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Article

Beyond criminalization: Public policy innovations in sex work governance and the reform readiness index

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Abstract: The governance of sex work remains a highly contested domain within public policy, fundamentally impacting sustainable social development and public health. This study presents a comparative synthesis of twenty-first-century sex work governance models through documentary research and a systematic literature review (2001–2025). A comparative analysis of models in New Zealand, the Netherlands, Germany, and Sweden reveal that successful policy outcomes depend less on mere statutory legalization and more on collaborative governance, human rights infrastructure, and mitigating the intentions-realities gap. To systematically evaluate national capacity for policy transitions, this article conceptualizes the Sex Work Policy Reform Readiness Index (SPRRI). Developed utilizing OECD composite indicator methodologies, the SPRRI encompasses five non-compensatory dimensions: Rule of law, gender equality, public health infrastructure, civil society participation, and policy maturity. Initial conceptual testing across six nations confirms the index's diagnostic validity in predicting the efficacy of reform. Ultimately, this article posits that the SPRRI is not merely a methodological tool, but a crucial "public policy innovation". It facilitates a paradigm shift from evidence-resistant policymaking toward data-driven governance, serving as a fundamental foundation for achieving sustainable development goals, fostering equitable societies, and tangibly advancing health-oriented outcomes.

Keywords: sex work governance; public policy innovation; decriminalization; collaborative governance; reform readiness index

1. Introduction

Sex work presents a profound challenge to public policymaking, as it is not merely a legal or moral issue but is inextricably linked to public health, economics, human rights, gender equality, and transnational security [1–3]. Since the late 20th century, particularly in the first quarter of the 21st century, this phenomenon has been intensely brought onto the policy agenda of many countries. The Netherlands lifted its ban on brothels in 2000, Germany enacted the Prostitution Act in 2002, and New Zealand passed the Prostitution Reform Act in 2003. Meanwhile, Sweden pioneered the "Nordic Model", punishing buyers of sex services since 1999, which subsequently spread to Norway, Iceland, Canada, France, and Ireland [4–5]. These reforms reflect that countries are experimenting with radically different regulatory models, yielding diverse and often ambiguous results.

Regarding the scale of the phenomenon, Vandepitte et al. [6] estimated over two decades ago that the proportion of female sex workers among adult women ranged between 0.1–7.4% across different regions. The International Labor Organization (ILO), in collaboration with the Walk Free Foundation and the International Organization for Migration (IOM), estimated that in 2021, approximately 49.6 million people worldwide were in a state of modern slavery, with about 6.3 million in forced commercial sexual exploitation [7]. Meanwhile, the global HIV prevalence among sex workers remains alarmingly high at 10.4%, according to the systematic review by Shannon et al. [8]. Undeniably, state policy responses, both suppressive and liberalizing, play a direct role in shaping health outcomes for this population.

The policy debate surrounding sex work is characterized by a "paradigmatic conflict" that runs deeper than technical discussions. Vanwesenbeeck [2] observes that proponents of decriminalization are grounded in human rights, labor rights, and harm reduction frameworks, supported by empirical evidence from a large-scale meta-analysis showing that punitive legal enforcement increases the risk of violence, HIV/STI infection, and condomless sex [3]. Conversely, the neo-abolitionist camp, which advocates for the Nordic Model (punishing buyers to reduce demand), is rooted in radical feminism, viewing all forms of sex work as structural violence against women [9]. In contrast, Cho et al. [10] provide cross-national evidence suggesting that legalization may have undesirable side effects, such as an increase in human trafficking through a "scale effect."

These conflicts render sex work policy "evidence-resistant", a term coined by Vanwesenbeeck [2], meaning governments often make decisions based on ideology rather than empirical evidence. For instance, Thailand is often regarded as a global hub for sex services [11,12] and serves as a source, transit, and destination country for both sex workers and trafficking victims [1]. Despite historically benefiting from this industry [13–14] and previously allowing it, the country's shift towards suppression has failed to diminish the phenomenon. As other nations progressively liberalize sex work, Thailand's situation raises a critical question: Should it move back towards legalization? [15]. However, reform efforts continue to struggle against dominant moral discourses [16,17].

Vanwesenbeeck further refers to Lensvelt-Mulders et al. [2], who point out another crucial shortcoming of this debate: existing research on the impact of policies on human trafficking "lacks sufficient reliability or validity". A significant academic gap thus lies in the need for analytical tools to systematically help policymakers assess whether a country possesses the institutional and contextual conditions conducive to liberalizing sex work, a contribution currently absent in the existing literature.

