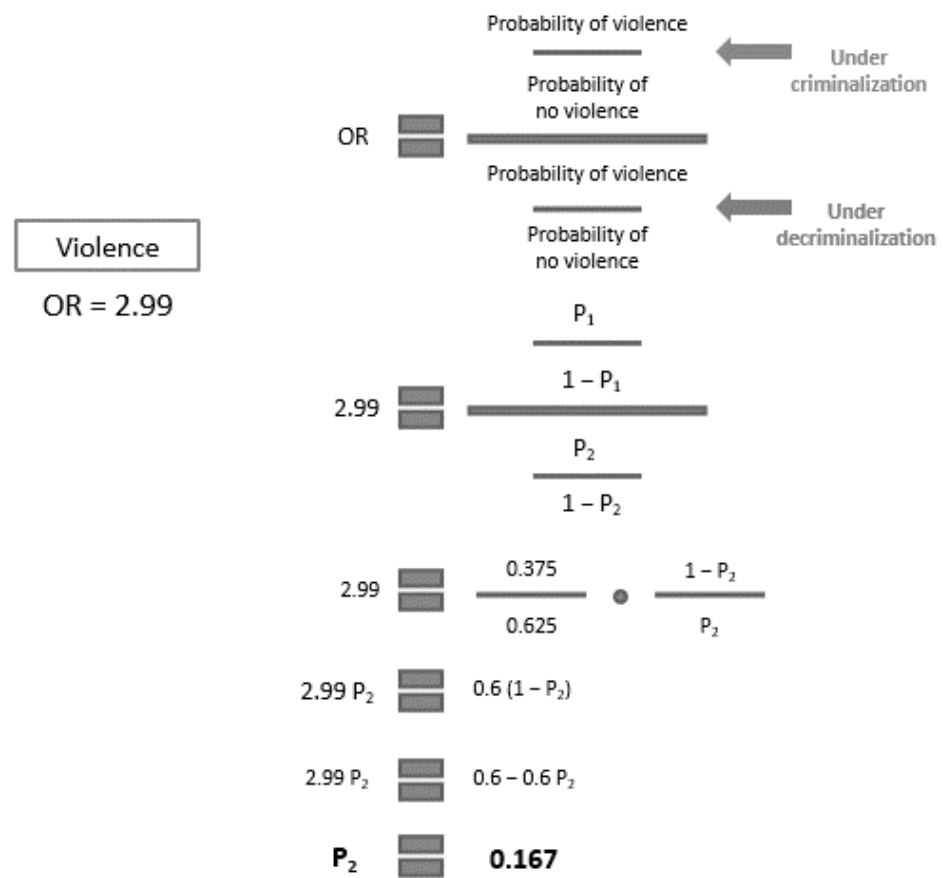


Figure A1. Incidence of violence in sex workers following decriminalization.

