The Devil in the Details: Sex Work Legalization, Sexual Violence, and Moral Subjectivity

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The Devil in the Details: Sex Work Legalization, Sexual Violence, and Moral Subjectivity

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Abstract

Prostitution legislation has re-emerged in public and academic discourse in recent decades after relative silence on the issue since the mid-twentieth century, spurred by Sweden's adoption of prostitution decriminalization - the first known legislation criminalizing the buyers of sex (rather than the sellers) to be actualized in legislation. Since then, scholarship examining the population-level effects of such legal changes has found evidence that changes in legislation affect rates of sexual violence, although the causal credibility and generalizability of some of this scholarship is disputed. Additionally, much of the previous scholarship examining this question used relatively small sample sizes that include only wealthy, industrialized, European Union (EU) member countries. In the current study, I leverage a uniquely constructed panel dataset of an international sample of nations from 1975-2006 to examine the relationship between sex work legislation and rates of sexual violence. Using a staggered adoption difference-in-difference design, I find that the impact varies by the type of legislation: moves to complete legalization as compared to states of criminalization and decriminalization significantly reduce rape rates, but decriminalization, as compared to states of criminalization, leads to an increase in rape rates. These findings suggest that moves towards legalization, and not decriminalization, are effective routes for reducing sexual violence.

Introduction

Prostitution, often dubbed "the first profession," has existed in societies since the beginning of time (Miller and Haltiwanger, 2004; Salmon, 2008; Shuster, 1992). However, in recent decades, prostitution legislation has resurfaced in public discourse as countries such as Sweden have introduced what has now been dubbed the "Swedish model" or the "Nordic model" of prostitution legislation. This legislation effectively criminalizes the clients of sex workers and decriminalizes the practice of selling sexual services (Coleman, 2022; Danna, 2014; Perrotta et al., 2020; Perrotta & Spagnolo, 2019). Some countries have responded by doubling down on legislation, seeking to punish all actors involved in the practice, including Croatia in 2000, Ireland in 1993, Barbados in 1992, and Armenia and Ukraine in 2003 (Criminal Code of the Republic of Armenia, 2003; Danna, 2014; Di Nicola, 2021; Eduardovich 2016; Gao & Petrova, 2022; Kempadoo, 2009; McCarthy, Caslin, & Laite, 2014; Ukrainian Penal Code, 2001; Ward, 2010). Still others have chosen to fully legalize all types of sex work and roles associated with the profession, including pimping, brothels, selling sex, and buying sex, as is the case in the Netherlands (Coleman, 2022; Danna, 2014; Wijers, 2008). The responses of sex workers have varied in their support of specific policies, necessitating the need for an empirical examination of how sex work legislation may affect various outcomes in the population as a whole - what policy leads to the best outcomes for the greatest amount of people?

Proponents of full legalization state that these policies may reduce the amount of sexual violence in the population, both for sex workers and for the general public. Previous scholarship has found evidence that changes towards more liberalized sex work legislation reduce rates of sexual violence, although the causal credibility and generalizability of some of this scholarship is disputed. Specifically, studies have a) focused on small geographic units that impede generalizability (Cunningham & Shah, 2018) and b) focused exclusively on more developed EU nations (Gao and Petrova 2022). Thus, in the current study I ask what effect the level of

prostitution legislation in a given country may have on rates of sexual violence. More specifically, I examine to what degree changes in prostitution legislation resulted in changes at the population level of sexual violence over time. This study will be informative as those in the profession call for different legal regimes in the name of their protection and labor rights depending on the country they reside in (Abel & Healy, 2021; Long, 2007; Mgbako et al., 2012, Petchkaew, 2023). Using a staggered adoption difference-in-difference design, I find that the relationships between sex work legislation and sexual violence are more complicated than previous scholarship suggests: when countries that originally decriminalize or criminalize prostitution adopt prostitution legalization, this legalization is tied to lower rates of rape internationally. However, moves towards decriminalization in countries that start with full criminalization result in *higher* rates of rape. This suggests a bifurcating effect of liberalizing sex work legislation on rates of sexual violence, and points to full legalization as a potential policy that may be useful in reducing rates of sexual violence internationally.

Background

Previous Research on Prostitution Legislation Changes and Sexual Violence

Previous research has examined the relationship between changes in sex work legislation and sexual violence, utilizing quasi-experimental designs in different social contexts. Gao and Petrova (2022), using a generalized difference-in-difference design and data from the EU, find evidence that legalized prostitution is in fact a "substitute" for sexual violence in the overall population. In other words, legislative changes toward legalization led to lower levels of sexual violence. They also examine moves towards criminalization, finding that prohibiting prostitution has a far greater effect on rates of sexual violence as compared to legislative moves towards tolerance. This "substitution mechanism" is also exemplified in a case study of a natural experiment that took place in Rhode Island when a district court judge inadvertently decriminalized indoor prostitution in 2003 (Cunningham & Shah, 2018). The authors found that, when controlling for relevant covariates, rape rates went down between 41 and 54 percent, based on the authors' difference-in-difference models (Cunningham & Shah, 2018). They attribute this result to the fact that a district court judge interpreted a previous case law ruling as decriminalizing indoor prostitution (Cunningham & Shah, 2018). Additionally, the reduction in STI incidence measured by gonorrhea rates went down by statistically significant margins, ranging from 39-45 percent, with the most conservative estimates between five and ten percent, still within range of statistical significance (Cunningham & Shah, 2018). More recent scholarship has called Cunningham and Shah's conclusions into question. Cunningham and Shah's case study is disputed by other scholars (Brooks & Hughes, 2014; Lachapelle et al., 2019) along analytical and definitional lines, prompting even further inquiry into whether their findings are borne out on a larger scale. For example, Brooks and Hughes (2014) dispute the timeline used by Cunningham and Shah (2018), stating that prostitution was not decriminalized in 2003, but in 1980, with a re-interpretation of the law in 1998. Brooks and Hughes (2014) argue that this study period was used because it was a statistical anomaly, with rape rates being higher than other years, making the fall in the rape rates of the following years more significant. Additionally, Brooks and Hughes (2014) further state that rape statistics were available until 2012 when Cunningham and Shah's (2018) study was published, yet Cunningham and Shah (2014) did not include these years. Brooks and Hughes advocate for using data until 2012 as prostitution was

criminalized in 2009. This would have allowed Cunningham and Shah's (2018) hypothesis to be further tested.

Both studies reinforce the economics of sex work in terms of supply and demand. Cunningham and Shah (2018) in particular note that the size of the market for prostitution was directly impacted by the ruling in criminal case law, increasing the demand for indoor sex work. However, it is important to note that Cunningham and Shah (2018) examine only decriminalization and do not address the full legalization and regulation of prostitution - which evokes changes in law surrounding legal pimping, legally mandated testing for sexually transmitted infections, registration and licensing, and taxation. Therefore, the study helps establish that the liberalization of sex work laws does impact sexual violence, without addressing the specific impacts of legalization and regulation of prostitution. Rounding out the study of the substitution effect, Cunningham and Shaw (2018), unlike other scholars, consider the substitution effect's application to decriminalization only, excluding legalization, and find that decriminalization decreases sexual violence. They cite a theory stating that men choosing between committing rape or using a sex worker's services will opt for the sex worker to avoid the legal ramifications of rape (Dever, 1996), reflective of a sort of hedonistic calculus found in rational choice and deterrence theories. Finally, none of these economic studies theorize about the *cultural or social* ramifications of changes in sex work legislation.