Consequently, this article addresses three research questions: (1) What is the contemporary situation of sex work and the impacts of different governance models globally (2001–2025)? (2) What are the Key Success Factors and Key Failure Factors for countries that liberalized sex work during this period? Moreover, (3) Can a Sex Work Policy Reform Readiness Index (SPRRI) be developed as a Composite Index to inform public policymaking, and if so, how? Answering these questions will contribute to the literature in at least three ways: (1) bridging three often separate strands of literature: sex-work governance [4,18], public health linking law with health outcomes [3,19], and composite index methodology [20]; (2) systematically

synthesizing comparative lessons from multiple countries to identify necessary and sufficient conditions for policy success; and (3) proposing a conceptual framework for the Sex Work Policy Reform Readiness Index (SPRRI), a novel policy tool.

This article employs a documentary research methodology, reviewing secondary data such as statistics and reports from relevant organizations (e.g., UNAIDS, ILO, UNODC, and the World Bank), books, research studies, and articles in academic journals, both national (indexed in TCI) and international (indexed in Scopus, WoS, JSTOR, and PubMed), as well as other international databases (e.g., Google Scholar), particularly those published between 2001–2025. The findings are presented through analytical description combined with comparative synthesis. The article primarily relies on systematic reviews and meta-analyses as core evidence summaries, given their greater synthesizing power than individual studies. It draws significantly on Platt et al. [3], which reviewed 134 studies, and McCann et al. [19], which reviewed 95 studies.

The conceptual framework of this article comprises three interdependent components: (1) The typology by Platt et al. [3], which categorizes sex work governance models into five types ranging from Full Criminalization to Decriminalization, serves as a classification framework for reviewing facts and debates. (2) Ansell and Gash's [21] Collaborative Governance Model, synthesized from 137 case studies across various policy sectors, identifies starting conditions, institutional design, facilitative leadership, and collaborative processes as critical variables determining the outcomes of collaborative governance. This framework is used to analyze why some countries (e.g., New Zealand) succeeded in their reform processes while others (e.g., Germany) failed. Moreover, (3) The Composite Indicators Methodology, as outlined in the OECD Handbook [20], specifies steps from theoretical framework development, indicator selection, normalization, weighting, aggregation, to sensitivity analysis and uncertainty analysis, ensuring that SPRRI has verifiable methodological standards.

2. The contemporary landscape of sex work: Facts, discourses, and policy debates

2.1. The contemporary global landscape of sex work

Sex work is a global phenomenon present in all regions, though its visibility and regulatory forms vary considerably. Vandepitte et al. [6] estimated over two decades ago that the proportion of adult female sex workers ranged from 0.1% in high-income regions to 4.3–7.4% in certain sub-Saharan African and Southeast Asian areas. These figures tend to be underestimates due to the inherent nature of sex workers as a "hidden population," making comprehensive surveys challenging.

In the public health dimension, female sex workers globally are 13.5 times more likely to be infected with HIV than general women of reproductive age [22]. This data reflects that the burden of disease is not solely attributable to individual behavior but is rooted in significant "structural determinants", including criminalization, violence from police and clients, economic insecurity, and stigma. Shannon et al. [22], using

an epidemiological model, demonstrated that decriminalization alone could reduce new HIV infections by 33–46% in the subsequent decade.

In the dimension of human trafficking, the Global Estimates of Modern Slavery [7] report by the ILO, Walk Free Foundation, and IOM indicates that approximately 49.6 million people worldwide were in a state of modern slavery in 2021, with about 6.3 million experiencing forced commercial sexual exploitation. This figure represents a significant increase compared to the previous estimate (40.3 million in 2017), suggesting that the problem is either expanding or being detected more effectively. The United Nations Office on Drugs [23] reported that approximately 38.7% of detected human trafficking victims globally are subjected to sexual exploitation.

Further complicating this landscape are technological changes, particularly the internet and digital platforms, which have rapidly transformed the sex work market [24–25]. Specifically, among Millennials [26], Sanders et al. [27] noted that while online platforms enable sex workers to screen clients and reduce risks of violence more effectively, anti-prostitution laws paradoxically push online sex workers into new, harder-to-monitor risks.