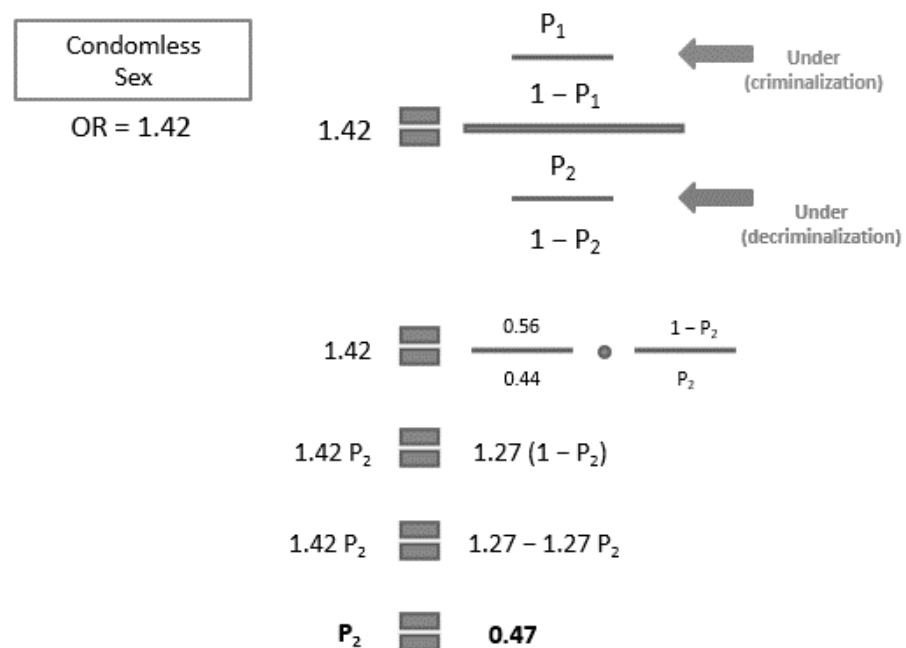


Figure A2. Prevalence of condomless sex after decriminalization.

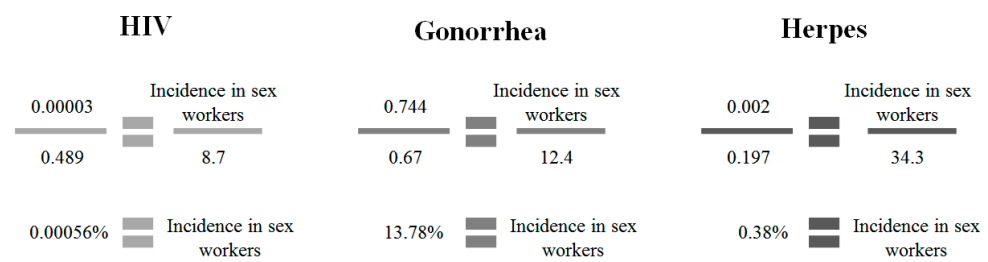


Figure A3. Current incidence of HIV, gonorrhea, and herpes.

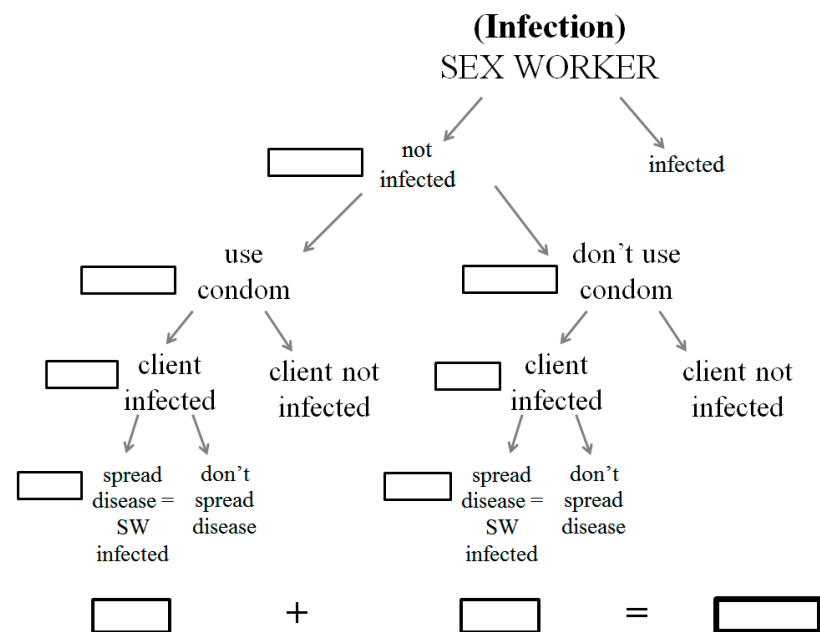


Figure A4. Probability tree of sex worker's risk of infection.

