



COUNTERING TRAFFICKING IN PERSONS IN THE LAO PEOPLE'S DEMOCRATIC REPUBLIC

AN ECOSYSTEM APPROACH USING WEAK-SIGNAL ANALYSIS

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PREAMBLE

This report summarizes an empirical ecosystem analysis of trafficking in persons (TIP) in the Lao People's Democratic Republic (PDR) using weak-signal analysis. Parts of this analysis have been previously presented to the United States Agency for International Development (USAID) and the USAID Mission in Lao PDR during briefings scheduled by USAID on August 18, 2020, December 16, 2020, and August 24, 2021.

The United States (US) Department of State has requested that more research on TIP be published in the peer-reviewed professional literature. Consistent with this request, parts of the analysis presented in this report have already been published in the peer-reviewed professional literature, and the other parts are either currently under review or have been submitted.

While cross-cutting recommendations are included in Section 3 of this report, detailed geographically-targeted interventions specific for the most vulnerable provinces are presented in Annex 1. Annex 2 is a description of our methodology and the limitations associated with the analysis. Annex 3 provides a detailed analysis of the TIP tier rankings in the US Department of State's annual TIP report and was published in the Journal of Human Trafficking. Annex 4 provides a detailed analysis of the role of child marriage in TIP and includes analysis currently under review in the peer-reviewed professional literature.

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ACRONYMS

BRI	Belt and Road Initiative
CTIP	Counter Trafficking in Persons
DHS	Demographic and Health Surveys
DoS	Department of State
ECE	Early Childhood Education
GDP	Gross Domestic Product
GSI	Global Slavery Index
ILO	International Labor Organization
ISP	Internet Service Providers
MCS	Multiple Indicator Cluster Surveys
NGO	Non-governmental Organization
OSEC	Online Sexual Exploitation of Children
PDR	People's Democratic Republic
SCP	Situational Crime Prevention
SDG	Sustainable Development Goal
SEZs	Special Economic Zones
TIP	Trafficking in Persons
TVPA	Trafficking Victims Protection Act
UDHR	United Nations Universal Declaration on Human Rights
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
US	United States
USAID	United States Agency for International Development
USD	United States Dollars
USG	United States Government
U18	Under 18 years of age
U15	Under 15 years of age

EXECUTIVE SUMMARY

Over the last two decades, the Lao People's Democratic Republic's (PDR) ranking in the United States (US) Department of State's annual Trafficking in Persons (TIP) Report has largely fluctuated between Tier 2 and the Tier 2 Watch List. The annual TIP Report is the US government's principal diplomatic tool for engaging foreign governments on human trafficking. Placement into one of the tier levels is based not on the magnitude of the country's trafficking problem, but on the extent of governments' efforts towards the elimination of human trafficking. Law enforcement metrics on prosecutions, convictions, and identified victims are presented in the TIP Report, and have been used by the US government as evidence of progress towards countering TIP (CTIP).

While prosecuting traffickers and rescuing those who have experienced trafficking have an important role in the overall CTIP strategy, we have found no evidence at the global scale that prosecutions result in meaningful reductions in TIP. Accordingly, our analysis supports a complementary approach that is aimed not towards prosecuting traffickers, but towards preventing future trafficking to create meaningful reductions in TIP. Our approach is grounded in the criminology theory of situational crime prevention (SCP) and is focused towards the "Prevention" part of the "3P" paradigm for addressing TIP (Smith, 2000). SCP focuses on the criminal setting and begins with an examination of the circumstances (the "ecosystems") that allow for particular types of crime. By gaining an understanding of these ecosystems, mechanisms are then introduced to change the ecosystems, which reduces the opportunities for crime.

Consistent with SCP, our analysis applies an ecosystem model that uses "weak-signal analysis" to identify the characteristics of ecosystems in which TIP occurs. Every population has a complex mosaic of characteristics derived from their demographics, environmental resources, geographical location, ethnic history, wealth, social norms, income-producing activities, religious sects, access to markets, educational levels, etc. Individual indicators are not assumed to have direct causal relationships to TIP, rather it is the combinations of indicators that hold predictive value. Just as there is no single cause for TIP, there is no single solution. Our analysis is consistent with the observation that many anti-trafficking policies have had limited success at reducing human trafficking because they tend to be applied uniformly and do not account for varying sociocultural and economic conditions. Scalability requires an "adaptive approach," with interventions customized to each geographic location.

An additional advantage of an ecosystem approach is that the analysis is agnostic. We do not pre-select and combine indicators that we think are related to TIP, nor do we limit our analysis to any single survey or type of data. We input as much relevant data as available and allow the analysis to reveal the combinations of indicators and their relative weightings that are most characteristic of ecosystems where the problem occurs. Previously hypothesized relationships are often confirmed, but the discovery of unexpected relationships is just as common. These discoveries of unexpected relationships lead to a more sophisticated understanding of TIP, and in turn, offers new opportunities for more nuanced and effective interventions.

Globally, we find that the traditional economic hypotheses that TIP arises from elevated poverty and unemployment appears to be an oversimplification. Economic measures, such as unemployment and poverty rates, have only weak relationships with both prevalence estimates and tier rankings. Our data analysis in Lao PDR is consistent with this larger-scale finding and reveals more nuanced circumstances.

Our analysis reveals that within Lao PDR, there are two main groups of vulnerable populations. The first group is based in rural communities, where the youthful demographics of the country yield large numbers of people entering the workforce each year, outpacing employment opportunities. This population of mostly agricultural workers and unskilled laborers are vulnerable to economic shocks, such as droughts, and displacement, such as that resulting from land-loss to Special Economic Zones (SEZs) and Belt and Road Initiative (BRI) projects). Their placement in a TIP vulnerability ecosystem is largely involuntary and is a result of consequences over which they have little or no control.

The second group are individuals who are middle-income in more urbanized areas or who have access to an urban area and are looking for opportunity and upward mobility. These populations have some resources and access to information and media, which enables them to seek employment opportunities in other parts of the country or abroad. However, they may not have sufficient information literacy or safe migration knowledge to avoid falling prey to trafficking.

Confounding factors to both vulnerable populations include proximity to international borders with Thailand and China and high levels of gender inequality. For the most impoverished, forced or child marriage with Chinese men may be a means of reducing economic burden. For those seeking upward mobility and opportunity, the higher wages in Thailand may be seen as providing opportunities unavailable within Lao PDR. While our findings are more specific, they are consistent with the general observation that TIP victims who are externally trafficked tend to be jobseekers looking for work abroad (US DoS, 2021).

Populations with high levels of TIP have high levels of child marriage and gender inequality. The treatment of a child as a commodity is consistent with the definition of human trafficking, regardless of whether that child is being transactionally exchanged for money, goods, social status, protection, or family honor. Future efforts to reduce TIP would benefit from promoting female empowerment and complementing female empowerment with efforts targeted at reducing gender inequality. Specifically, engaging males before the age of ten, when gender roles and expectations begin to be imprinted (Blum et al., 2017), is needed to complement improving education and opportunities for females. In addition to promoting further reductions to TIP, a reduction of gender inequality will likely also benefit economic development.

Weak-signal analysis provides a means for predicting vulnerability to TIP. The analysis can also reveal the underlying causal relationships associated with the vulnerability. As such, it can be used to identify vulnerable populations and increase their resilience to TIP with geographically-targeted, customized interventions. While attempts at universal solutions have had limited success, geographically-targeted, customized interventions hold strong promise for providing significant reductions in victimization.

This report presents a TIP vulnerability map for Lao PDR, a vulnerability measure for each province based on weak-signal analysis, cross-cutting recommendations, and recommendations for geographically-targeted interventions. The vulnerability measure is translated into a projected TIP prevalence and projected numbers of potential victims for each province. In allocating CTIP resources, decision-makers are often looking to reduce the number of victims in the most cost-efficient manner. They may want to prioritize areas with the highest density of potential victims, as measured by a combination of prevalence rate and population. Prevalence estimates can be misleading when used by themselves. For example, a province with a low prevalence rate but high population can contain more TIP victims than a province

with a high prevalence rate and low population. We thus include projected numbers of potential victims with prevalence to account for population differences.