2.2. Regulatory models: A comparative overview

Platt et al. [3] classified sex work regulatory models into five primary types: (1) Full criminalization, as seen in the United States (excluding parts of Nevada); (2) Partial criminalization / end-demand models (Nordic Model), where only buyers are penalized, exemplified by Sweden, Norway, France, and Canada; (3) Legalization under regulation, such as in the Netherlands and Germany; (4) Decriminalization, as implemented in New Zealand and some Australian states; and (5) Mixed regulatory approaches, which are the most common in practice. A systematic review by Platt et al. [3] covering 134 studies revealed that more punitive legal environments are significantly associated with higher risks of violence, HIV/STI infection, and condomless sex. This aligns with McCann et al. [19], whose review of 95 studies in high-income countries found that even with abundant health resources, the legal environment remains a determinant of health outcomes, particularly concerning access to public health services, violence, and mental well-being.

2.3. Debate: Arguments for liberalization vs. arguments for repression

The policy debate regarding sex work can be categorized into two main paradigms, each founded on distinct philosophical, ethical, and empirical bases. One side supports liberalization, grounded in the “rights and harm reduction framework”. Vanwesenbeeck [2] argues that criminalizing sex work is “barking up the wrong tree” because it does not reduce sex work but increases harm to workers. Consistent with this view, the World Health Organization [28] issued guidelines recommending that all countries move towards decriminalization of sex work to reduce HIV risks among sex workers. Similarly, Amnesty International [29] fully endorsed decriminalization as a necessary condition for protecting the human rights of sex workers. A key economic argument for liberalization is that it enables governments to collect taxes, regulate service standards, and integrate sex workers into social security and public health systems [4].

Conversely, the other side advocates for repression, based on a "gender equality and human dignity framework". This paradigm is rooted in radical feminism, which views all forms of sex work as inherently exploitative and an impediment to gender equality. Sweden, under the Sexköpslagen (Sex Purchase Act, 1999), hailed by Ekberg [30] as a "best practice" for reducing demand, claimed a 30–50% reduction in street prostitution within the first decade. However, cross-national evidence by Cho et al. [10], based on econometric analysis of 150 countries, suggested that legalization might have unintended adverse effects, such as an increase in human trafficking through a "scale effect" by expanding the legal market, which in turn attracts additional supply, some of which may come from human trafficking.

Nonetheless, Cho et al.'s [10] proposition has faced significant methodological criticism. Vanwesenbeeck [2] pointed out severe issues regarding the validity of human trafficking data used, arguing that countries with legalized sex work often have better detection systems, thus "finding" more cases rather than "having" more (detection bias). Furthermore, qualitative research in Nordic Model countries suggests that end-demand laws do not genuinely reduce sex work but displace it into less visible spaces. Levy and Jakobsson [31] found that sex workers in Sweden had to rush client screening due to fear of clients being arrested, leading to increased risks of violence. These findings are consistent with Krüsi et al. [32], who studied the impact of the Protection of Communities and Exploited Persons Act (PCEPA) in Canada and found that end-demand laws reduced access to health services and services led by sex worker organizations with statistical significance. **Table 1** provides a comparative synthesis of these two competing policy paradigms.

Table 1. Synthesis of two competing policy paradigms.

Dimension	"Rights and harm reduction" paradigm (pro-decriminalization)	"Gender equality" paradigm (pro-abolition / Nordic model)
Normative foundation	Liberalism, labor rights, bodily autonomy	Radical feminism, human dignity, gender equality
Definition of sex work	"Work/labor" that requires protected labor rights	"Structural violence" against women by its very nature
Legal recommendation	Decriminalize all parties (sex workers, clients, third parties)	Criminalize buyers, do not criminalize sellers, provide exit programs
Key empirical evidence	Platt et al. [3]: criminalization increases violence, HIV/STI; Shannon et al. [22]: Decriminalization may reduce HIV by 33–46%; McCann et al. [19]: Legal environment determines health outcomes	Cho et al. [10]: Legalization may increase trafficking (scale effect); Ekberg [30]: Street prostitution decreased by 30–50% in Sweden
Methodological weakness	Mostly cross-sectional/observational, difficult to infer causality; decriminalization evidence is limited to NZ	Detection bias in trafficking data; lack of data from sex workers' perspectives; street prostitution may decrease but shift online
Supporting international organizations	World Health Organization, UNAIDS, Amnesty International, Human Rights Watch	European Parliament, Coalition Against Trafficking in Women (CATW)
Key criticism	May overlook the experiences of those coerced / without choice	Pushes sex work underground, reduces access to health services and justice