Jakobsson and Kotsadam (2013) continue the focus on the economics of sex work and related activities, examining how sexual violence is affected by prostitution laws, with a specific focus on this legislation's effect on human trafficking. They find that countries with legalized prostitution have higher rates of human trafficking. Because human trafficking is closely linked to prostitution, Jakobsson and Kotsadam's (2013) study serves as another frame within which changes to prostitution legislation can be examined as they impact sexual violence.[1]

Human trafficking's second connection to prostitution returns to basic supply and demand. Traffickers, taking advantage of the large market created by liberalization of prostitution legislation, recruit women to travel to a region or another country under the false pretenses of employment not related to sex work; the women later find out that they are expected to sell sex under threats of danger and often have their vital documents confiscated, virtually leaving them stranded (Brooks & Hughes, 2014; Krumholtz, 2018; Moloney, 2018; Moloney,

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[1] The line between prostitution and human trafficking is ill-defined due to the role of managers or pimps of sex workers. In some cases, sex workers may be soliciting, advertising, and carrying out other activities related to prostitution on their own, but historically this has not always been the case (Brooks & Hughes, 2014; Giobbe, 1993; Williamson & Cluse-Tolar, 2002). Giobbe (1993) found that over 53% of women began prostitution using a pimp, and over 80% in their sample went on to become involved with pimps over time. Finally, because human trafficking is commonly described as exerting control over others in a labor-specific sense that goes so far as to restrict their movements and would require an escape to end employment with a given individual, it is sometimes difficult to definitionally separate pimps in the prostitution market from traffickers of victims of sex trafficking. Some countries' legislation blurs this line by criminalizing certain offenses related to prostitution using laws meant to target human trafficking, which is true for India and Canada. (India, 2021; Mason et al., 2022).

2018). When prostitution becomes more legally permissible, traffickers increase trafficking to a given country, often those that are well-known for sex tourism (Cunningham & Shah, 2018; Jakobsson & Kotsadam, 2013), although there is not full agreement on this fact (Cho et al., 2012; Swanson, 2016). In countries where sex work is legal or decriminalized, this creates the illusion for buyers that the sellers are voluntarily selling sex (Brooks & Hughes, 2014). Finally, many sex workers are not citizens or residents of the country or region they operate within, but are immigrants, as shown by the United States' Country Reports for numerous countries (Krumholtz, 2018). Because human trafficking often operates across borders and inherently involves the movement of people, the voluntary move that sex workers make to work abroad due to the legality of prostitution in another country invokes human trafficking (Brooks & Hughes, 2014; Giobbe, 1993; Williamson & Cluse-Tolar, 2002).

Labor Rights, Sexual Violence, and the Police

While previous theoretical and empirical scholarship is suggestive of changes in the economic *market* of sex work, research also indicates that sex work legislation may impact sexual violence through altering the labor rights and relationships to law enforcement of sex workers. Past scholarship has shown that decriminalization is advantageous for sex workers, allowing them to exercise labor and civil rights. Therefore, much of the violence that correctional institutions strive to save sex workers from is eliminated via a change in legislation and civil rights. In this way, the gendered paradigm that views women as inherently vulnerable and unagentic is exposed (Leon & Shdaimah, 2021; Cunningham & Shah, 2018; Sullivan, 2010). Sullivan (2010) also takes on the question of labor experiences as a case study, inquiring about the differing modes of approaching sex work legislation and how variation could impact working conditions, civil and labor rights, and the normal functioning of sex workers in Australia between the cities of Queensland and New South Wales (NSW). NSW restricted the selling of sexual services to certain areas of the city and created safehouses where sex workers could perform services (decriminalization), while Queensland regulated brothels and introduced regulation to other forms of sex work outside brothels (legalization). This provided a unique case study in which different forms of legal tolerance were implemented in a similar time frame and social context, enabling comparisons that control for social and cultural differences across time and space.

Sullivan (2010) found that on a micro scale, both legalization and decriminalization benefitted sex workers, suggesting that legalization and decriminalization are not monolithic in their effects. However, the working conditions each regime yielded were markedly different, indicating that the technicalities of laws governing prostitution result in measurable differences in experiences on the ground. Legalization had multiple key results: sex workers could operate without fear of arrest and the collateral consequences of a criminal record. They were also less vulnerable to violence due to increased safety measures and reduced STI incidence. Sullivan (2010) also finds that, contrary to those working in sanctioned brothels, those operating in unauthorized brothels still faced the possibility of arrest and occupational insecurity similar to that of working when sex work is not legal. However, Sullivan (2010) finds that legislative moves towards sex work tolerance were not universally liberalizing. Regulations in Queensland were noted by a sex worker advocacy group as oppressive and discriminatory towards workers who are older, transgender, male, or use drugs (Sullivan, 2010). Additionally, workers could not

choose their clients, their hours, what they wore, and the prices of their services. In short, legalization resulted in less agency regarding the specifics of the job (Sullivan, 2010). Further, zoning laws, which limit sex work to specific areas in the city, effectively criminalize private workers (Sullivan, 2010). On the other hand, the decriminalization of sex work in NSW resulted in a greater diversity of sexual services and thus agency of workers to earn more.

Increased Agency: Removing Sources of Manipulation

Scholarship also identifies how the legalization of sex work can increase agency amongst sex workers. The legalization or decriminalization of sex work reduces the potential for manipulation in the work and lives of sex workers that is present when sex work is illegal (Brents & Hausbeck, 2005; Human Rights Committee, 2022). One such source of increased agency is the reversal of police officers' roles when sex work is legalized; they transform from disruptors to protectors by enforcing order and removing unruly patrons from brothels (Brents & Hausbeck, 2005). Power is placed in the hands of sex workers and their managers, with police officers supporting the industry instead of interfering with it, giving sex workers the upper hand over their clients (Brents & Hausbeck, 2005). We see a similar reversal when considering the prevalence of police officers who coerce sex workers into performing sexual acts under threat of arrest when sex work is illegal (Cunningham & Shaw, 2018; Levitt & Venkatesh, 2007). Finally, when prostitution is decriminalized or legalized, police officers can no longer stop women on the street who are believed to be sex workers; such stops are currently legal and in some places, carrying condoms is considered to be evidence of prostitution (Marshall, 2014; McLemore, 2013; Wurth et al., 2013), again reversing the role of police officers from a source of aggravating violence faced by sex workers and women in general to one that protects their civil, sexual, and labor rights. Thus, law changes can temper the manipulative relationship between police officers and sex workers by reducing the power differential between each party.

Similarly, the overall attitudes of a society play a role in both legislative changes and sexual violence reporting. In other words, the subjective moral values of a group of people may be a key route by which sex work legislative changes have their impact on sexual violence. When prostitution was criminalized in a given country, I found that public discourse surrounding commercial sex carried a negative connotation that explicitly stated the immorality of selling sex. This was present specifically in countries like Egypt, where legislation has been passed prohibiting "indecent" behavior (Noralla, 2021), and in a significant number of other countries, "soliciting for immoral purposes" is illegal; the specific act of selling sex isn't always noted explicitly, but rather, these acts and similar behavior are encapsulated under legislation calling the selling of sex immoral, as in the cases of India and Bangladesh (Bangladesh, 2021; India, 2021). Additionally, countries like Canada take a quasi-morality approach in their stance on prostitution legislation after our study period (Department of Justice, 2023), stating in official communications that the Canadian government uses the decriminalization approach because it is the least dangerous and least exploitative of all types of prostitution legalization. Assertions that sex work is inherently exploitative are not consistent in the literature and public discourse, thus illustrating that sex work as a whole contains moral subjectivity that leaks into official discourse. Although much research has evaluated the attitudinal correlates of sex work legalization (Powers et al., 2023), research has yet to investigate the potential mediating role of sociocultural gender

and prostitution attitudes in this relationship. Therefore, the current study leverages attitudinal measures of gender equality and prostitution justification to evaluate this hypothesis.