Our focus is on prevention, with the goal of undertaking proactive measures to reduce vulnerability. Although our projections accurately identify areas of known TIP, the analytical objective is to identify ecosystems where populations are most likely to fall victim in the future. Where vulnerability is high, TIP may also be occurring under-reported. In addition to focusing resources in locations where TIP has already been reported, we recommend prioritizing preventative policies in the set of locations where TIP vulnerability is high.

The annexes of this report include a description of the analytical methodology, limitations associated with the analysis, and a province-by-province analysis of TIP vulnerabilities and related-metrics with recommendations for potential geographically-targeted interventions.

I. INTRODUCTION

In this report, we begin with an evaluation of trafficking in persons (TIP) in Lao People's Democratic Republic (PDR) in relation to United States (US) Department of State (DoS) TIP Report, further referred to as the TIP Report. Next, we provide an assessment of the emerging phenomenon of online sexual exploitation of children (OSEC) in Lao PDR, and the impact of the Belt and Road Initiative (BRI) and Special Economic Zones (SEZs) on TIP. Next, we provide an analysis of vulnerability to TIP based on an ecosystem approach and weak-signal analysis. The final section of the report includes cross-cutting recommendations and conclusions. Geographically-targeted interventions specific to the most vulnerable provinces are presented in Annex I.

II. ANALYSIS

The analysis section consists of six parts:

- a) an evaluation of TIP in Lao PDR in relation to the tier rankings in the annual TIP Report;
- b) an evaluation of the relationship between child marriage and TIP in Lao PDR;
- c) an evaluation of OSEC in Lao PDR;
- d) an overview of the impact of the BRI and SEZs on TIP;
- e) an analysis of TIP victim profiles; and
- f) an analysis of vulnerability to TIP based on an ecosystem approach and weak-signal analysis.

A. LAO PDR IN THE US DOS'S ANNUAL TIP REPORT

The US government's (USG) principal diplomatic tool to engage foreign governments on human trafficking is the TIP Report (US DoS, 2020a). The report is produced annually in accordance with the Trafficking Victims Protection Act (TVPA) of 2000 (Smith, 2000). Division A of TVPA established US anti-trafficking policy to (1) prevent trafficking, (2) protect trafficking victims, and (3) prosecute and punish traffickers (known as the “3 Ps”).¹ The Trafficking Victims Protection Reauthorization Act of 2003 added a requirement to the original law that foreign governments provide the DoS with data on trafficking investigations, prosecutions, and convictions (Smith, 2003). Since 2004, law-enforcement metrics on prosecutions, convictions, and identified victims have been annually reported in the TIP Report (Smith, 2003).

After spending 2018 in Tier 3 and 2019 on the Tier 2 Watch List (Grassley, 2018), Lao PDR was upgraded to Tier 2 in the 2020 TIP Report and remained in Tier 2 in 2021 (US DoS 2020a; US DoS, 2021). The TIP Report uses a ranking system in which the best-ranked countries are identified as Tier 1 and the worst ranked as Tier 3 (Grassley, 2018). Under the TVPA, Tier 3 countries are subject to potential restrictions on certain types of US foreign aid and other US and multilateral funds. Placement of each country into one of the tiers is based not on the magnitude of the country’s trafficking problem, but on the extent of governments’ efforts to meet the TVPA’s minimum standards for the elimination of human trafficking (22 USC 7106). The minimum standards used to determine a country’s ranking are their efforts towards: 1) prohibiting severe forms of TIP and punishing acts of such trafficking; 2) prescribing punishment commensurate with that for grave crimes; 3) prescribing punishment that is sufficiently stringent to deter and reflects the heinous nature of the offense; and 4) making serious and sustained efforts to eliminate severe forms of TIP.²

Figure I shows Lao PDR’s rankings in the TIP Report since 2009. The blue bar shows the tier where Lao PDR was placed that year. For comparison, we have included the global average tier ranking, computed both by averaging the tier ranking for each country (dark grey), and by the percentage of global population at each tier level (light grey). The latter average reflects how many people are living in each tier. The purpose of normalizing the data to the number of people is to account for the differences in population size among nations. For example, while only nine percent of countries are in Tier 3, those

¹ In addition, the DoS employs a fourth “P,” partnerships, “as a complementary means to achieve progress across the 3Ps and enlist all segments of society in the fight against modern slavery.” US DoS, Policy Issues, “Human Trafficking,” at <https://www.state.gov/policy-issues/human-trafficking/>.

² In determining if serious and sustained efforts are being made (standard #4), 12 criteria are considered as indicators.

countries contain 25 percent of the global population. The dotted line represents the overall trendline for Lao PDR during this period, following its fluctuations between tiers.

Figure 1: Lao PDR Tier Ranking in the US State Department's Annual TIP Report

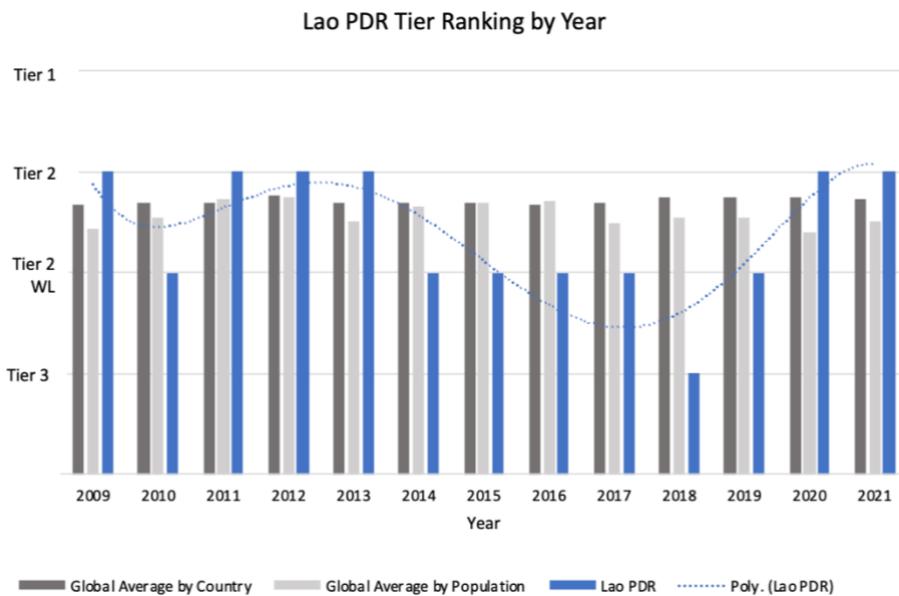


Figure 1 caption: Over the last two decades, Lao PDR's ranking in TIP Report has fluctuated. After spending 2018 in Tier 3 and 2019 on the Tier 2 Watch List, Lao PDR was upgraded to Tier 2 in 2020 and remained in that tier in 2021.

The 2021 TIP Report's prioritized recommendations for Lao PDR include the need to "further train law enforcement officials at the national and local level on the Lao Penal Code to improve their ability to investigate, prosecute, and convict traffickers – including complicit officials and child sex tourists." The government has shown steady prosecution and conviction rates. From 2018 to 2020, Lao PDR had an average year prosecutions per capita rate of 2.6 per million citizens, compared to a median rate of 2.3 prosecutions per million citizens for Tier 2 nations. When convictions and prosecutions are averaged over three years to reduce the amount of uncertainty caused by the time-delay between prosecution and conviction, Lao PDR averages 0.98 convictions per prosecution. This rate of convictions per prosecution is higher than that of 87 percent of Tier 2 countries, for which the median rate is 0.38; it is also higher than the median rate of 0.63 for Tier 1 countries.

Figure 2 displays the law-enforcement metrics for Lao PDR and other Tier 2 nations in the form of a box and whisker plot. The box-and-whisker format shows both the data distribution and critical statistics. Each dot represents a nation that was ranked as a Tier 2 nation in the 2021 TIP Report. The lower and upper hinges define the shaded box area, which includes the values for the middle 50 percent of the Tier 2 nations. The line separating the darker and lighter sides of the shaded box is the median value for all Tier 2 nations. The "whiskers" stretching from either end of the box show the minimum and maximum values, which are either the furthest values or else 1.5 standard deviations from the hinges. Values that lie outside of the whiskers are statistical outliers. Lao PDR lies within the middle "box" of the Tier 2 nations for both prosecutions and identified victims, and it lies above nearly all Tier 2 nations in convictions.