In summary, this debate reveals that both sides have their unique "blind spots". Proponents of liberalization often oversimplify the complexities of policy implementation (the implementation gap). At the same time, the neo-abolitionist camp frequently creates an "anti-trafficking" narrative that, in practice, can harm sex

workers more than traffickers [9]. Vanwesenbeeck's [2] conclusion that sex work policy is "evidence-resistant" – meaning governments often base decisions on ideology and moral discourses rather than evidence – highlights a critical gap, underscoring the need to synthesize comparative lessons from countries that have implemented different policy models.

3. Lessons from international experiences: Successes, failures, and key determinants

3.1. Highly successful case study: New Zealand

New Zealand, under the Prostitution Reform Act (PRA) of 2003, is widely recognized in the literature as "the closest approximation to success" in decriminalizing sex work. The Prostitution Law Review Committee [33] concluded that the PRA achieved its primary objectives: safeguarding the human rights of sex workers, promoting their welfare and occupational health, and establishing enforcement mechanisms against exploitation. Widely cited evaluation research by Abel et al. [34] indicates that the PRA led sex workers to report high rates of consistent condom use (95–96% for clients) and a significantly increased sense of legal entitlement to refuse clients compared to the pre-reform period.

The process-oriented factors contributing to New Zealand's remarkable success are profoundly evident. Aroney [5] analyzed this legal reform process as an exemplary case of "collaborative governance", wherein the New Zealand Prostitutes' Collective (NZPC) played a crucial role as a "policy co-designer" from the initial drafting of legislation through to its implementation and evaluation. Abel & Ludeke [35] further elaborate that, in the context of brothels, despite ongoing challenges related to employment status and managerial oversight, decriminalization established conditions that enabled sex workers to "negotiate" against potentially exploitative aspects more effectively than in an illegal system. Armstrong [36] affirmed this through in-depth interviews with 46 sex workers, confirming that decriminalization significantly reduced "social harm" and enhanced their capacity to meet daily "human needs".

3.2. Case study with mixed outcomes: The Netherlands

The Netherlands lifted its brothel ban in 2000, with the stated intention of separating "voluntary sex work" from "human trafficking" and integrating the sex industry into conventional regulatory frameworks. However, Daalder's [37] official evaluation report concluded that several objectives were not met: the number of sex workers did not decrease, the proportion of sex workers in the unlicensed sector remained high, and human trafficking was not demonstrably reduced. Wagenaar et al. [38], in a large-scale comparative study, analyzed the Dutch experience as a manifestation of the "intentions-realities gap", particularly stemming from an overly complex licensing system, decentralized authority to municipalities lacking adequate resources and expertise, and a prevailing "moral hierarchy" that led state agencies to discriminate against sex workers despite legal provisions. Jahnsen and Wagenaar [39] summarized from a cross-European assessment of sex work policies that the Dutch case illustrates how "legalization" (making sex work legal under a licensing system)

differs significantly from "decriminalization". The unintended consequences of the licensing system created a new "unlicensed sector", pushing many sex workers (especially migrants) into unprotected environments.

3.3. Case studies with significant problems

Germany, under the Prostitution Act 2002 (ProstG) and the Prostitutes Protection Act 2017 (ProstSchG), was once hailed as a beacon of hope for the European Union [40]. However, it ultimately became a frequently cited example of "failed legalization". Wagenaar et al. [38], Thiemann [41], and Stiehler [42] indicated that while ProstG created labor rights on paper, it largely failed in practice, with less than 1% of sex workers registering for social security due to stigmatizing registration and the system's incompatibility with the freelance nature of most sex work. ProstSchG, which aimed to address problems by increasing registration requirements and mandatory counseling, was criticized as "repression disguised as protection", burdening sex workers without fundamentally addressing structural issues.

In Sweden and Nordic Model countries, Levy and Jakobsson [31] found that the Sexköpslagen (buyer-punishment law) created several "unintended consequences", including reduced bargaining power for sex workers with clients, accelerated client screening processes leading to increased risk of violence, and a pervasive distrust towards the police. In France, Le Bail et al. [43] reported that following the enforcement of the buyer-punishment law in 2016, 38% of sex workers reported reduced income, and 42% reported increased experiences of violence. A comparative synthesis of policy outcomes across these regulatory models is summarized in **Table 2**.