Bodily Health and Safety: Sexual Violence Mitigation via Liberalizing Prostitution

One of the main questions surrounding the regulation of sex work is whether the transaction of sex for money inherently leads to violence or whether legalization can mitigate the risks of violence historically associated with sex work. Brents and Hausbeck (2005) argue that legalizing sex work would decrease violence through formal and informal social controls; formal due to the legal protection of sex workers and the accompanying deterrent effects of punishment placed upon potential aggressors and informal through the protection afforded by personal connections that sex workers have with their coworkers as well as the potentially increased informal social controls placed upon solicitors. Brents and Hausbeck (2005) find that the selling of sex does not categorically imply violence. In fact, very few sex workers in the study reported experiencing any violence throughout their employment. The previously mentioned finding that police officers become bona fide protectors when sex work is legalized also points to increased bodily safety in terms of contraceptive use and ability to give consent without being under the influence of substances as brothels can legally remove dangerous and/or intoxicated clients. In fact, most legalized brothels are prohibited from serving alcohol (Brents & Hausbeck, 2005; Sullivan, 2010). Finally, sex workers have reported feeling a sense of protection when working in a brothel directly as a result of their superiors (Brents & Hausbeck, 2005). These superiors also felt that they kept their employees safe, and noted the superior's role in preventing the sex worker from engaging in illegal (and therefore dangerous) sex work. Management also enforces regulations that require testing for STIs, widely mandated where sex work is legal (Brents & Hausbeck, 2005; Sullivan, 2010).

Brief History and Current State of Prostitution Legislation

National sex work legislation has undergone significant changes worldwide since 1990. The fall of the Soviet Union (USSR) led to a massive overhaul of the criminal codes in post-soviet states because the USSR's criminal code did not address prostitution in an attempt to erase it from the public's consciousness (Reinschmidt, 2016; Quigley, 1991; Hearne, 2022). In port cities and other locations where the sex industry flourishes, economic booms contributed to changing legal regimes and other in some cases public discourse surrounding prostitution, as was the case in Singapore (Herzog, 2017). From there, the turn of the century marks another point at which wide changes in prostitution legislation took place, first in Sweden and extending to other countries who began to rethink their legislation governing (or punishing, in some cases) sex work. Europe, in comparison to other continents, went through particularly well-documented and well-studied changes that act as a model for the present scholarship as they find that changes in legislation did cause rape rates to decrease (Jakobsson & Kotsadam 2013; Gao & Petrova 2022). However, these particular studies have a limited sample scope as they used data based in Europe, leaving a significant portion of the globe unstudied at an aggregate level.

Current Study

While extant research lends support to the possibility of causal relationship between sex work legislation and sexual violence, both Gao and Petrova's (2022) and Cunningham and Shah's (2018) studies are at risk of limited generalizability due to the narrow parameters of their analytical samples because they use only EU member countries or a micro analysis of a change in one U.S. state (Rhode Island). We improve upon this research by leveraging a uniquely constructed panel dataset of 53 countries over the time period from 1975-2006. Additionally, the current study offers a closer examination of the legislation itself; the methodology followed for coding each country's legislation is based not on how the laws are applied, but what the laws themselves dictate in a detailed manner. Further, my original data collection and operationalization of legislative change allows for my analysis to disentangle the effects of decriminalization and legalization, allowing an analysis of the effects on the basis of the scope of the sex work legislation. Further, I move past previous quantitative research that conceptualizes this relationship solely in an economic market-based approach. Rather, I explicitly model the potential mediating influence of sociocultural attitudes, and assess the extent to which sex work legislation indirectly influences sexual violence through sociocultural change. Using a staggered adoption difference-in-difference design, the current study uses the aforementioned panel data to estimate the causal effect of changes in types of sex work legislation on rates of sexual violence in an international sample of countries.

Methods

Sources, Definition, and Operationalization of Sexual Violence

To measure international rates of sexual violence, I used the United Nations Surveys of Crime Trends and Operations of Criminal Justice Systems Series, Waves 1-10, 1970-2006. These data consist of voluntary reported crime counts reported to law enforcement from states to the United Nations survey waves, and I use the counts of rape as my focal dependent measure of sexual violence ('rappol'). I express the rape rate as the number of rapes reported per 100,000 in the population. In the case of rape, victims rarely misreport or falsely report their victimization, as historical meta-analyses have shown (Orchowski et al., 2021), but these measures likely reflect the systematic underreporting of rape to legal authorities. I do not examine the number of people convicted of rape offenses, but the number of reported rapes, as the accuracy of reporting in relation to actual victimization is a well-established fact (Evans, 2023). Additionally, the definition of rape, although it varies from country to country for a host of reasons, has the most consistent, if gendered (Pittman, 2023), definition among types of sexual violence. We do not track other sexual violence offenses because their definitions are expected to be less consistent than that of rape. Finally, other studies involving prostitution legislation and its effects on sexual violence also operationalize sexual violence using rape statistics (Brooks & Hughes, 2014; Cunningham & Shah, 2018; Gao & Petrova 2022; Jakobsson & Kotsadam, 2013), rendering this work comparable to current scholarship on the subject.

Sources, Definition, and Operationalization of Prostitution Legislation

There are many debates on the terms "prostitution" versus "sex work." The present scholarship takes a more critical approach, noting the difference between the two terms. Sex work is an all-inclusive term, encompassing those who sell sex in brothels and on streets to those who do not sell sex but are employed in the erotic entertainment industry that is not governed by legislation on prostitution and does not include sexual contact, like strip clubs and entertainers in erotic bars. Prostitution, on the other hand, is explicitly the selling of sex acts. Therefore, I maintain the difference between sex work and prostitution, but acknowledge the negative connotations that the term "prostitute" carries in everyday discourse and consequently term those who sell sex "sex workers" and the concept of selling sex for money "prostitution." For this reason, legislation governing the selling of sex is termed "prostitution legislation" because this legislation does not address sex work that does not include sex acts between clients and workers.

At present, there does not exist a public database or repository detailing the prostitution legislation of countries internationally. Therefore, I performed an original data collection of prostitution legislation using information from various online databases. While these sources vary depending on each country, they included the country's criminal code where possible. The other main sources used include the United States Department of State Trafficking in Persons Reports, the United States Country Reports on Human Rights Practices, the Global Network of Sex Work Projects, the Sexual Rights Initiative Database, the Library of Congress, government and scholarly articles on the current state and history of prostitution legislation in a given country, reports from human trafficking prevention organizations and sex workers' rights organizations, and finally, news reports from within and outside of a given country to ensure correct coding of the laws.

In the examination of international variation in prostitution legislation, a great deal of variety was found, as is the case in most large-scale evaluations of national legislation. Very rarely, if ever, did a particular country state by name the legislative regime of their prostitution legislation as decriminalization, criminalization, legalization, or another type. Rather, a series of specific offenses established themselves as relating to prostitution in the legal codes of the original 90 countries under analysis. These offenses are listed below.