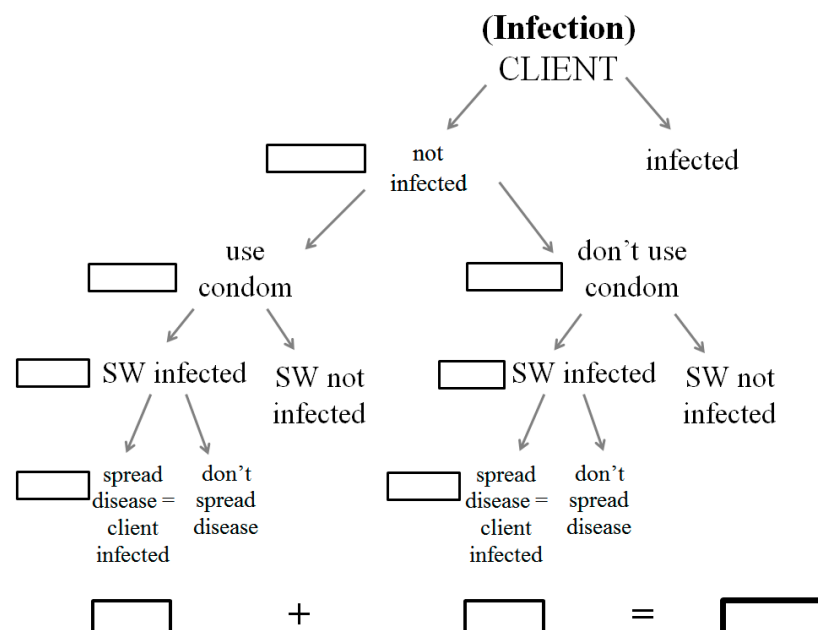


Figure A5. Probability tree of client's risk of infection.

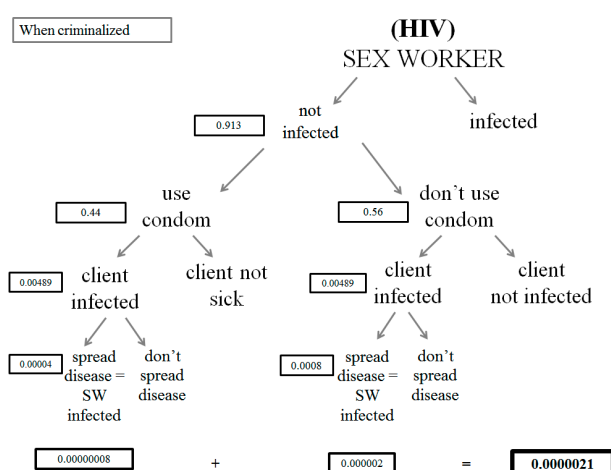


Figure A6. Risk of HIV transmission to a sex worker under criminalization.

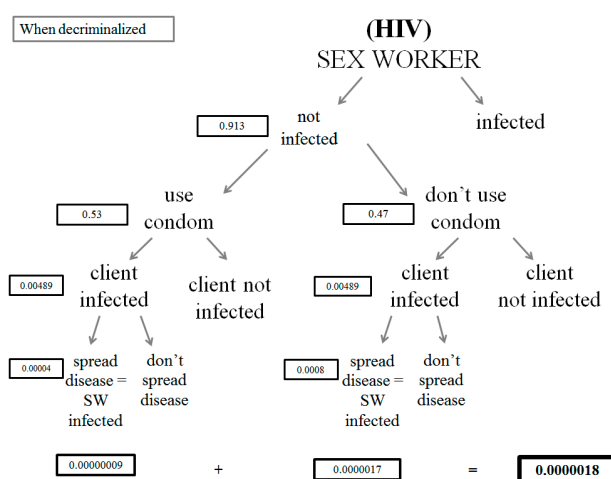


Figure A7. Risk of HIV transmission to a sex worker under decriminalization.

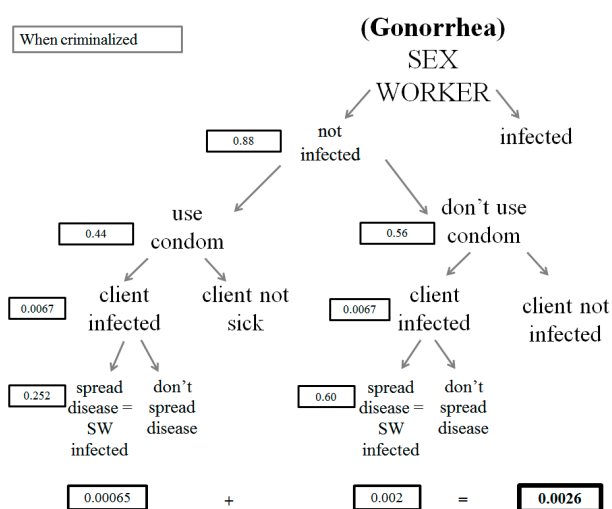


Figure A8. Risk of gonorrhea transmission to a sex worker under criminalization.