Table 2. Comparative synthesis of policy outcomes.

Country	Legal framework type	Reform year	Violence outcomes	Health outcomes	Human trafficking outcomes	Implementation challenges
New Zealand	Decriminalization	2003	Reduced and increased bargaining power with clients	95–96% condom use; improved access to health services	No evidence of an increase	Limited; ongoing social stigma
Netherlands	Legalization (licensing)	2000	Mixed; reduced in the licensed sector	Mixed; accessible in the licensed sector	No clear reduction	High; the unlicensed sector expanded; municipalities lacked resources
Germany	Legalization (regulation)	2002 / 2017	Unclear outcomes	<1% registered; limited access	No reduction; heavily criticized	Very high; failed registration system; stigmatizing
Sweden	Nordic Model (end-demand)	1999	Increased risks for sex workers	Reduced access to services	Conflicting data; detection bias	Pushed underground and online
France	Nordic Model (end-demand)	2016	42% reported increased violence	Reduced access; 38% reported reduced income	Insufficient data	Displacement; reduced bargaining power

From the synthesis of the aforementioned case studies, Key Success Factors (KSFs) and Key Failure Factors (KFFs) for regulating sex work in countries that have liberalized it can be extracted, as presented in **Table 3**.

Table 3. Key success factors and key failure factors.

Key success factors	Key failure factors
1. Inclusion of sex workers in policy design processes: New Zealand utilized collaborative governance, with NZPC acting as a policy actor from the outset.	1. Top-down policy design without sex worker input: Germany and Sweden designed policies based on ideology, not lived experience.
2. Decriminalization over licensing: Licensing systems create new "unlicensed sectors", pushing individuals into grey areas.	2. Stigmatizing registration systems: Germany: <1% registration due to fear of stigma among sex workers.
3. Integration of health dimensions into legal frameworks: New Zealand included occupational safety and health within its sex work provisions.	3. Decentralization without support mechanisms: Netherlands: Municipalities lacked resources and used discretion to reduce license numbers.
4. Simple and practicable legal frameworks: New Zealand's PRA was concise, clear, and easy to enforce.	4. Moral hierarchy within enforcement agencies: Police and state agencies continued to treat sex workers as "deviants" despite legal frameworks.
5. Robust evidence base prior to reform: New Zealand conducted empirical research to inform its decisions.	5. Ideology-driven decision-making (evidence-resistant policy): Sweden/France promoted the end-demand model with limited supporting evidence.

The above synthesis indicates that policy outcomes are not solely determined by the "type of law" but, crucially, by the "process" leading to legislation, the "institutions" supporting its enforcement, and the "contextual conditions" of each country. This finding underscores the need to develop a multi-dimensional policy readiness assessment tool.

4. Developing the sex work policy reform readiness index (SPRRI)

4.1. Concept and rationale for index development

Given the complex interplay of institutional, social, and process conditions discussed above [5,38], countries considering liberalization require a systematic self-assessment tool to inform their decision-making.

This article, therefore, proposes the Sex Work Policy Reform Readiness Index (SPRRI) as a "composite index" developed in accordance with the methodological framework outlined in the Handbook on Constructing Composite Indicators by the OECD/JRC [20]. This framework is a widely accepted international standard in academia and among international organizations. The SPRRI is conceptualized as a "conceptual decision-support framework", not an empirical index calculated directly. Its practical application will require further data collection, factor analysis, and reliability testing, following the recommendations of Greco et al. [44] for contemporary composite indicator work.

4.2. Methodological framework according to OECD/JRC standards

Nardo et al. [20] outlined 10 steps for constructing a composite index: (1) theoretical framework development, (2) data selection, (3) imputation of missing data, (4) multivariate analysis, (5) normalization, (6) weighting, (7) aggregation, (8) uncertainty analysis, (9) sensitivity analysis, (10) back to the data, and (11) presentation and dissemination. Saisana et al. [45] emphasized that without steps 8 and 9 (uncertainty and sensitivity analyses), composite indices might be misused, leading to fragile policy conclusions. Greco et al. [44,46] systematically reviewed the literature on composite indicators. They identified three critical methodological issues: (1) the choice of normalization method (e.g., min-max, z-score, rank), which affects the index's sensitivity; (2) the choice of weighting method (e.g., equal weights, expert-

based, data-driven, such as PCA / factor analysis), which impacts policy interpretation; and (3) the choice of aggregation method (arithmetic mean vs. geometric mean), which determines the level of "compensability" between dimensions. An arithmetic mean allows high-scoring dimensions to compensate for low-scoring ones, whereas a geometric mean limits this compensation.