1. Procuring
2. Pimping
3. Profiting from the earnings of a sex worker
4. Soliciting (public-type is usually cited)
5. Advertising sexual services
6. Selling Sex
7. Buying Sex
8. Brothel-keeping
9. Allowing premises to be used for sex work to occur (usually relating to residences)
10. Zoning laws (e.g., no prostitution a certain distance from churches, homes, schools, etc.)
11. Emigrating or immigrating for the purpose of prostitution
12. Registration of Sex Workers
13. Pension for sex workers
14. Taxation of prostitution
15. Sick leave for sex workers

16. Medical Testing of Sex Workers
17. Mandatory quarantine for infected sex workers
18. Sex outside of marriage

Due to the volume and heterogeneous inclusion of the above variables, the following seven variables were the primary focus of the current study, as they relate directly to the legislation or lack thereof of sex work and they were the most commonly included activities across all countries:

1. Selling Sex
2. Buying Sex
3. Brothel-keeping
4. Pimping
5. Living Off/Profiting From Another's Prostitution Earnings
6. Solicitation of Prostitution
7. Medical Testing Required
8. Individual Licensing and/or Registration Required

From these activities, a determination of the legislative regime was made, chosen from one of three options: decriminalization, legalization, and criminalization. In line with my staggered adoption difference-in-difference design, I noted whether a given legal change occurred that moved the legislative regime towards more tolerance of prostitution and related activities, or whether no change occurred. This coding was based only on overall shifts that changed a country's legislative regime, not changes in the legality of single activities related to prostitution, unless the movement of a single activity changed the overall legislative regime.

For countries coded as *criminalized*, selling sex is usually not legal and sex workers themselves are prosecuted and convicted of prostitution as a crime, whether through vagrancy and loitering laws (which must note loitering for the purpose of selling sex or "prostitution" to be included in our coding scheme) or laws punishing the specific act of selling sex. Advertising, soliciting, pimping, and brothels are usually illegal and subject to prosecution, but in some rare cases, brothels may still be legal in a few cities while all other prostitution is illegal.

In countries where prostitution is *decriminalized*, the criminal code focuses on those other than a sex worker being criminalized; pimping and other types of organizing prostitution are not legal and living off the earnings of a prostitute is often not legal. Buying sex is usually (though not always) illegal but selling sex is legal - which means that in the criminal code, selling sex is not mentioned because the criminal code dictates what people *will* be punished for and excludes what they will *not* be punished for. In some cases, no activities related to prostitution are included in the criminal code, resulting in a de facto decriminalization, as activities not listed as punishable offenses in the penal code are technically legal but in this case are not regulated.

Legalized prostitution regimes lean toward regulation. Buying, selling, and soliciting sex are often legal; brothels are allowed and often taxed in this regime, workers may be subject to medical exams, workers may need to be licensed and comply with regulations, which may

sometimes include the taxing of workers' earnings; workers may even have workers' compensation, family leave, and severance, as is the case in Colombia (Rodriguez-Ferrand, 2012). Often, but not always, third-party activities relating to prostitution are legal under legalized regimes.

With regard to activities related to prostitution, I do not assume what a given country's specific legislative policies are if there is no verbiage addressing these activities in available sources - a specific source was required to code an action's illegality or legality. This decision is made due to the relative ambiguity of legislative data and this position guards against potential inaccuracies within the data. For example, sometimes sources other than legal codes only state that "prostitution is legalized," but do not address the legality of specific acts of selling sex and buying sex that often determine the difference between decriminalized prostitution and legalized prostitution. When prostitution is legal, it is reasonable to assume that both buying and selling sex would have to be legal, but often only selling sex is explicitly legal in sources, the buying portion of the transaction left unaddressed. There is no one set of laws a country must adopt to define their prostitution regime as legal, decriminalized, or illegal, so these variables are not constant in all countries whose sources state that prostitution is or was legal.

For states with heterogeneous legislation, meaning that sex work laws are governed primarily at the state level, federal laws are used, erring on the side of tolerating prostitution because those who may potentially buy sexual services effectively have access within the country to legal prostitution. However, when vagrancy laws explicitly criminalize prostitution (i.e. "loitering for the purposes of prostitution,"), the overall code for these countries is criminalization. This applies in particular to Malta (Danna, 2014; Di Nicola, 2021). Additionally, Austria's laws are somewhat heterogeneous (Di Nicola, 2021; Johnson et al., 2008), however the laws maintain a significant level of homogeneity at the federal level so Austria is coded as though its laws are entirely homogeneous, aided by the fact that Austria has never outlawed prostitution (Di Nicola, 2021; Johnson, et al., 2008).

In cases where the solicitation of prostitution was legal if the sex worker was properly licensed or in the part of the city zoned for legal prostitution, solicitation of prostitution is listed as legal because while rules exist surrounding how solicitation is done, it is a legally protected activity, as are other types of work when carried out within the law. Any employment is illegal if not carried out legally, so I treat prostitution similarly while noting that prostitution is not a comparable form of employment to much of the rest of the labor world. When there is not a legal way to carry out solicitation in a given country, solicitation is marked as illegal. Finally, in my attempt to classify the legal regimes of each country of study, I do not assert that these legal regimes are the "correct" way to categorize each country's prostitution laws and are not set in our classification of this legislation. Further, they should be subject to critique by other scholars in the field.

Assumptions About Sex Work

Finally, an acknowledgement of the coercive nature of sex work must be made. In the vast majority of cases, women selling sex originally may not have chosen to do so voluntarily, but may have been forced into the business either as a child (who could not consent to these

activities), or suffered some kind of abuse early in life that they personally link to their present profession as a sex worker (Bagley & Young, 2009; Harding & Hamilton, 2009; Hughes & Brooks, 2014; Orchard et al., 2014). This is relevant to the current study because my work centers on a particularly vulnerable population; providing context with transparency is essential to accurately tell the story of the individuals at the center of this research. Hence, while this work opts to use the word "sex worker" to describe those in the profession in the most objective way possible, I caution those who may assert that sex work is usually voluntary, because this both invalidates the experience of sex workers and creates an obstacle for those seeking to leave the profession due to safety and health concerns. Lastly, in many countries, like Argentina and Honduras, historical estimates show that the majority of women who are sex workers are single mothers that engage in sex work to support their children (RedTraSex 2017; Ammar Argentina, 2015). In other countries, about half of female sex workers have children and are usually single mothers (Perkins & Bennett 1985, Romans et al., 2001, Vanwesenbeeck 1994), thus shedding more light on the reductionistic approach of stating that women who engage in sex work do so fully voluntarily and because they enjoy their work, which does not have empirical backing.

Sampling

In selecting my international sample, I purposively chose 90 countries from the previously mentioned UN's Surveys of Crime Trends and Operations of Criminal Justice Systems Series data that had 20 or more data points available on sexual violence statistics. This limits the generalizability of my analysis, and exposes the current study to sample selection concerns as we are analyzing a panel of countries that somewhat consistently reported rape counts to the UN across the period from 1975-2006. Upon merging the various data sources described below, which also have varying amounts of missing data across the series, we perform listwise deletion of countries that have missing data on the entire series of any of our time-varying controls as described below, resulting in a final analytical sample of 53 countries (n = 53 countries x 32 years = 1,696 country-years). While this further limits the generalizability of the current analysis, the state of missingness in many of these international data sources limits my ability to include many countries to test my hypotheses. Countries that do not have adequate sexual violence data due to a lack of infrastructure that is a barrier to reporting sexual violence may also vary in their likelihood to pass prostitution legislation. To further bolster the analytical sample, imputation was performed on the 53 nations in the analytical sample using a last observation carried forward or backward (LOCF/B) procedure. Effectively, this assumed stability between the observed data points and subsequent (or previous) data points, and effectively made possible my international analysis despite the ubiquitous missing data from many of the disparate survey and governmental data sources. I return to discussing these issues in the limitations section in the discussion.