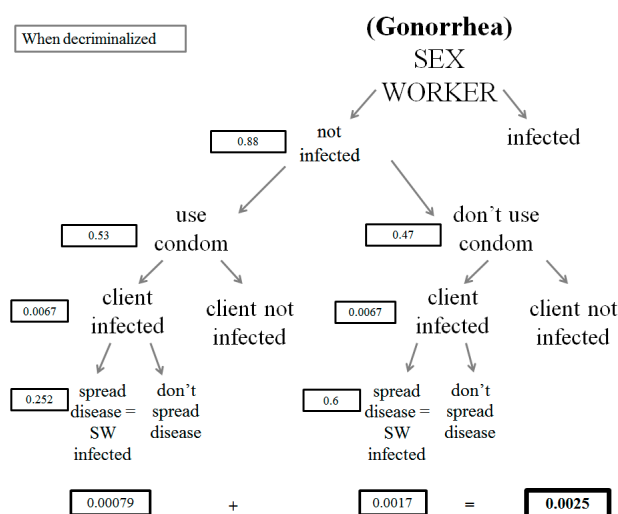


Figure A9. Risk of gonorrhea transmission to a sex worker under decriminalization.

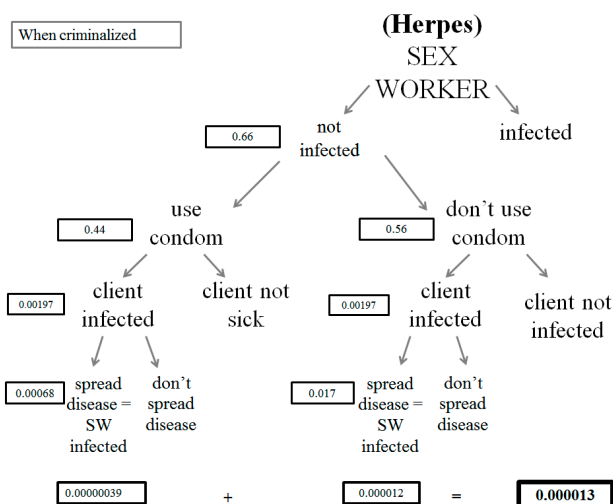


Figure A10. Risk of herpes transmission to a sex worker under criminalization.

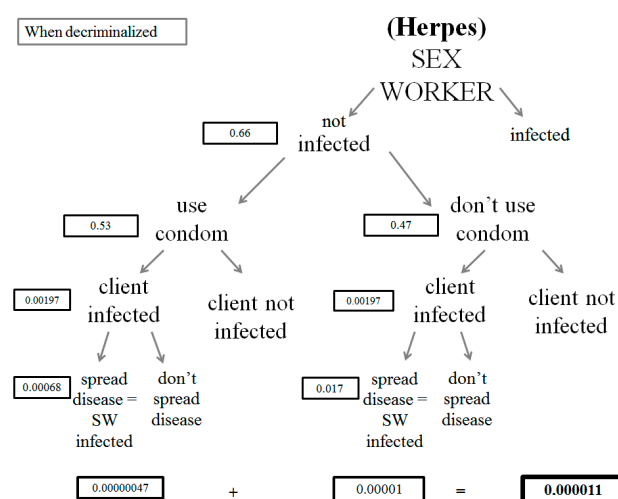


Figure A11. Risk of herpes transmission to a sex worker under decriminalization.