Figure 2: Lao PDR Prosecutions, Convictions, and Identified Victims

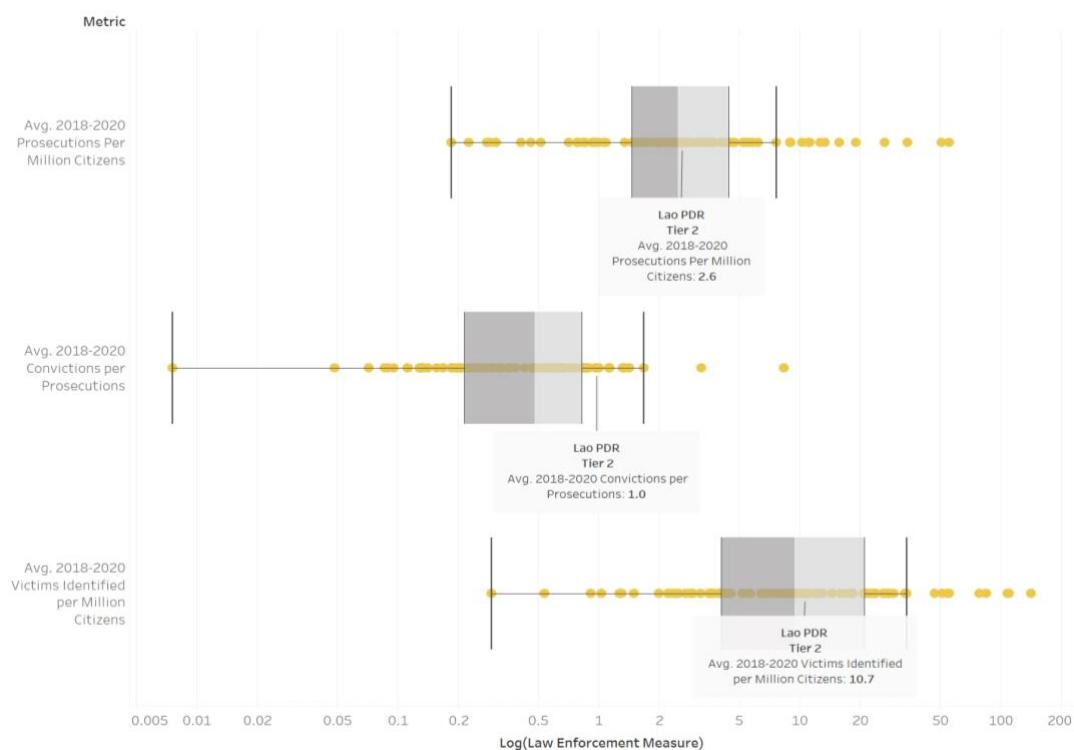


Figure 2 caption: In 2020, Lao PDR reported 20 prosecutions, compared to 25 in 2019 and 12 in 2018. The government reported 11 convictions in 2020, compared to 18 in 2019 and 27 in 2018. This shows a steady decline over the past three years, but the average conviction per prosecution rate for Lao PDR is still higher than that of over 87 percent of Tier 2 nations. In this figure, we normalized the number of convictions to the number of prosecutions. Both the number of convictions and the number of prosecutions are averaged over three years to reduce the amount of uncertainty caused by the time-delay between prosecution and conviction. The statistical relationships are similar if we normalize the prosecutions to the estimated size of the TIP population.

While the TIP Report is intended to measure a nation's efforts towards reducing TIP, the Global Slavery Index (GSI) attempts to measure the magnitude of TIP within a nation (Walk Free Foundation, 2016 and 2018). A logical assumption would be that nations with stronger counter TIP (CTIP) efforts, as indicated by their tier level, would achieve lower rates of TIP prevalence over time. Consistent with such an assumption, the correlations between GSI prevalence estimates and TIP tier rankings are statistically significant (van der Vink et al., 2021a). The GSI reports provide an estimate of the prevalence of human trafficking, quantified as the number of victims per 1,000 population in a country. The GSI estimate of prevalence in Lao PDR increased from 2.95 victims in 2016 to 9.4 in 2018, a roughly 218 percent increase. Lao PDR's prevalence rate is higher than the average 2018 prevalence estimate for Tier 2 countries (4.8 victims).

The assignment of nations to various tier levels by the TIP Report, when viewed globally, only weakly correlates with the law-enforcement statistics within the reports. In addition, increases in prosecution do not typically correlate with decreases in GSI TIP prevalence estimates (van der Vink et al., 2021a). Nevertheless, some have presented law-enforcement metrics as evidence that government efforts stemming from the Palermo Protocol are working (US DoS, 2019). Others argue that viewing TIP as a law-and-order problem requiring an aggressive criminal justice response has resulted in “hundreds of

millions of dollars being invested with no appreciable reduction in the absolute number of people trafficked worldwide” (e.g., Chuang, 2006).

Prosecuting traffickers and rescuing those who have experienced trafficking is an important component of an overall CTIP strategy. There is, however, no evidence that prosecutions result in meaningful reductions in TIP. Our analysis supports a complementary approach that is aimed at preventing future trafficking instead of prosecuting traffickers to create meaningful reductions in TIP. Our approach is grounded in the criminology theory of situational crime prevention (SCP) and is focused towards the “prevention” part of the “3P” paradigm for addressing TIP (Smith, 2000).³

SCP focuses not on apprehending criminals, but on reducing criminal opportunities. It employs a preventive approach by reducing opportunities for crime, and it has helped law-enforcement organizations realize significant reductions in the occurrence of crime and in the number of people who have experienced crime (e.g., Eck and Clarke, 2019). SCP focuses on the criminal setting and begins with an examination of the circumstances (the “ecosystems”) that allow for particular types of crime. By gaining an understanding of these ecosystems, mechanisms are then introduced to change the relevant ecosystems, reducing opportunities for the harmful activities. SCP is considered an essential part of the United Nations (UN) Economic and Social Council's Guidelines for the Prevention of Crime (Resolution 2002/13) (UN Office on Drugs and Crime, 2010).

There are varied definitions of TIP, and this, combined with its sensitive nature, makes victim identification and quantification difficult. The varied definitions also lead to a large range of prevalence estimates across different institutions. Both the DoS and the Philippines use the definition of human trafficking presented in Article 3 of the Palermo Protocol. The DoS estimates that there are 25 million victims of labor and sex trafficking worldwide (US DoS, 2020b). The International Labour Organization (ILO) published its first estimate in 2005 of 12.3 million persons trafficked as a minimum at any given time between 1995 and 2004. In 2012, the ILO estimated that 20.9 million people were suffering forced labor at any given point in time over the ten-year period 2002-2011, reporting a standard error of 1.4 million at a 68 percent level of confidence (ILO, 2012). In 2016, the ILO and the Walk Free Foundation estimated 40.3 million people were “in modern slavery, including 24.9 million in forced labor” (ILO, 2017), a decrease from the earlier GSI estimate of 45.8 million victims in 2016 (Walk Free Foundation, 2018; Walk Free Foundation, 2016). The GSI published prevalence estimates by nation in 2012, 2014, 2016, and 2018. As with the DoS national estimates, the GSI national estimates have also been subject to criticism (e.g., Gallagher, 2014) and their 2012 and 2014 estimates have been withdrawn due to changes in their methodology.

The GSI estimate includes forced marriage, child marriage, and child soldiers. The DoS and earlier ILO estimates treat these human rights abuses separately. The difference between estimates can be attributed not only to differences in scope of definition, but also to the inherent uncertainty of such estimates; specifically:

- 1) Ambiguity and differences exist in the terms human trafficking, TIP, modern slavery, slavery, slavery-like practices, etc.;
- 2) Victims of human trafficking generally self-identify and therefore include subjective assessments that are affected by different sociocultural norms;

³ The “3P” paradigm consists of Prevention, Protection, and Prosecution, as shown in the 2018 TIP Report.