Controls

Although my research design implicitly controls for time-stable heterogeneity across place, as well as common time shocks shared amongst nations, I also include a suite of time-varying control variables. I include these time-varying controls to strengthen the parallel trends assumption within my staggered adoption difference-in-difference design as described

below. I include the level of economic development measured by the Gross Domestic Product (GDP) measured in 2010 dollars, male to female population ratio (male population/female population*100), immigrant shares of the population, population size (in millions), rule of law index[2], and unemployment rates from the World Bank Development Indicators data (Arel-Bundock, 2022). These time-varying controls are consistent with Gao and Petrova's (2022) study, as well as Jakobsson and Kotsadam's (2013) study. The Gender Inequality Index comes from UN Development Programme data, which rates countries based on equality in reproductive health, empowerment and the labor market. This standardized index ranges from 0 to 1, with 1 being the smallest amount of gender inequality, and 0 being gender inequity (United Nations, 2024).[3] I also use variables from the World Values Survey as both time-varying controls, as well as a test as to the extent by which sex work legislation impacts sexual violence via sociocultural change in attitudes towards gender equality and prostitution. Research indicates that attitudes about prostitution around the world are changing and people are becoming more permissive of prostitution (Inglehart, 2016). These variables are whether or not prostitution is justified and whether respondents have confidence in the police. Finally, we include measures of gender equality from the World Values Survey in jobs, politics, and education. Summary statistics for all variables can be found in Table 1.

<u>Staggered Adoption Difference-In-Difference Design</u>

To estimate the causal impact of sex work legislation on international rape rates, I use a difference-in-difference (DID) research design. The classic DID design comprises two time periods and two groups, where one group is treated (i.e. passes sex work legislation) and another group is not (i.e., does not pass sex work legislation). The treated group becomes treated in the second time period and the difference in the change in the treated group as compared to the change in the untreated group estimates the causal effect of treatment. Classic DID effectively estimates "how much more the treated group changed than the untreated group (Huntington-Klein 2021, p. 437)," and the change in the untreated group, under the parallel trends assumption, represents the expected amount of change in the treated group had treatment been withheld effectively acting as a counterfactual scenario. Formally, the 2x2 classic DID estimates the average treatment effect among the treated (ATT) by comparing the observed, treated outcomes to the unobserved, but estimated outcome from observed untreated units:

$$ATT = E[Y_t(1) - Y_t(0)|D = 1]$$

where the ATT is the average of the difference between the treated, $Y_t(1)$, and untreated, $Y_t(0)$, potential outcomes for units in the treated group. My DID design relies upon the parallel trends assumption, which assumes that "had no treatment occurred, the gap between treated and untreated groups would have remained constant (Huntington-Klein 2022, p. 441)." This

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[2] The World Bank Development Indicator data's rule of law index is an aggregate of six dimensions of governance: Voice and Accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness; Regulatory Quality; Rule of Law; Control of Corruption. This measure captures perceptions of the extent to which citizens have confidence in and abide by the rules of society.

[3] The UN Development Programme gender inequality index is constructed from 5 international indicators from various sources: maternal mortality ratio, adolescent birth rate, female and male population with at least secondary education, female and male shares of parliamentary seats, and female and male labor force participation rates.

assumption allows the DID design to use the observed outcomes in the control countries as an estimate for the treatment units' unobserved outcomes under the condition of no treatment. It should be noted that I strengthen the parallel trends assumption by conditioning on the time-varying covariates as described above, which aid in controlling for differences over time that are not identical over time between treatment groups (e.g., countries that select into treatment having time-varying characteristics that are related to rape rates). Under the parallel trends assumption, the ATT is:

$$ATT = E[Y_t - Y_{t-1}|D = 1] - E[Y_t - Y_{t-1}|D = 0]$$

which states that the difference in the mean change in outcomes over time in the treatment group is adjusted by the mean change in outcomes over time in the untreated group. Effectively, this removes the part of the over-time change in the treated group that is *not due to treatment*.

Following Gao and Petrova (2022), I estimate the ATT of sex work decriminalization and legalization using the The Two-Way Fixed Effects (TWFE) estimator (Callaway & Sant'Anna, 2021). This DID estimator estimates the causal effect of treatment under the assumptions of 1) parallel trends, 2) no treatment anticipation, and 3) no treatment effect heterogeneity (e.g., differences in the impact of treatment across countries or time periods) and no treatment effect dynamics (e.g., an effect that grows or weakens over time). I choose the TWFE estimator for parsimony as well as its similar effectiveness to other, more sophisticated, staggered adoption DID estimation strategies in the context of the study of sex work legislation (see Gao and Petrova 2022). My final TWFE specifications, relayed in tables 3 and 4 below, are as follows:

$$R_{it} = \beta Decrim_{it} + \lambda X_{ij} + \theta_i + \gamma_t + \varepsilon_{it}$$
$$R_{it} = \beta Legal_{it} + \lambda X_{ij} + \theta_i + \gamma_t + \varepsilon_{it}$$

where R_{it} is the rape rate per 100,000 residents in a given country-year, λX_{ij} represent observed, time-varying controls, θ_i are the country fixed effects that account for time-stable between country variation, γ_t are the year fixed effects that capture common time shocks across countries, and ε_{it} represent unobserved time-varying changes on rates of rape. I estimate the decriminalization model on only the countries that never moved to legalization to provide a more clear comparison between decriminalization and criminalization. The second specification defines treatment as legalization in comparison to the control states of criminalization and decriminalization. Under the assumptions defined above, these TWFE DID panel models identify the causal effect of sex work legislation on rates of sexual violence.

Table 1: Descriptive Statistics for All Variables, 1975-2006

Statistic	N	Mean	St. Dev.	Min	Median	Max
Rape Rate	1,696	9.160	17.199	0.000	4.725	203.827
Treat Decrim	1,696	0.000	0.000	0	0	0
Treat Legal	1,696	0.000	0.000	0	0	0
GDP per Capita (thousands)	1,696	13.703	15.658	0.327	5.846	78.894
Population (millions)	1,696	64.875	193.741	0.143	12.860	1,311.020
Unemployment Rate	1,696	7.302	4.865	0.600	6.838	24.400
Gender Inequality Index	1,696	0.380	0.187	0.047	0.368	0.741
Immigrant Share	1,696	8.515	11.262	0.029	4.188	77.052
Rule of Law	1,696	0.425	0.913	-1.835	0.313	1.966
Gender Ratio	1,696	102.418	9.464	39.509	102.989	120.118
Gender Equality - Job	1,696	0.529	0.206	0.054	0.544	0.968
Gender Equality - Politics	1,696	0.511	0.161	0.124	0.492	0.815
Gender Equality - Education	1,696	0.673	0.104	0.395	0.670	0.939
Prostitution Justified	1,696	2.674	1.080	1.017	2.651	6.228
Confidence in Police	1,696	2.616	0.351	1.849	2.628	3.715