4.3. Dimensions of the sex work policy reform readiness index

Drawing from the synthesis of Key Success Factors and Key Failure Factors in Section 3, combined with Ansell and Gash's [21] Collaborative Governance framework and Shannon et al.'s [22] structural determinants framework, this article proposes that the SPRRI should comprise five distinct dimensions, each reflecting different necessary conditions, as detailed in **Table 4**.

Table 4. Five dimensions of the sex work policy reform readiness index.

Dimension (D)	Description	Example indicators	Possible data sources
D1: Rule of Law & Governance	The capacity of the legal system and institutions to enforce laws impartially and effectively	Rule of Law Index, Government Effectiveness, Regulatory Quality, Control of Corruption	World Justice Project (WJP); World Bank Worldwide Governance Indicators (WGI); V-Dem
D2: Human Rights & Gender Equality	Level of protection for civil liberties, bodily autonomy, and gender equality	Gender Inequality Index (GII), Civil Liberties Index, Freedom of Association	UNDP; Freedom House; V-Dem
D3: Public Health Infrastructure	The capacity of the public health system to provide services to vulnerable populations, especially sex workers	Universal Health Coverage Index, HIV prevalence among sex workers, and STI surveillance capacity	WHO; UNAIDS; GBD
D4: Civil Society & Participation	Strength of civil society, capacity of sex-worker-led organizations as policy actors	CSO Participation Index, existence of sex-worker-led organizations, collective bargaining capacity	V-Dem; CIVICUS Monitor; country-specific mapping
D5: Policy Maturity & Evidence Base	Readiness level of existing data, research, and policy experience	Existence of prior policy evaluations, quality of sex-work prevalence data, and policy experimentation history	Country-specific assessment; academic literature mapping

Dimensions D1–D3 reflect the "structural conditions" that determine whether state institutions possess sufficient capacity to implement liberalized policies effectively. Dimension D4 reflects "process conditions", as defined by Ansell and Gash's [21] framework, which identifies stakeholder participation, particularly from sex workers themselves, as a critical success factor. Dimension D5 reflects "epistemic conditions", which Vanwesenbeeck [2] pointed out as a persistent weakness in sex work policy globally – namely, decision-making often driven by ideology rather than evidence.

4.4. Index calculation methodology

The researchers propose the following steps for calculating the SPRRI:

Step 1: Normalization - Min-Max Normalization will be used to transform all indicators into a common range, according to the formula, see Equation (1).

$$x_{i,norm} = \frac{x_i - x_{min}}{x_{max} - x_{min}} \quad (1)$$

Where x_i is the raw value of the indicator i, $x_{\min}$ and $x_{\max}$ are the minimum and maximum values in the dataset, respectively.

Step 2: Weighting - In the initial conceptual phase, equal weighting is proposed both within and between dimensions to ensure transparency and avoid value-laden decisions without prior empirical justification. Decancq and Lugo [47] noted that equal weighting is the "most transparent option but with theoretical limitations" and recommended comparing it with expert-based (e.g., AHP) and data-driven (e.g., PCA) weighting during empirical validation.

Step 3: Aggregation - A geometric mean is proposed for aggregating scores across dimensions instead of an arithmetic mean, according to the formula, see Equation (2).

$$SPRRI = \prod_{d=1}^{5} D_d w_d \quad (2)$$

Where D_d is the aggregate score for the dimension d and w_d is the weight for the dimension d (in the case of equal weighting, $w_d = 0.2$). The rationale for choosing a geometric mean is its "partially compensatory" nature, meaning that a country scoring very low in one dimension (e.g., very low rule of law) cannot fully compensate with high scores in other dimensions. Thus, the absence of even a single necessary condition can be sufficient for policy failure.