- 3) The population of victims is largely a hidden population, and it is therefore difficult to obtain a representative sample for statistical analysis; and
- 4) In any given survey, the number of self-identified alleged victims is generally small and extrapolations from small numbers have significant uncertainty.

In addition, international definitions may not be fully consistent with national definitions and the local customs and laws of a particular country. For example, forced marriage is prohibited through the prohibitions on slavery and slavery-like practices, including servile marriage. By extension, child marriage can be considered to be forced marriage, as one or both parties by definition are not able to express free and informed consent (ILO, 2017). In many countries, however, parties under the age of 18 (U18) are legally allowed to marry. In the US, there is no federal law regarding child marriage, and each state has its own regulations.

The discrepancies in definitions and inherent ambiguity in victim identification can make estimating TIP prevalence complex and subjective. While methods that attempt to measure prevalence are imperfect, they still have merit and show statistically significant relationships with other related measures (van der Vink et al., 2021a).

At the global scale, the traditional economic theory that TIP arises from elevated poverty and unemployment appears to now be an oversimplification. Today, TIP and TIP tier rankings are more reflective of governance and social freedoms than economic factors (e.g., Perry and McEwing, 2013, Cho, 2015, van der Vink et al., 2021a).

Lao PDR has a Democracy Index that is on the lower end of the range typical of a Tier 2 nation and falls below the typical range of a Tier 1 nation (Figure 3). The country's ranking in Ease of Doing Business, Press Freedom, and Corruption are either on the lower end or well below the typical range for Tier 2 nations (Figure 3). The clear differences between the median governance measures for each tier level suggest that, at the national scale, governance, corruption, and bureaucracy contribute to TIP. The strong statistical relationships revealed through our analysis between these metrics and the TIP tier rankings and prevalence estimates suggest that problems with governance, transparency, and corruption should be addressed as part of the overall CTIP strategy. See Annex 3 for additional detail.

Figure 3: TIP Tier Rankings and Measures of Governance for Lao PDR



Figure 3 Caption: Compared to other Tier 2 nations, Lao PDR places on the lower end of most governance indicators. Presented in this figure are: a) Democracy Index: a measure based on electoral process and pluralism, civil liberties, the functioning of government, political participation, and political culture (Economist Intelligence Unit, 2020); b) Ease of Doing Business: measures business-related metrics including handling permits and utilities, getting credit, and dealing with trade and contracts for 2020 (World Bank, 2020); c) Press Freedom Index: a measure composed of survey responses from experts and data on abuse and violence against journalists for 2021 (Reporters without Borders, 2021); d) Corruption Perceptions Index: a composite index based on surveys of experts and business executives for 2020 (Transparency International, 2020); e) Freedom in the World: index assessing political rights and civil liberties of individuals for 2021 (Freedom House, 2021); f) Fragile States Index: uses the Fund for Peace's Conflict Assessment System Tool to measure conflict drivers and dynamics for 2021 (Fund for Peace, 2021); and g) Economic Freedom Index: measures rule of law, government size, regulatory efficiency, and open markets for 2021 (Heritage Foundation, 2021).

B. CHILD MARRIAGE AND HUMAN TRAFFICKING IN LAO PDR

Lao PDR has among the highest child marriage rates in Asia and the rate of decrease is less than one percent per year. The percentage of Laotian females married by age 15 is more than double the average rate for Asia and the percentage of Laotian females married by age 18 is 85 percent higher than the average for Asia. Article 9 of the Lao Family Law of 1999 sets the minimum legal age of marriage at 18 but allows it to be lowered to 15 in “special and necessary cases.” Marriage without mutual consent or under coercion is considered illegal. However, many continue to heed traditional practices, under which marriages may be formed through parental arrangement, formal request, or bride theft (Jordana, 2017; Siliphong et al., 2005).

Attempts to address child marriage and child, early, and forced marriage are interwoven with TIP through a fabric of international agreements, domestic laws, and cultural traditions that contain different definitions on the age of a child, the minimum age of marriage, the age of free and informed consent, and the factors that constitute special circumstances. There is general agreement that trafficking and child marriage intersect when marriage is used both in conjunction with force, fraud, coercion, or abuse of power, and as a means to subject spouses to conditions of slavery, often in the form of domestic or sexual servitude (e.g., UN Office on Drugs and Crime, 2020). When applied to different social norms, however, the definitions of these terms and the description of circumstances contain sufficient ambiguity to create inconsistencies regarding enforcement and interpretation.

At the international level, child marriage can be considered a violation of human rights under a series of linked international agreements:

- The United Nations Universal Declaration on Human Rights (UDHR) states in Article 16 (2): “Marriage shall be entered into only with the free and full consent of the intending spouses” (UN, 1948).
- The Convention on Consent to Marriage, Minimum Age for Marriage, and Registration of Marriages refers in its preamble to UDHR Article 16 (2), reaffirms the consensual nature of marriages (Article 1),⁴ requires the parties to establish a minimum marriage age by law (Article 2),⁵ and requires parties to ensure the registration of marriages (Article 3) (UN, 1964).
- The non-binding recommendation accompanying the Convention, “Recommendation on Consent to Marriage, Minimum Age for Marriage and Registration of Marriages,” recalls Article 2 of the Supplementary Convention on the Abolition of Slavery, the Slave Trade, and Institutions and Practices Similar to Slavery and specifies (Principle II) that any minimum age “shall not be less than fifteen years of age” except “for serious reasons, in the interest of the intending spouses” (UN, 1965). The exception for undefined “serious reasons” makes enforcement difficult.

Additionally, it can be argued that child marriage is a “practice similar to slavery” under the UN Supplementary Convention on the Abolition of Slavery, the Slave Trade, and Institutions and Practices Similar to Slavery (UN, 1956). Although child marriage is not specifically addressed in the convention, and no “suitable” minimum age is specified, child marriage is implicitly prohibited through Article I(C), Article I(D), and Article 2.

- Article I(C) prohibits a woman to be promised or given in marriage without the right to refuse.
- Article I(D) prohibits “any institution or practice whereby a child or young person under the age of 18 years, is delivered by either or both of his natural parents or by his guardian to another person, whether for reward or not, with a view to the exploitation of the child or young person or of his labour.”
- Article 2 states “with a view to bringing to an end the institutions and practices mentioned in article I (c) of this Convention, the States Parties undertake to prescribe, where appropriate,

⁴ The Convention on Consent to Marriage, Minimum Age for Marriage, and Registration of Marriages is a treaty agreed upon in the United Nations on the standards of marriage. The treaty was opened for signature and ratification by General Assembly resolution 1763 A (XVII) on 7 November 1962 and entered into force 9 December 1964.

⁵ The Convention on Consent to Marriage, Minimum Age for Marriage, and Registration of Marriages also contains the statement that “No marriage shall be legally entered into by any person under this age, except where a competent authority has granted a dispensation as to age, for serious reasons, in the interest of the intending spouses.”

suitable minimum ages of marriage, to encourage the use of facilities whereby the consent of both parties to a marriage may be freely expressed in the presence of a competent civil or religious authority, and to encourage the registration of marriages.”

Finally, the UN Sustainable Development Goal (SDG) 5 is to achieve gender equality and empower all women and girls. Target 5.3 for that goal is to “eliminate all harmful practices, such as child, early and forced marriage and female genital mutilations.” To measure progress towards Target 5.3, the UN uses indicator SDG 5.3.1, “the proportion of women aged 20–24 years who were married or in a union before age 15 and before age 18” (UN, 2015). Among Laotian women aged 20-49, 8.4 percent were married under the age of 15 and 32.8 percent were married under the age of 18 (Lao Statistics Bureau and UNICEF, 2018).

As previously noted, the USG generally follows the definition of TIP contained in the Palermo Protocol. The Protocol defines the meaning of “child” as any U18 person (Article 3(d)) and specifies that means are not relevant if the act involves a child (Article 3(c)). The TIP Report references child marriage as a contributing factor to girl’s vulnerability to exploitation but does not consider it a form of human trafficking and does not include child marriage in its calculation of TIP victims.