Results

Historical and Current Prostitution Legislation

Figure 1: Prostitution Legislative Status by Country, 1975
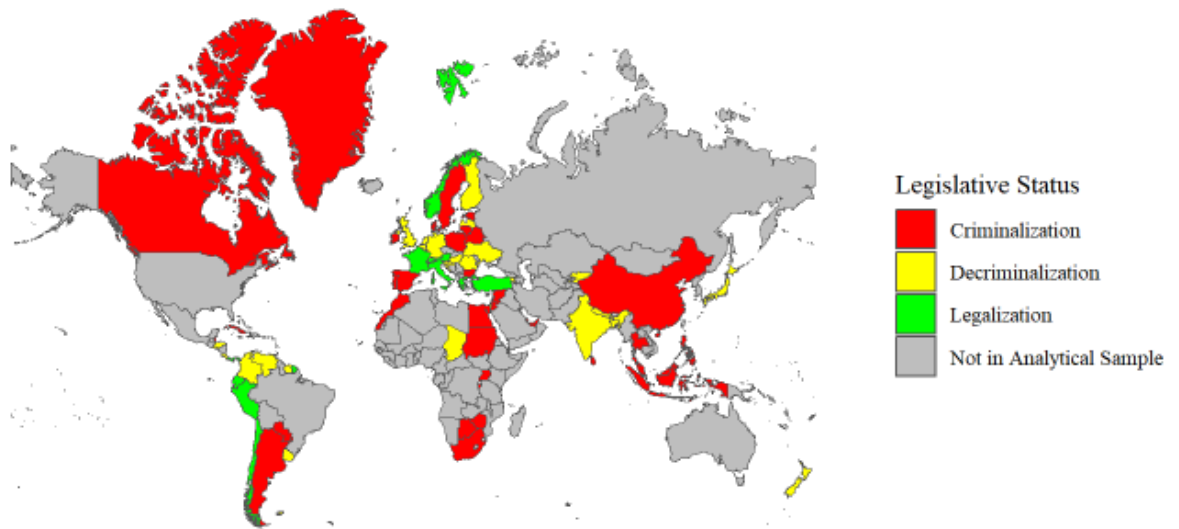
Figure 1 displays the legislative status of each country under the analysis as of 1975, the beginning of the study period. Of the 53 countries, 43% criminalized prostitution, 37% decriminalized prostitution, and 17% legalized prostitution. By their individual counts, 23 countries criminalized prostitution, 21 decriminalized prostitution, and 9 legalized prostitution. We see a concentration of legislation more tolerant of prostitution in western Europe, however there are key regions in which tolerance is seen, including South American countries like Ecuador, Chile, and Peru, which are popular for sex tourism, specifically in Peru's Madre de

Dios region in the Amazon rainforest (Moloney, 2020). Additionally, none of the African countries begin their time in the sample as decriminalized or legalized, while other regions, except for North America, have more heterogeneity in their legislative regimes.

Figure 2: Prostitution Legislative Status by Country, 2006
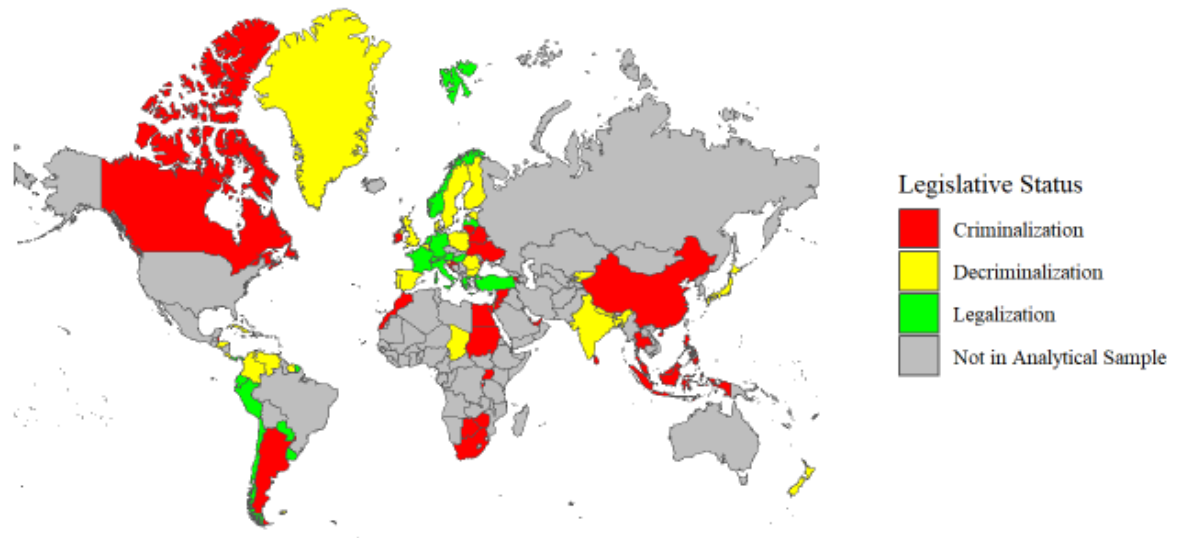
Here, we see that a greater number of countries have decriminalized prostitution at the end of the study period as compared to the beginning of the study period. 40% of the countries criminalized prostitution, 34% decriminalized prostitution, and 26% legalized prostitution. Notably, the number of countries that legalized prostitution experienced a 9% increase, from nine countries in 1975 to 14 countries in 2006, while the number of decriminalized countries in this sample went down by three countries, showing a greater change in legalization and criminalization than decriminalization. Sweden's adoption of decriminalization seemingly began a domino effect, with other countries like Germany adopting decriminalization (Ekberg, 2013). Notably, none of the African countries in the sample changed their legislation from one regime to another, and the only South American country that changed its legislation was Uruguay. In 2006, there was overall more tolerance of commercial sex as compared to 1975, an expected trend given the resurgence of prostitution in the public discourse.

Bivariate Analysis

Table 2: Rape Rate per 100,000 Means by Pre/Post Treatment

Treatment	Pre/Post Legislation	Rape Rate per 100,000	Welch's T-Test
Treat Decriminalization	Pre	11.34	
Treat Decriminalization	Post	6.36	t(1184) = 4.58, p < .001
Treat Legal	Pre	9.30	
Treat Legal	Post	8.60	t(1416.6) = 1.07, p = .29

Table 2 presents simple bivariate mean comparisons between state-years in post-treatment statuses, as compared to state-years in pre-treatment (i.e., never or not-yet-treated) conditions in the analytical samples. For the decriminalization treatment, which uses the sample with only countries who experienced only criminalization or decriminalization, the mean rape rate per 100,000 in the pre-treatment period (11.34) is statistically significantly larger (t(1184) = 4.58, p < .001) than that of the post-treatment period (6.36) which is suggestive of a decline in the rate of rape in post-treatment time periods. Similarly, the post-treatment mean for legalization (9.3), as compared to criminalization or decriminalization (8.6), is lower but the magnitude of this difference is much smaller and not statistically significant (t(1316.6) = 1.07, p = .29). It should be noted that these simple pre/post mean comparisons contain both variation that could be due to changes in legislation, as well as other factors correlated with time (e.g., declining overall crime rates). Therefore, the following staggered adoption DID models will be used to isolate the variation that is attributable to the adoption of sex work legislation by comparing the temporal variation in treatment countries to countries that have not passed legislation changing a country's prostitution regime.

Staggered Adoption Difference-in-Difference Models

Table 3: DID TWFE Models of the Rape Rate, 1975-2006

	Rape rate per 100,000		
	(1)	(2)	(3)
Treat Decrim	8.594***	9.452***	10.349***
	(2.239)	(2.206)	(2.301)
GDP per Capita (thousands)		0.193	0.149
		(0.160)	(0.166)
Population (millions)		-0.006	-0.012
		(0.011)	(0.012)
Unemployment Rate		-0.333*	-0.170
		(0.153)	(0.163)
Gender Inequality Index		61.815***	59.459***
		(14.058)	(14.090)
Immigrant Share		0.334*	0.266
		(0.168)	(0.172)
Rule of Law		-3.576	-2.838
		(2.968)	(2.979)
Gender Ratio		1.535***	1.461***
		(0.234)	(0.236)
Gender Equality - Job			-11.458*
			(5.507)
Gender Equality - Politics			20.265**
			(7.685)
Gender Equality - Education			-1.340
			(10.364)
Prostitution Justified			0.115
			(0.758)
Confidence in Police			3.859
			(2.146)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	1,216	1,216	1,216
R^2	0.013	0.073	0.082
Adjusted R^2	-0.047	0.011	0.017
Notes:	***Significant at the 0.1 percent level.		
	**Significant at the 1 percent level.		
	*Significant at the 5 percent level.		
	Models estimated on sample without countries that moved to legalization.		