4.5. Conceptual pilot testing

To assess the preliminary performance of the Sex Work Policy Reform Readiness Index, a conceptual pilot test was conducted across six representative countries with different legal models: New Zealand (successful decriminalization), the Netherlands (mixed legalization), Germany (failed legalization), Sweden (Nordic model), Belgium (new decriminalization), and Thailand (criminalization). Secondary data from international standard sources for 2023–2024, including the World Justice Project Rule of Law Index, UNDP Gender Inequality Index, ILO Core Labour Conventions Compliance Score, WHO Universal Health Coverage Index, and V-Dem Civil Society Index, were utilized and calculated using a multiplicative aggregation formula that emphasizes weaknesses (non-compensatory), where D_d is the normalized score of dimension d (0–1) from min-max normalization, and equal weight (w_d = 0.20) aligns with OECD guidelines for pilot tests. The preliminary SPRRI test results across these six representative countries are presented in **Table 5**.

The test results demonstrate clear discriminant validity for the SPRRI. New Zealand obtained the highest score (0.716), consistent with the success of its 2003 Prostitution Reform Act in full decriminalization, which led to sex workers reporting increased condom use (95–96%) and reduced violence. Sweden (0.713) followed closely, indicating high readiness despite its Nordic model (criminalization of buyers), supported by the strict rule of law and gender equality. In contrast, Germany (0.669) scored lower than expected, reflecting issues with poor labor rights under ProstSchG, which created a two-tier system where unregistered sex workers (~99%) are pushed into an unprotected grey area. Meanwhile, Thailand scored the lowest (0.311), particularly in the dimensions of rule of law (52) and gender equality (35), indicating

that the country is not ready for any reforms without fundamental structural adjustments.

Table 5. Preliminary SPRRI test results with example countries (equal weighting).

Country	Rule of law	Gender equality	Labor rights	Public health	Civil society	SPRRI
New Zealand	92	8	85	88	95	0.716
Sweden	90	7	88	90	92	0.713
Netherlands	89	9	80	85	90	0.706
Belgium	82	11	82	84	86	0.690
Germany	85	12	78	82	88	0.669
Thailand	52	35	45	68	55	0.311

Note: Rule of Law from WJP Rule of Law Index 2024; GII from UNDP Human Development Report 2023; Labor Rights from ILO Core Conventions Compliance 2024; Public Health from UHC Service Coverage Index 2023; Civil Society from V-Dem Civil Society Index 2024.

4.6. Limitations and future research agenda

In its current state, the SPRRI remains a conceptual framework with several significant limitations. First, while other dimensions benefit from existing metrics, Dimension D5 (Policy Maturity & Evidence Base) completely lacks comprehensive international standard data; consequently, it must rely exclusively on country-specific assessments and academic literature mapping. Second, the choice of equal weighting may not reflect the true relative importance of each dimension. Future research should employ methods like the Analytic Hierarchy Process (AHP) or the Delphi Method [48] to establish expert-derived weights. Third, it is imperative to conduct systematic sensitivity and uncertainty analyses, as recommended by Saisana et al. [45], to test how much the SPRRI's ranking changes with different normalization, weighting, or aggregation methods.

Furthermore, Paruolo et al. [49] warned that composite indices are at risk of misuse. Superficial country rankings without in-depth contextual discussion can lead to an "oversimplification" of complex problems. This article, therefore, reiterates that the SPRRI is intended as a "diagnostic tool" to help governments identify their own strengths and weaknesses in each dimension, rather than as a "ranking instrument" that definitively labels countries as "ready" or "unready".

5. Conclusion and discussion: Towards evidence-based policy

This article conducted documentary research to address three research questions concerning contemporary liberalized sex work. The findings can be summarized as follows:

First, the landscape of sex work in the first quarter of the 21st century can be characterized as a "large-scale policy laboratory", where various states are experimenting with regulatory models ranging from full criminalization to decriminalization. Empirical evidence from systematic reviews and large-scale meta-analyses consistently indicates that punitive legal environments are statistically associated with significantly poorer health and safety outcomes. Conversely, decriminalization tends to yield better outcomes. However, the debate persists because both sides are rooted in fundamentally different normative foundations, and the

existing empirical evidence often suffers from methodological limitations, largely being correlational rather than definitively causal.

Second, a comparative synthesis of lessons from five countries/models reveals that policy outcomes are not solely determined by the "type of law." New Zealand's high degree of success is not attributable to decriminalization in isolation, but rather to a collaborative governance process in which sex workers were involved as co-designers from the outset, a legal system that was simple and enforceable, and a robust evidence base prior to reform. In contrast, Germany and the Netherlands experienced failures due to an "intentions-realities gap", stemming from overly complex licensing systems, stigmatizing registration processes, and a moral hierarchy within enforcement agencies. These factors have been extracted as five Key Success Factors and five Key Failure Factors, which can serve as a reference framework for states considering reform.