In 2017, the ILO began counting forced marriage in their slavery statistics (ILO, 2017) under the general recommendation that “child marriage is considered to be a form of forced marriage, given that one and/or both parties have not expressed full, free and informed consent” (Article VI.B.20, CEDAW, 2014). The recommendation, however, contains the caveat that “marriage of a mature, capable child below 18 years of age may be allowed in exceptional circumstances, provided that the child is at least 16 years of age and that such decisions are made by a judge based on legitimate exceptional grounds defined by law and on the evidence of maturity, without deference to culture and tradition” (CEDAW, 2014).

In Figure 4, each dot represents a nation. The vertical axis is the percentage of females aged 15-49 ever U18 married, divorced, or in an informal union (UN Department of Economic and Social Affairs, 2017; UN World Marriage Data, 2017).⁶ The horizontal axis is the 2018 GSI estimate of the prevalence of “modern slavery” within each country (Walk Free Foundation, 2018). Each dot is colored by that nation’s tier assignment in the 2018 TIP Report (US DoS, 2018). The dashed horizontal lines are the median child marriage rates for the countries in each TIP tier level. Even though child marriage rates are not incorporated in the calculation of TIP tier levels, there is an association. Tier 1 countries have on average two to three times lower child marriage rates than Tier 2 and 3 countries.⁷

⁶ Many western nations were missing U18 child marriage rates in the UNICEF MICS surveys. The missing values were imputed using the linear relationship between the U15 ($U15 = 0.423 * \text{Child Marriage Practice} - 1.232$, R-squared = 0.716) and U18 values ($U18 = 1.141 * \text{Child Marriage Practice} + 4.7$, R-squared = 0.809) from the UN Child Marriage Practices survey (UN World Marriage Data, 2017). The latter survey measures the percentage of women aged 15-19 ever married, divorced, widowed, or in an informal union. Thus, there are discrepancies between the age groupings of the two datasets, but given the high r-squared values in the relationship between the rates, the interpolation was suitable.

⁷ It is notable that seven of the ten countries with the highest U18 child marriage rates are on the Tier 2 watchlist.

Figure 4: Child Marriage, TIP Prevalence, and TIP Tier Rankings

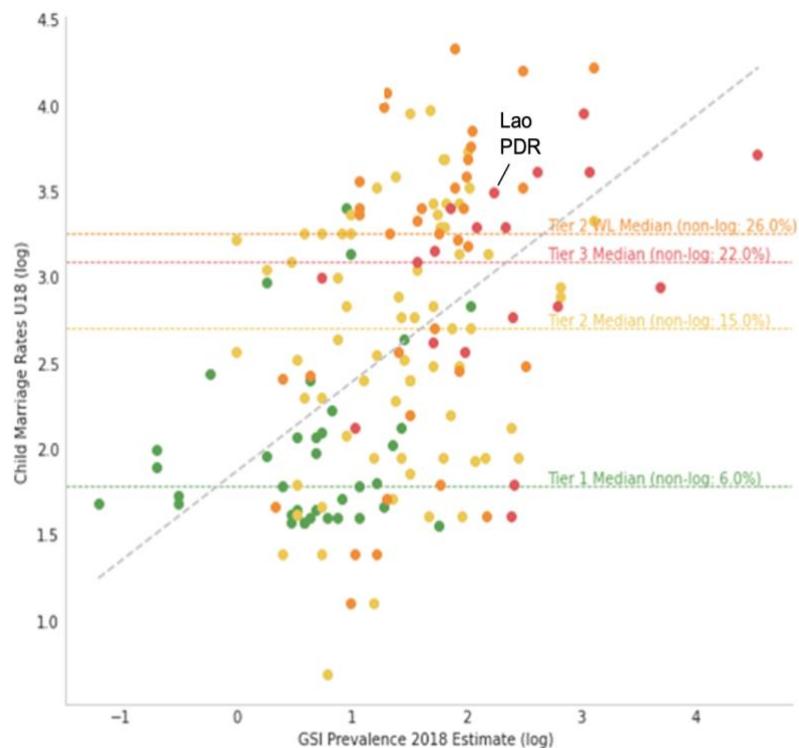


Figure 4 caption: Child marriage and TIP are interrelated within a common ecosystem (van der Vink et al., 2021b). The GSI prevalence 2018 estimate is the GSI estimate of the prevalence of “modern slavery” within each country. The Child Marriage Rates U18 values are estimates of the percentage of U18 females ever married, divorced, or in an informal union, based on the 2017 UN Department of Economic and Social Affairs and United Nations Children’s Fund (UNICEF) Multiple Indicator Cluster Surveys (MICS) data. Each dot represents a nation, colored by that nation’s tier ranking in the 2018 TIP Report. The dashed horizontal lines are the median child-marriage rates for the countries in each TIP tier level.

While the reporting of child marriage rates, the estimating of human trafficking prevalence, and the designation of TIP tier levels are distinct activities pursued by different organizations operating under different mandates, our analysis in Figure 4 demonstrates that these metrics and the associated phenomenon they attempt to measure are inter-related within a common ecosystem. Countries with higher child marriage rates typically have higher rates of human trafficking and are assigned worse TIP tier levels. Statistically, the chances of the “null hypothesis” being true, that child marriage and human trafficking are not related, is less than one in ten million.⁸

While many claim that not all child marriages are TIP, the ecosystem of opportunities it creates for TIP and other negative impacts is large. There is increasing pressure to set a minimum age for marriage and to classify marriage under that age as TIP. The hope is that by recognizing child marriage as a form of TIP, it will raise awareness and provide increased leverage for enforcement (e.g., Redfern, 2019). The argument for including child marriage as a form of slavery similar to TIP can be logically presented. Children, by definition, cannot provide free and informed consent. The treatment of a child as a

⁸ The data distributions were skewed, so a logarithmic transformation was applied to both variables (Child Marriage Rates and GSI Prevalence Estimates) for a more accurate statistical analysis. The relationship in Figure 4 has an equation of $\log(U18) = 0.518 \times \log(GSI) + 1.868$ and an R-squared value of 0.188.

commodity is consistent with the definition of human trafficking, regardless of whether that child is being exchanged in a transaction for money, goods, social status, protection, or family honor.

C. OSEC IN LAO PDR

OSEC generally includes the production, for the purpose of online publication or transmission, of visual depictions (e.g., photos, videos, live streaming) of the sexual abuse or exploitation of a minor for a third party who is not in the physical presence of the victim, in exchange for compensation (International Justice Mission, in partnership with US DoS and IACAT, 2020). OSEC is illegal in Lao PDR, in that the creation and distribution of child pornography, under the umbrella of all pornography, is illegal. The existing legislation, however, fails to make the possession of child pornography illegal (Breese, 2017).

Child pornography has predominantly been distributed through CD shops, especially in the capital city of Vientiane (Davy, 2017). Child pornography material bought at a CD shop gets further distributed at internet cafes. This is especially problematic because Lao PDR has not implemented government guidelines for internet service providers (ISPs) to install filtering software to block access to and transmission of child pornography materials (Davy, 2017). Lao PDR also does not require ISPs to report instances of OSEC (Breese, 2017). Lao PDR does not have legislation that criminalizes online grooming (ECPAT International, 2017). Additionally, there is no requirement in Lao PDR for identification of internet cafe users (Song, 2015).

The percentage of the population using the internet has increased from under ten percent in 2010 to over 25 percent in 2017 (World Bank, 2021). The rapid increase in technology use across the country makes it difficult for protective and security measures against OSEC to catch up (ECPAT International, 2017). Children and parents in Lao PDR have a low awareness of online grooming's existence, and societal norms tend to view only penetrative rape as sexual abuse (Davy, 2017). Social norms, increased connectivity, availability of content, and lack of safeguards make Lao PDR an emerging hotspot for OSEC.

D. BRI, SEZS, AND HUMAN TRAFFICKING IN LAO PDR

The BRI is a blanket term for Chinese President Xi Jinping's signature foreign policy undertaking (Chatzky & McBride, 2020). While the BRI was initially designed to improve regional connectivity between China's modern coastal cities, its less developed interior, and immediate neighbors within East Asia, the program now spans over 65 countries (Bird et al., 2019). Chinese banks and private enterprise have financed over one trillion United States Dollar (USD) of investments, which include railroads and highways (land belt), bridges and ports (maritime road), fiber-optic cables, artificial intelligence, e-commerce, surveillance (digital silk road), and vaccine and relief distribution (health silk road) (ASEAN Business News, 2021). However, the BRI's incomplete social-impact assessments, failure to meet project management best practices, and tolerance of corruption is likely to exacerbate TIP in participant countries, such as Lao PDR (Hillman & Sacks, 2021).