Table 3 relays staggered adoption TWFE DID models of the rape rate per 100,000, with decriminalization as the focal treatment as compared to control countries that criminalize prostitution. Model 1 is a naive TWFE DID that includes only the treatment variable in the model and model 2 adds in country social, economic, and demographic characteristics. Model 3 introduces the survey items from the World Values Survey that capture relevant sociocultural attitudes towards gender equality, prostitution, and the police. Contrary to previous research and my hypotheses, the effect of decriminalization on the rate of rape is statistically significant and

positive. This means that passing prostitution decriminalization, as compared to the pre-treatment status of full criminalization, leads to an additional 10.3 rapes per 100,000. This suggests that decriminalization, when compared to criminalization leads to more sexual violence. Additionally, the effect of decriminalization is not attenuated by the introduction of cultural attitudes, which does not support the hypothesis that prostitution legalization is operating through sociocultural changes in the general population.

Table 4: DID TWFE Models of the Rape Rate, 1975-2006

	Rape rate per 100,000		
	(1)	(2)	(3)
Treat Legal	-3.883	-4.943*	-5.508*
	(2.232)	(2.209)	(2.257)
GDP per Capita (thousands)		0.196	0.068
		(0.108)	(0.113)
Population (millions)		-0.006	-0.006
		(0.010)	(0.010)
Unemployment Rate		-0.265*	-0.168
		(0.120)	(0.127)
Gender Inequality Index		49.473***	47.610***
		(11.675)	(11.684)
Immigrant Share		0.153	0.107
		(0.136)	(0.139)
Rule of Law		-2.588	-2.236
		(2.418)	(2.418)
Gender Ratio		1.394***	1.451***
		(0.192)	(0.194)
Gender Equality - Job			-1.721
			(3.837)
Gender Equality - Politics			9.287
			(5.567)
Gender Equality - Education			5.265
			(7.079)
Prostitution Justified			0.460
			(0.518)
Confidence in Police			5.154**
			(1.586)
Country FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	1,696	1,696	1,696
R²	0.002	0.053	0.064
Adjusted R²	-0.050	-0.001	0.008
Notes:	***Significant at the 0.1 percent level.		
	**Significant at the 1 percent level.		
	*Significant at the 5 percent level.		
	Models estimated on full sample panel.		

Table 4 shows staggered adoption TWFE DID models of the rape rate per 100,000, with legalization as the focal treatment as compared to control countries that have criminalized or decriminalized prostitution. Aside from the treatment variable and the analytical sample, the specifications are identical to those depicted in Table 3. Contrary to the results in Table 3, and

consistent with my hypotheses and previous research, the effect of legalization on the rate of rape is statistically significant and negative. This means that passing prostitution legalization, as compared to legislative conditions of criminalization or decriminalization, reduces the rape rate by 5.5 rapes per 100,000 population. This suggests that legalization, when compared to more conservative legislation, leads to less sexual violence reporting. Similar to the decriminalization models presented in Table 3, the effect of legalization is not attenuated by the introduction of cultural attitudes, which does not support the hypothesis that prostitution legalization is operating through sociocultural changes in the general population, at least as measured with the included attitudinal measures in this study.

Discussion

Contextualization of Results

This study is the first quasi-experimental study of the relationship between sexual violence and prostitution legalization in a global sample of countries. The results suggest a bifurcating impact of liberalizing prostitution legislation. On the one hand, moves towards decriminalization away from criminalization are tied to higher rates of sexual violence. Given that this change usually reverses the legal liability from the sex worker to their clients, sex workers may feel more comfortable reporting incidents of sexual violence to the police when they occur, artificially inflating the rape rate of a country. Additionally, as documented by previous scholarship (Jakobsson & Kotsadam, 2013), moves from prostitution criminalization to decriminalization can cause an increase in human trafficking to a given country, which could legitimately increase the rate of sexual violence.

However, the most liberalizing policy, that of full legalization, represents a potential violence suppressing impact, as compared to policies that constrain or limit sex work. The role of police and regulations may be the most influential factor here, as legalization does more than preventing sex workers from being arrested or harassed by officers (which can be true in decriminalized regimes) and regulations may serve to increase safety for legal forms of prostitution. In legalized regimes, police officers are responsible for keeping sex workers safe, especially in the case of indoor prostitution, where they may be responsible for keeping patrons who do not comply with sobriety policies out of brothels, in addition to removing violent patrons.

Further, this study was the first to investigate the possibility that sociocultural attitudinal changes play a mediating role in the relationship between prostitution legislation and sexual violence. The DID models above do not provide evidence in support of this hypothesis, suggesting that changes in sexual violence occur through other channels, or through attitudes not measured in the current study. This suggests that the mechanisms of sex work legislation impact sexual violence via the interpretation of laws, not their original dictation, as countries that have very stringent prostitution laws effectively push sex workers to operate outside of legal bounds because regulations are so onerous that it is nearly impossible to operate within the law.

My findings, at least in terms of decriminalization, are not consistent with other studies on the subject. This could be due to a difference in the way that legislation is coded, with the

knowledge that there is no standard way to code prostitution legislation regimes. Gao and Petrova (2022) code their legislation according to how prostitution operates in a given country, while our study focuses on the exact stipulations of the laws themselves. While both studies focus only on legislation coded according to criminalization, decriminalization, and legalization, the operational parameters of these measures may be different (Cunningham & Shah, 2018; Gao & Petrova, 2022; Jakobsson & Kotsadam, 2013). Further, previous studies have not analyzed a global sample. The sample parameters alone may explain the differences seen in our results; while Cunningham and Shah (2018) use a case study, Gao and Petrova (2022) and Jakobsson and Kotsadam (2013) use sample sizes smaller than the current sample of 53 countries, with Jakobsson and Kotsadam (2013) using 46 countries and Gao and Petrova (2022) using 31 countries. Both studies are limited to countries in the EU. Gao and Petrova (2022) themselves note that a majority of their sample contains wealthy, industrialized nations; thus, their results may not be generalizable to other countries which are not wealthy and industrialized and whose legal systems and prostitution markets would subsequently operate differently. These differences in sampling offer a number of future directions for study and potential explanations for the difference in results explained above. Prostitution may operate differently on different continents, particularly in countries that are EU members versus non-members. The economics of prostitution may be impacted by EU policies that do not have an effect in non-EU countries included in our sample and may be another factor that influences changes in prostitution legislation.

Limitations

While my study represents a contribution to the study of sexual violence and prostitution legislation, it is not without its limitations. Future research should use alternative estimators to see if the results can be replicated. The current TWFE estimator may produce biased results because it is not robust to treatment effect heterogeneity or temporal treatment dynamics (Callaway & Sant'Anna, 2021). In other words, the TWFE model compares newly treated countries whose treatment took place during the study period with countries that received treatment in earlier periods, effectively contaminating the clean treatment-control comparisons. In further preparing this analysis for potential publication my advisor and I are going to work towards examining the robustness of this analysis strategies to other modeling strategies, such as the group-time ATT approach developed by Callaway & Sant'Anna (2021).