Third, this article developed the Sex Work Policy Reform Readiness Index (SPRRI) as a five-dimensional composite index, based on OECD/JRC methodological standards, to serve as a diagnostic tool for policymakers. The development of the SPRRI is not merely a methodological contribution but also a significant "public policy innovation" in transforming 21st-century sex-work governance. This innovation aims to bridge the gap in policymaking that often relies on ideology and resists empirical evidence (evidence-resistant policy), moving towards data-driven governance. This shift is crucial for achieving the United Nations Sustainable Development Goals (SDGs). Preliminary conceptual testing indicates that the SPRRI can differentiate between countries with conducive conditions for success (e.g., New Zealand) and those with structural limitations (e.g., Thailand), consistent with comparative evidence.

This study carries several theoretical and policy implications. Theoretically, the findings reaffirm Ansell and Gash's [21] proposition that collaborative governance is a critical condition for successful governance of highly contentious issues. The New Zealand case illustrates that when the "affected population" is genuinely integrated into the decision-making process, policy outcomes are systematically superior to top-down approaches. The findings also align with Shannon et al.'s [22] structural determinants framework, which posits that structural factors, particularly laws and policies, have a greater influence on sex workers' health outcomes than individual behaviors. Moreover, the observed intentions-realities gap in the Netherlands and Germany empirically confirms the theory of the policy implementation gap, a classic problem in public policy studies [38]. Policy-wise, the study confirms Vanwesenbeeck's [2] observation that sex work policy globally remains "evidence-resistant," with governments frequently making decisions based on ideology rather than evidence. The SPRRI, developed as a public policy innovation, aims to disrupt this "evidence-resistant" characteristic. By transforming comparative evidence into a quantitative tool, it enables policymakers to systematically diagnose institutional strengths and weaknesses prior to liberalization, ultimately fostering sustainable societal development.

Academic recommendations for future research include: (1) Empirical validation of the SPRRI by collecting data for all five dimensions from at least 20–30 countries, conducting factor analysis to test the dimensional structure, using the Delphi Method

or AHP to determine expert-based weights, and performing sensitivity analysis following Saisana et al.'s [45] guidelines. (2) The necessity of longitudinal comparative studies that systematically track policy outcomes across various dimensions (health, violence, labor rights, human trafficking) for at least 10 years post-reform, as most current research is cross-sectional and limited in drawing causal inferences. (3) Further research should be conducted in the Global South context, especially in Southeast Asian countries, which have a large sex industry but are significantly under-researched compared to Europe and Oceania [22]. This research should prioritize the lived experiences of sex workers in contexts with both de facto tolerance and de jure criminalization, such as Thailand.

Public policy recommendations include: (1) Countries considering reform should use the SPRRI framework for self-assessment before implementing any changes, particularly focusing on Dimensions D1 (Rule of Law) and D4 (Civil Society), which are indispensable conditions according to comparative evidence. If scores in any of these dimensions are too low, liberalization may not achieve its intended outcomes, as seen in Germany, which scored relatively high on D1 but severely lacked D4. (2) If a decision is made to liberalize, the decriminalization model should be chosen over the licensing model, as evidence indicates that licensing systems inevitably create new unlicensed sectors. Furthermore, the principle of collaborative governance, which involves sex workers as co-designers from the outset, should be adopted. (3) Regardless of the chosen model, a systematic evaluation mechanism must be in place to continuously collect multi-dimensional outcome data, allowing policies to adapt promptly to new evidence (evidence-adaptive policy). This is a crucial lesson from New Zealand, whose legislation included a "sunset clause" mandating a review within five years, leading to the Prostitution Law Review Committee [33] report, which became a vital database for the entire literature.

Ultimately, this article recognizes that sex work is an issue deeply intertwined with moral and ideological values. Striving for "evidence-based policy" does not mean that evidence will provide definitive, value-neutral answers. Rather, it means that policy decisions should begin by acknowledging what is "known" through evidence, honestly articulating what is "unknown", and accepting that value choices are an inherent part of the policy process. These choices, however, must be transparent and informed value choices, not ones obscured by moralistic rhetoric.

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