Lao PDR is a major BRI participant with over 30 completed and ongoing projects in hydroelectric power, agriculture, mining, and transportation (HKTDC, 2021). Measured by ratio of BRI loan to country gross domestic product (GDP), Lao PDR is the heaviest utilizer of BRI initiatives among all participant country's (HKTDC, 2021; World Bank, 2021). The flagship BRI project in Lao PDR is the China-Lao PDR railroad, a 257-mile high-speed rail line with 32 stations that links the southern Chinese

province of Yunnan to the Lao PDR capital of Vientiane and ultimately through to Singapore (ASEAN Business News, 2021). The first 21 stations are estimated to have directly displaced over 4,400 families (RFA Lao, 2018). On a comparable scale is the Sanakham Dam, which is to be built 96 miles north of Vientiane. While the project is intended to meet local energy demands, the preexisting Xayaburi and Don Sahong dams have already negatively affected fisheries and farms and displaced families on the riverbanks downstream (Kipgen & Gupta, 2020).

Displacement from family farms and fisheries can directly reduce income for much of Lao PDR's heavily agricultural population, with residents and local officials alike reporting slow, inadequate, or missing compensatory payments (Whong & Khotpanya, 2019). Farmers represent about 80 percent of the total population of Lao PDR and 59 percent of them engaged solely in subsistence agriculture (Lao PDR - Agricultural Census, 2011). Loss of land due to development and construction for this population directly translates to loss of both home and income, and displacement. Foreign investors in Lao PDR frequently fail to initiate public consultations or enact sufficient social and environmental safeguards (Asian Development Bank, 2009). Regarding the development of the China-Lao railroad alone, Lao PDR officials and locals have lodged complaints concerning slow, insufficient, or lacking compensation payments, including frequent cases of locals removed from their land before receiving remittances (Janssen, 2018; Whong & Khotpanya, 2019).

SEZs are designated zones developed to attract investment. There are currently 13 active SEZs in Lao PDR, two more in development, and an additional 25 SEZs are planned (Macan-Markar, 2019). Investors include China, Thailand, Japan, Vietnam, Korea, and Malaysia. SEZs funded by China are considered to be part of the BRI. SEZs draw large numbers of international visitors to casinos, which are prohibited in China, Thailand, and Lao PDR proper. SEZs are also centers of prostitution and can attract children and youth from nearby villages (Crispin & Thompstone, 2011; RFA Lao, 2020). The 2021 TIP Report highlights SEZs as areas with high TIP vulnerability, specifically the Boten Beautiful Land SEZ and the Golden Triangle SEZ in Boten and Bokeo, respectively (US DoS, 2021). In addition, the economic benefits of SEZs mainly accrue to foreigners: as of 2018, Laotian workers had secured only 34 percent of all jobs created in all SEZs in the country, which is well below the 90 percent promised by both China and the Lao PDR government (Economist, 2020).

E. ANALYSIS OF TIP VICTIM PROFILES

Analysis of the Lao PDR TIP profiles we gathered from news, reports, and academic literature reveals approximately equal percentages of victims returning from China and Thailand. Female victims were mostly victims of sex TIP, at more than 70 percent, and evenly trafficked between China and Thailand. Male victims were overwhelming victims of labor TIP, at about 90 percent, and trafficked mostly in Thailand, also at about 90 percent. The three source provinces with the highest number of sex TIP victims are Louangnamtha, Vientiane, and Oudomxai. The three source provinces with the highest number of labor TIP victims are Savannakhet, Champasack, and Salavan.

Our analysis is consistent with the 2021 TIP Report narrative that victims are primarily trafficked to Thailand and China. Points of contrast are mostly associated with male labor trafficking, and the difference may be associated with reporting and varying interpretations on what constitutes exploitative practices. We find that labor TIP is almost equally divided between males and females, at 53 percent versus 47 percent, while the traditional narrative is that labor TIP is primarily females providing

domestic work or working in factories and agriculture, and males are a minority, working in fishing, construction, and agriculture (US DoS, 2021).

Internal trafficking may be poorly represented in the TIP victim profiles due to underreporting. Anecdotal information suggests victims move from provinces bordering major cities into areas of high population density and areas of high population mobility, including national borders, casinos, and SEZs (Crispin & Thompstone, 2011). It is thought that many of TIP victims are young women and girls trafficked while pursuing economic opportunity and upward mobility in food or beverage sales (bars), domestic work (housemaids), garment and textile production, or economic stability through marriage (Jordana, 2017).

In our analysis, China was the destination for all TIP victims associated with foreign marriage where a destination was identified (123 cases). While the number of cases is small, this finding is consistent with the claim that Lao PDR women have been trafficked to China through northern provinces directly connected to Yunnan and through SEZs (Alliance Anti-Traffic & ECPAT International, 2019; RFA Lao, 2021; Yap, 2017).

F. VULNERABILITY TO TIP IN LAO PDR

Just as there is no single cause for TIP, there is no single solution. Even when causes appear similar, solutions that work in one location seldom work in another location owing to the vast array of varying sociocultural and economic conditions. The lack of effective universal solutions has frustrated anti-trafficking efforts and limited their success (e.g., Betz, 2009).

From an analytical perspective, TIP can be classified as a “wicked problem,”⁹ the type of problem that defies a single solution and is characterized by a myriad of dynamically interconnected variables. Causal relationships are seldom direct, and the circumstances that foster the problem vary from location to location. While “wicked problems” may defy single and universal solutions, they can be addressed through an ecosystem approach (Eck and Clarke, 2019; Clarke, 1995). In using such an analytical approach, we parameterize the ecosystem in which TIP exists to reveal through weak-signal analysis the combinations of characteristics that allow TIP to occur. Once we identify the characteristics of the ecosystem that supports TIP, we can formulate geographically-targeted interventions to disrupt that support system and mitigate TIP in a more effective manner.

We do not assume that any characteristic by itself is predictive of TIP. It is combinations of characteristics that create vulnerability to TIP, and these characteristics vary from location to location. Vulnerability to TIP is not the same as TIP prevalence. Socioeconomic ecosystems can be vulnerable and as-yet unexploited, or the exploitation can be unrecognized.

Analytically, weak-signal analysis provides a means for identifying underlying causal relationships among multiple interrelated variables. Understanding the ecosystem that makes populations vulnerable to TIP, allows us to formulate geographically-targeted interventions that, in turn, can be used to disrupt that ecosystem and make populations less vulnerable. Ecosystem approaches have been proposed for

⁹ The original use of the term “wicked problem” is attributed to design theorist Horst Rittel.

addressing the sex trafficking of children (Finigan-Carr et al., 2019) and for building resilience to trafficking within communities (Gardner et al., 2020).¹⁰

We begin with millions of data values from diverse, mostly open-source datasets from non-governmental organizations (NGOs), media, the USG, and statistical authorities of local governments. These datasets include detailed national census data, health and educational survey data, remote-sensing data, web-scraped data, and data from both formal and informal media sources.¹¹ These millions of data values were distilled into over half a million indicator values covering over 1,000 measures for 148 districts over 20 years, representing demographics, governance, land-use, natural resources, education, health, economics, ethnicity, religion, infrastructure, conflict, gender equality, female empowerment, societal norms, and other human-social-cultural-behavioral characteristics. While datasets may be of varying quality and completeness, each has the potential of carrying information that reflects a characteristic of a population, either by itself or, more commonly, through combination with other datasets.