Another limitation of the current analysis is the potential presence of spatial autocorrelation or spatial "spillovers" across treatment and control groups. Returning to the studies by Brooks and Hughes (2014) and Lachapelle et al. (2019) which criticize the work of Cunningham and Shah (2018), we now examine spatial factors that may influence the reporting of sexual violence which interact with changes in prostitution legislation. Brooks and Hughes (2014) and Lachapelle et. al (2019) examine the idea of reporting locations when prostitution laws change in a given region and the market size for prostitution increases. Particularly in the case of Rhode Island, a district court judge inadvertently decriminalized indoor prostitution and massive changes were seen in sexual violence rates (Brooks & Hughes 2014; Cunningham & Shah, 2018; Lachapelle et al., 2019). The individuals who make up the market increase that results from these changes actually may not be reflected in the reporting of sexual violence in Rhode Island. The individuals that make up this market come from outside the state to take

advantage of lenient prostitution laws not present in their home state that are present in Rhode Island (Brooks & Hughes, 2014; Lachapelle et al., 2019). When these individuals return to their home state, they may be diagnosed with a sexually-transmitted infection, which would be counted in their home state's reporting, not in Rhode Island's reporting (Brooks & Hughes, 2014; Lachapelle et al., 2019). This can also be true for sex workers who travel to areas where prostitution is decriminalized (for example, across state lines) to carry out sex work with a lower risk of criminal legal consequences. Considering the sex worker's side brings us to the other measure of sexual violence: rape rates. When sex workers travel to other states to practice their profession, they may experience sexual violence but report this violence once they return to their home state, counting these incidences as taking place in a state other than the one in which they occurred, yet in both situations, these events may occur directly as a result of changes in legislation. If the above is true, the drop in sexual violence noted by Cunningham and Shah (2018) may not be reflective of the realities of prostitution legislation's impact on society. In the context of the current study, the treatment effect may be dispersed to other countries, not to other states, which is an argument present in scholarly discourse on this subject (Ekberg, 2013). In my future work on this project, I hope to incorporate model specifications that will directly assess the spatial impacts of sex work legislation on sexual violence.

Gao and Petrova (2022) use a measurement of the number of local peace officers present in each country in their study from Eurostat. Because of our differing samples, the police covariate is omitted because there is not a similar indicator that exists for most of the countries in our study as they include countries beyond Europe.

Brothels constitute a legal wild card with respect to whether their legality in a given country aligns with a country's overall prostitution legislation regime. While we take specific steps to examine laws themselves and not how they are enforced, it should be noted that well-known brothels operating illegally are often tolerated by countries in which prostitution is illegal, with raids occurring every so often but never truly ending the brothels' operations, including countries like Japan, in which authorities are well aware that prostitution is taking place even though it is, by law, illegal (Here and Now, 2023; Parmanand, 2019). Additionally, we also note that some individual brothels (usually very few in number) may have permission to operate if they are licensed, registered, and submit to government oversight even though they are actually considered to be illegal by law and all sex work may be illegal in the criminal code. The presence of quasi-legality of these brothels may act as a confounding spatial variable in some countries, in which the availability of legal commercial sex may drive down sexual violence rates in the spatial area in which they exist, but in areas where the brothels do not exist in the country (when prostitution is illegal in the rest of the country), sexual violence is not impacted by the availability of services brothels offer. The potential within-country variation in sexual violence rates created by this dichotomy is not reflected in per-country reporting of sexual violence, but it may impact them nonetheless.

During the legislative data collection phase, there were two phenomena that should be noted in order to urge caution in interpreting our results, both surrounding the question of prostitution policy versus practice. First, in some cases, while prostitution may be fully legal and regulated, policies may be so stringent that in practice, it is impossible for sex workers to operate legally because they are unable to advertise, solicit, or live with others who are also sex workers

(which is seen by the law as operating a brothel), eliminating a safety measure. Thus, while prostitution appears legal on paper, the reality of operating as a sex worker is more akin to that of criminalized regimes because prostitution is illegal, even if slightly out of step with regulations. Second, the opposite situation may occur. When prostitution is criminalized in the penal code yet there is very little strength in a country's legal system, there is often a large availability of commercial sex, both indoors and outdoors. Therefore, these countries operate as though they have legalized prostitution even though criminalization is dictated by the penal code. While raids and crackdowns may occur, brothels and prostitution in general return after a period of time, moving locations or even returning to the same location once a show of law enforcement has taken place (Here and Now, 2023; Parmanand, 2019).

I note that sexual violence reporting has been increasing without a real change in incidence, as reporting becomes more robust and social norms change, as established in previous literature (Cybulska, 2007). Not only that, but reporting may be different particularly as this relates to our sample size and composition in comparison to how sexual violence reporting is impacted by the politics in a given area. The social or political upheaval more common in other parts of the globe may impact the reporting of sexual violence rates due to the inability to report or changes in reporting. We expect that countries that are a part of the EU have more consistent reporting that corresponds more closely with actual sexual violence incidence.

Conclusion

Given that previous scholarship on the relationship between prostitution legislation and sexual violence rates has varying levels of empirical support, our results provide evidence that the type of legislation makes a difference. My study suggests that more liberal legislative moves towards prostitution are not invariably, monolithically related to sexual violence. Rather, full legalization is related to lower levels of sexual violence, whereas decriminalization, as compared to criminalization, increases the incidence of sexual violence. Countries looking to promote legislation that reduces sexual violence should look towards full legalization, as opposed to decriminalization.

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Appendix

Appendix Table 1: Historical Prostitution Legislation for Analytical Sample, 1975-2006

COUNTRY	YEAR	Legislation
Argentina	1975	Criminalization
Armenia	1975	Decriminalization
Armenia	2003	Criminalization
Bangladesh	1975	Decriminalization
Belarus	1975	Criminalization
Bulgaria	1975	Criminalization
Bulgaria	1990	Decriminalization
Canada	1975	Criminalization
Chile	1975	Legalization
China	1975	Criminalization
Colombia	1975	Decriminalization
Croatia	1975	Decriminalization
Croatia	2000	Criminalization
Cyprus	1975	Decriminalization
Ecuador	1975	Legalization
Egypt	1975	Criminalization
El Salvador	1975	Decriminalization
England & Wales	1975	Decriminalization
Estonia	1975	Criminalization
Estonia	1987	Decriminalization
Finland	1975	Decriminalization
France	1975	Legalization
Germany	1975	Decriminalization
Germany	2002	Legalization
Greece	1975	Legalization
Hungary	1975	Decriminalization
Hungary	1999	Legalization
India	1975	Decriminalization
Indonesia	1975	Criminalization
Israel	1975	Decriminalization
Italy	1975	Legalization
Japan	1975	Decriminalization
Jordan	1975	Criminalization
Kyrgyzstan	1975	Decriminalization
Latvia	1975	Decriminalization
Latvia	2001	Legalization
Lithuania	1975	Criminalization
Malaysia	1975	Criminalization
Maldives	1975	Criminalization
Morocco	1975	Criminalization
Netherlands	1975	Decriminalization
Netherlands	2000	Legalization
New Zealand	1975	Decriminalization
New Zealand	1979	Legalization
Norway	1975	Legalization
Peru	1975	Legalization
Philippines	1975	Criminalization
Poland	1975	Criminalization
Poland	1997	Decriminalization
Qatar	1975	Criminalization
Romania	1975	Decriminalization
Singapore	1975	Criminalization
Slovenia	1975	Decriminalization
South Africa	1975	Criminalization
Spain	1975	Criminalization
Spain	1995	Decriminalization
Sweden	1975	Criminalization
Sweden	1999	Decriminalization
Switzerland	1975	Legalization
Thailand	1975	Criminalization
Turkey	1975	Legalization
Uganda	1975	Criminalization
Ukraine	1975	Decriminalization
Ukraine	2003	Criminalization
Uruguay	1975	Decriminalization
Uruguay	2003	Legalization
Zimbabwe	1975	Criminalization

Note: Year denotes the legislation at the start of the analytical window (1975) and any other years represent subsequent changes to prostitution legislation.