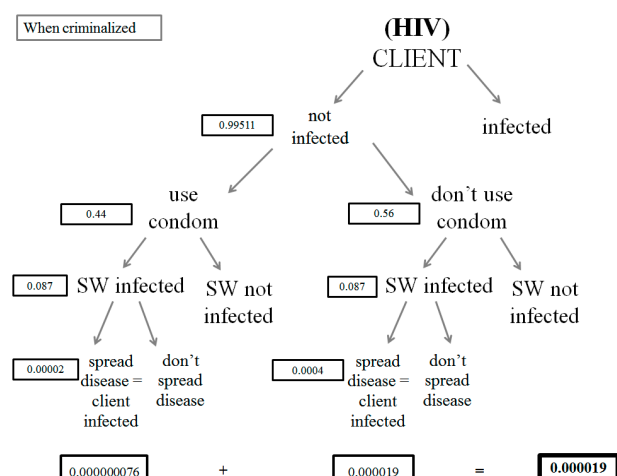


Figure A12. Risk of HIV transmission to a client under criminalization.

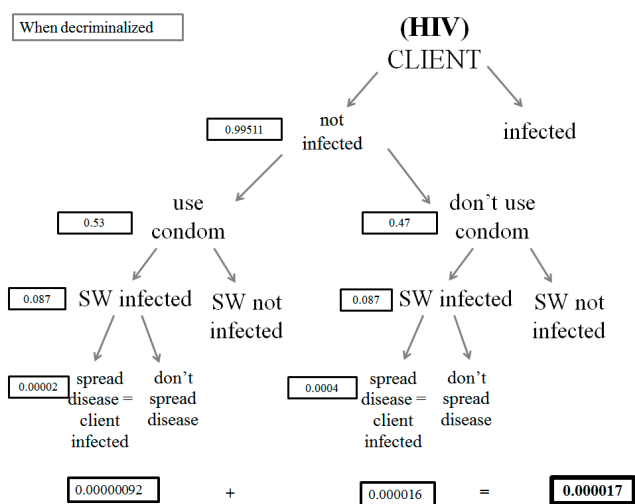


Figure A13. Risk of HIV transmission to a client under decriminalization.

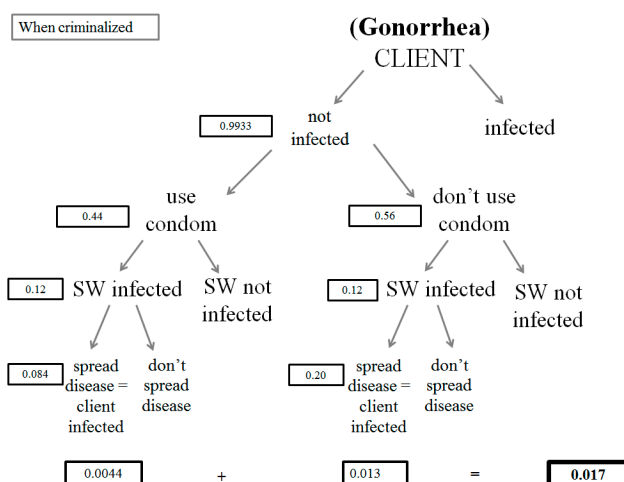


Figure A14. Risk of gonorrhea transmission to a client under criminalization.

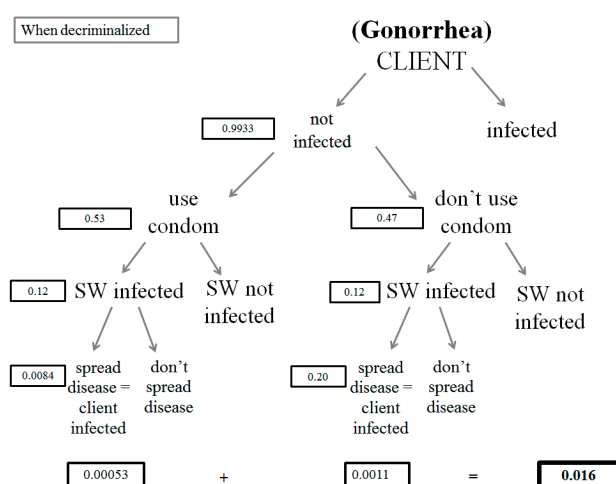


Figure A15. Risk of gonorrhea transmission to a client under decriminalization.