Data on human trafficking victims, traffickers, and locations of origin or transit in Lao PDR have not been systematically compiled. While a nationwide survey on child trafficking occurred in 2004 (Lao PDR Ministry of Labour and Social Welfare, 2004), no comprehensive TIP survey has been conducted. Household surveys such as the UNICEF MICS surveys and the United States Agency for International Development (USAID) Demographic and Health Surveys (DHS) surveys do not contain questions from which data on TIP can be distilled.¹² While TIP prosecution data are collected and summarized by the Lao PDR government, these data are not publicly shared and geographic information is not included in the summary. We expanded the data reported by the Lao PDR government using an extensive review of formal and informal media sources and a literature review of academic articles, NGO reports, and government reports dating from 2018 through 2021. Whenever available, we included sources, transit areas, and destinations within our database. Data on victim profile characteristics such as gender, age, foreign marriage status, minority ethnicity status, and geographic origin were also collected. Although a large number of sources were used, double-counting was avoided by screening dates and characteristics, resulting in a Lao PDR TIP database of over 500 unique victim profiles.

A detailed technical summary of weak-signal analysis is included in Annex 2. In mathematical terms, we use singular-value decomposition, combined with varimax rotation and squared-factor loadings as an unsupervised self-learning algorithm to identify key attributes and their relative weightings (OECD, 2008). In non-mathematical terms, we begin with a wide range of socioeconomic indicators (in this case, over 1,000) to capture the full spectrum of factors that are associated with a population. The algorithm then identifies the optimal combinations of these indicators (in this case, 14) that are predictive of TIP,

¹⁰ Despite popular belief, research primarily shows that SCP does not necessarily lead to crime displacement (Clarke, 1995; Hesseling, 1994; for a discussion of the literature and the general conclusions on crime displacement, see Crime Prevention and Criminal Justice Module 2 on Crime Prevention). Ref: <https://www.unodc.org/e4j/en/cybercrime/module-9/key-issues/situational-crime-prevention.html>

¹¹ Lao PDR survey data sources include the Lao Social Indicator Surveys I and II (Lao Statistics Bureau and UNICEF, 2018; Lao PDR Ministry of Health and Lao Statistics Bureau and UNICEF, 2012).

¹² Household surveys supported by UNICEF (MICS) and USAID (DHS) allow us to evaluate progress and understand varying sociocultural ecosystems. The openly available datasets that accompany these surveys are essential sources of subnational data for a broad range of research requirements on aid and development. The usefulness for CTIP of these on-going data collection efforts can be improved.

while eliminating the combinations that are neither conducive nor preventative. The higher the value of the composite vulnerability measure, the higher the vulnerability for TIP activity.

Figure 5 shows the optimal combination of indicators used to generate the TIP vulnerability measure, along with their respective weightings. A positive weighting indicates a direct, positive relationship with TIP, and a negative weighting indicates a negative relationship. Table I lists the indicators that were used to generate the vulnerability measure, along with possible interpretations of their significance.

Figure 5: TIP Vulnerability Measure for Lao PDR

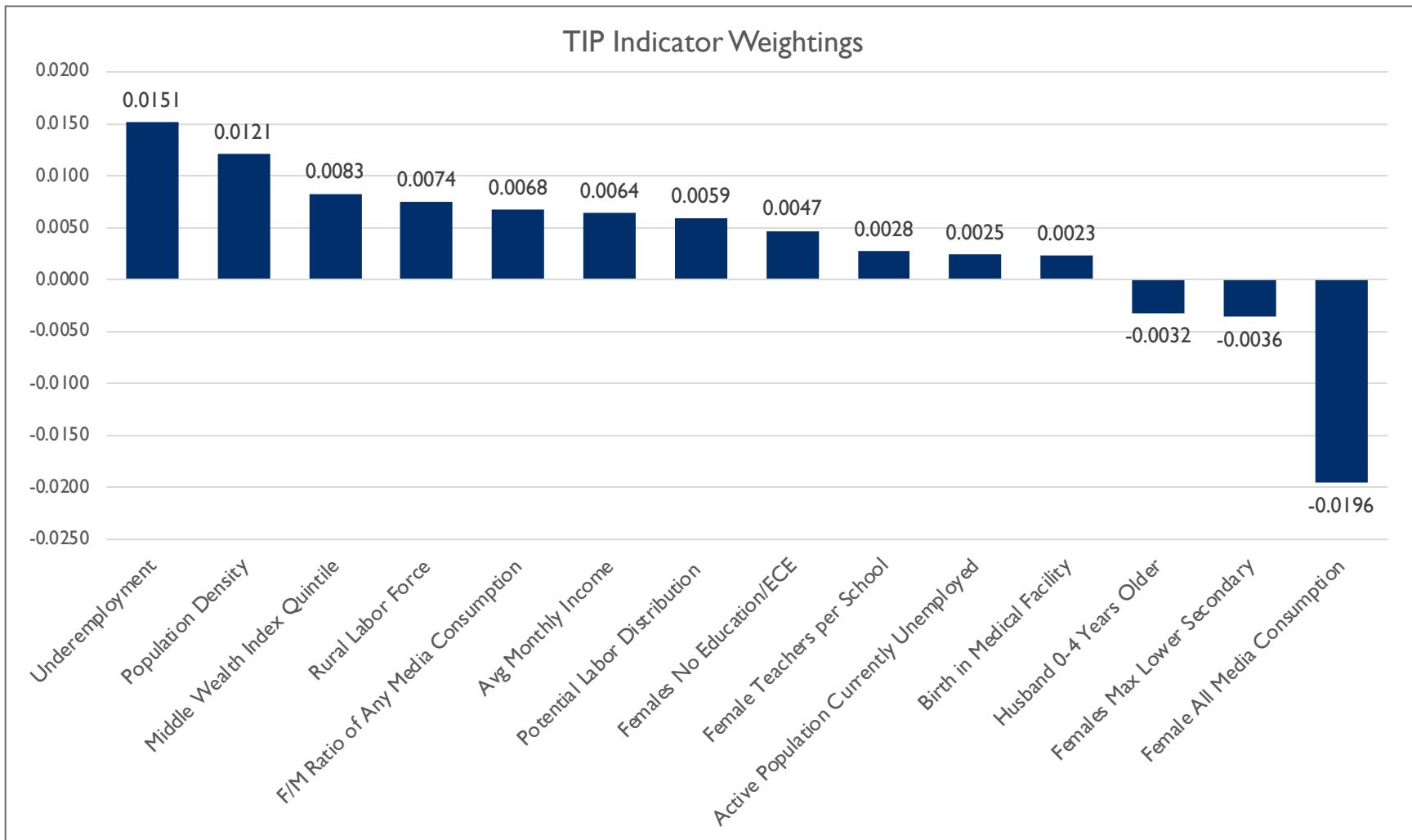


Figure 5 caption: Beginning with over 1,000 measures, the TIP Vulnerability Measure for Lao PDR is composed of a relatively small subset of indicators that represent the optimal combination characteristic of the TIP ecosystem. To explain as much of the data as possible while avoiding an overly complicated measure, various threshold values for indicator weightings are used to identify the optimal subset of indicators. The weighted values of the selected indicators are then used as input to the composite measure to generate vulnerability measures for each province. The outputs are sets of indicators (weak-signals) that are proxy measures for the underlying causal relationships. The higher the vulnerability measure, the increased vulnerability for TIP activity.

We do not assume the indicators are necessarily direct causes of vulnerability, rather we interpret them as proxy measures that reflect more complex societal phenomena that are difficult to measure directly. For example, we cannot directly measure gender inequality. However, certain manifestations of gender inequality, such as high female child marriage rates and violence towards women can be measured. For each location, we interpret the causes of vulnerability using the specific indicator values for that location and our interpretation of those indicators. The definitions of each indicator, along with our interpretation and other phenomena with which they have strong statistical relationships, are included in Table I. The interpretations of the indicators are illustrations and are not intended to be exhaustive.

Our analysis confirms that the causes of TIP are multiple. Because the underlying causal relationships associated with TIP vary with each socioeconomic landscape, it is unlikely that a one-size-fits-all intervention approach for TIP will be successful. Scalability will require an adaptive approach with interventions customized to each geographic location. Our analysis is consistent with the observation that anti-trafficking policies have had limited success at reducing human trafficking because they tend to be applied universally and do not account for the unique circumstances present in the country (e.g., Betz, 2009).