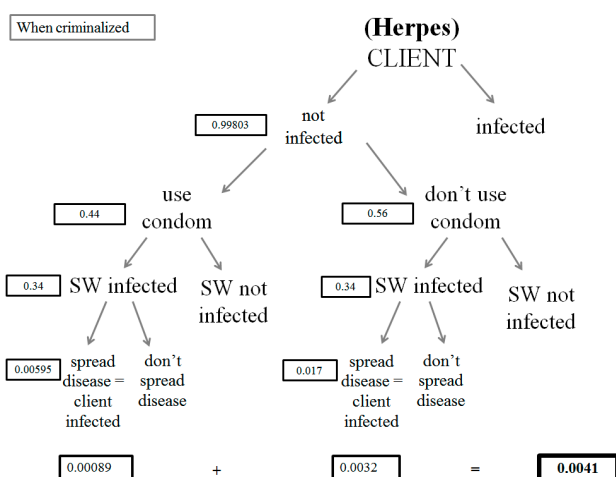


Figure A16. Risk of herpes transmission to a client under criminalization.

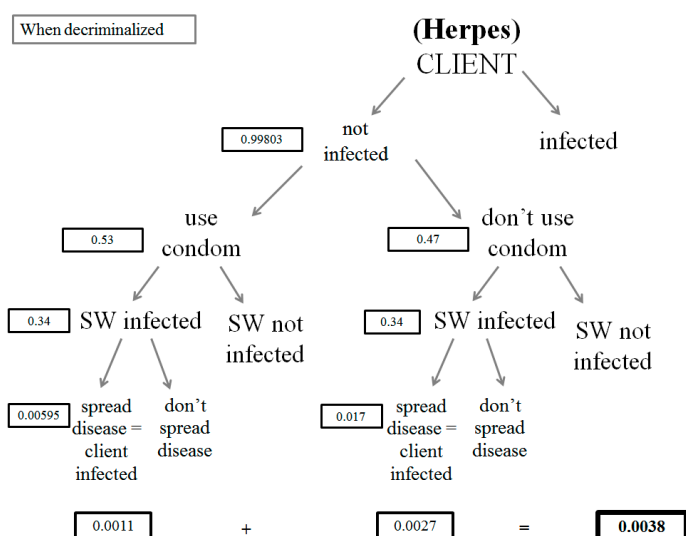


Figure A17. Risk of gonorrhea transmission to a client under decriminalization.

Table A1. Annual income tax revenue and health sector savings per sex worker in sensitivity analysis, by variable modified.

Variable	Overestimation	Underestimation
Income Tax	Calculated from a tax rate based on individuals filing without dependents	Assumed sex worker salary would remain constant, rather than increase with demand
	Included sex workers who are already filing income taxes	Excluded income generated by other workers in the industry
	Did not apply tax deductions to salary	
Criminal Justice Sector	Excluded costs to train law enforcement	Assumed arrests for prostitution led to only one day of prison time
	Excluded costs to disseminate educational materials	Did not account for higher costs to keep women in jail
	Assumed all instances of violence would require medical attention	Only measured direct, medical costs; clients' productivity loss and all indirect medical costs were excluded
Health Sector	Assumed all new cases of HIV/STIs were transmitted through unprotected sex	Excluded medical services used by those not enrolled in health insurance
	Excluded the portion of sex workers who "sometimes used condoms" during vaginal sex	Only measured the savings due to HIV, gonorrhea, and herpes; all other STIs were excluded
		Utilized prevalence and incidence data of violence and HIV/STIs, which are often underreported
		Assumed survivors of violence only experienced one episode of violence and sought treatment one time ¹
		Sourced violence data from the UK, where sex work was less criminalized
		Measured incidence of violence only when perpetrated by clients and not by police
		Assumed that clients' rate of infection was consistent with the general population
		Assumed clients only solicited services once a year
		Assumed all clients were men; did not account for clients who may be women, transgender, or gender non-conforming

¹: If someone experienced more than one episode of violence in the measurement period, health care costs would increase, creating a higher potential for subsequent economic gains following decriminalization.

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