Table I: Indicators in the TIP Vulnerability Measure

INDICATOR & DEFINITION
<p><i>Underemployment: Percentage distribution of person in time-related underemployment</i></p> <p>The percentage of people in time-related underemployment is an indicator of people that are employed but are actively seeking to work additional hours or have worked less than the national working time threshold (48 hours per week). This indicator may reflect an under-utilization of the current labor force's production capacity, potentially motivating individuals to seek opportunities for upward mobility and better wages (ILO, n.d.).</p>
<p><i>Population Density: Density of population measured as the number of individuals per area</i></p> <p>Population density serves as a measure of urbanicity. Its positive correlation with TIP indicates that access to urban areas can lead to an increased exposure to trafficking. Cities are often the linkages to transportation and employment opportunities, which allows a trafficker to move their victims away from their homes.</p>
<p><i>Middle Wealth Index Quintile: Percentage of households in middle wealth index quintile</i></p> <p>The middle wealth quintile indicator identifies households' comparative economic status. The indicator may also reflect access to basic resources, education, stability of employment, and household ownership (DHS, n.d.).</p>
<p><i>Rural Labor Force: Percentage of rural distribution of labor force</i></p> <p>Poverty tends to be more prevalent in rural areas, where individuals are more dependent on subsistence agriculture and have fewer opportunities for income-producing activities. The population of Lao PDR is young (45 percent is under 15 years of age and 55 percent is under 19), with approximately 60,000 young people entering the labor force each year (Jordana, 2017; Lao PDR Ministry of Labour and Social Welfare, 2004). Excess labor combined with a legal work age of 14 can motivate children to drop out of school and leave rural areas in search of jobs (Crispin & Thompstone, 2011). Increases in the rural labor force may reflect an inability to find jobs in rural areas, which motivates people to seek employment through urban or foreign migration, and exposes them to trafficking.</p>
<p><i>Female-to-Male Ratio Any Media Consumption: Female to male ratio of women to men consuming any media at least once a week</i></p> <p>Access to and consumption of television, the newspaper, or the radio helps an individual stay informed and connected to the rest of the world. This indicator reflects limited access to information. Access to limited information can make people accessible to trafficking, but perhaps not informed enough to differentiate potential trafficking vulnerabilities from safe migration channels.</p>

INDICATOR & DEFINITION

Average Monthly Income: Average monthly income from employment

The indicator for average monthly income is an indication of a worker's purchasing power and their standard of living. Similar to middle wealth quintile, some level of wealth is needed for access to transportation, communication, and other channels of recruitment into TIP.

Potential Labor Distribution: Percentage distribution of potential labor

The indicator for potential labor represents the percentage of people in unemployment due to limiting conditions but who have expressed a desire to work and/or are actively seeking employment.

Females No Education/Early Childhood Education (ECE): Percentage of women whose highest education level is none or ECE

Females with zero education or highest level is ECE is an indication of low wealth, fewer economic opportunities, and unequal social customs. The lack of economic opportunities may motivate females to search for opportunities through informal channels.

Female Teachers per School: Number of female teachers per school

The indicator for number of female teachers per school can reflect a region's wealth, gender equality, access to education, and information. In the case of Lao PDR, this indicator is more closely related to non-rural environments, and areas that are urban or have urban access. Thus, we interpret it as an indicator reflecting an urban environment or access to one.

Active Population Currently Unemployed: Percentage distribution of the usually active population: Unemployed percent (population age 10+)

The indicator reflects the percentage of individuals who are usually unemployed. Unemployment can be a driver for migration in Lao PDR. The majority of Laotians are self-employed farmers or unskilled laborers in short-term and poorly paid work (UNODC, 2017).

Birth in Medical Facility: Percentage of females (ages 15-49) who had a live birth in two years who delivered in health facility

An indicator for SDG 3.1, birth in a medical facility and attendance by a skilled professional enables quality care for both mothers and their newborns. In the case of Lao PDR, this indicator is closely related to non-rural environments and areas that are urban or have urban access. Thus, we interpret it as an indicator reflecting an urban environment or access to one.

Husband 0-4 Years Older [-]: Percentage of women (ages 15-19) whose husband is zero to four years older

The indicator for females whose husband is zero to four years older is a measure of females who have married within their age group. This indicator is a measure of gender equality. Larger age differences reflect gender inequalities and patriarchal social norms.

Females Max Lower Secondary [-]: Percentage of women whose highest education level is lower secondary

Lower secondary school begins at around age 11 and lasts for four years. It is a relatively high level of education in Lao PDR, attained by only about 25 percent of all students. The negative correlation of females whose highest education level is lower secondary with TIP suggests that educated females have greater access to economic opportunities and more autonomy. The indicator correlates with higher wealth measures. Attending secondary school costs 2.7 times the cost of attending primary school and requires passing an exam. Secondary schools are less accessible to most students (World Bank, 2016). There are also high opportunity costs for the family as children contribute to the households' economic needs (World Bank, 2016).

Female All Media Consumption [-]: Percentage of females that consume all forms of media (television, newspaper, radio) once a week

Females consuming all forms media is an indication of education, some migration experience, urban access, female empowerment, and gender equality. It reflects an absence of restrictive social norms that discourage females from participating in public life (Carter Center, 2021). This indicator has a negative correlation with TIP, suggesting that female consumption of media allows for increased opportunities and connectedness, together with access to safe migration knowledge and information literacy that may mitigate risk of trafficking.

Our TIP vulnerability measure has a high predictive value for TIP in Lao PDR, as confirmed by reported incidences. Although the final vulnerability measure is composed of a relatively small subset of indicators that represent the optimal combination characteristic of the TIP ecosystem, the analysis reflects the full sociocultural-economic ecosystem. Indicators that were excluded from the final measure are indicators that: a) do not have significant associations with TIP, either in a positive or negative capacity, or b) that correlate so strongly with those in the final measure that their inclusion would be redundant.

We have confirmed our analysis through “hind-casting,” which consists of testing the model against known occurrences in the past. The purpose of hind-casting is to see if the model correctly predicts areas of known TIP when the parameters for those areas are used as input for the model. When the TIP vulnerability measure is hind-casted with reported trafficking cases per 100,000 population, we see that the vulnerability measure is a strong, statistically significant predictor of TIP. Lao PDR has 17 provinces and one prefecture (Vientiane Capital), which we refer to as a province to be concise. When our vulnerability measure was hind-casted, it correctly identified the four provinces with the highest prevalence of provinces with known trafficking among the top five. The probability of this occurring by random chance is less than one in 100.¹³

Figure 6 is a map that applies the vulnerability measure to the population. The vulnerability measure is combined with the population to reveal concentrations that have the combinations of characteristics where TIP occurs, as identified through weak-signal analysis. We refer to this as the population’s vulnerability to TIP and can translate it into a probabilistic assessment predictive of the number of people within a population that are likely to experience TIP.

The vulnerability map is analogous to the vulnerability maps that are used for natural hazards and should be interpreted in a similar fashion. First-generation hazard vulnerability maps simply used the locations of known past events to predict future vulnerability. As the understanding of the ecosystem in which natural hazards occur improved, scientists were able to identify vulnerability in locations where events were previously unknown. Over time, these projections were validated with new events, and the number of hazard victims were dramatically reduced because of proactive measures to reduce vulnerability. The vulnerability analysis for TIP in Lao PDR follows the same developmental logic. By analyzing the ecosystem in which TIP is occurring, we can assess the potential of other locations to support TIP activity and reduce victimization through proactive measures. The corresponding values used in the map, along with a ranking for each province and estimates of prevalence, are presented in Table 2.

The scale is a relative ranking with areas that are most vulnerable to TIP shown in red and areas that have the lowest vulnerability shown in blue. The higher the vulnerability, the increased likelihood for TIP activity. The map is composed of 284,055 pixels, each with an area of 30 seconds x 30 seconds (approximately 1km²). We forgo the approach of displaying our results on land area and instead display our results referenced to population. Such a display helps identify hotspot areas, where there may be large concentrations of vulnerable populations. Two messages are conveyed simultaneously: the color shade indicates the vulnerability index of the location, and the density of color indicates the sizes of vulnerable populations.

¹³ The TIP vulnerability measure has an R-squared value = 0.33, and the p-value is less than 0.05, allowing us to reject the null hypothesis that the relationship occurred by chance. The probability of four of the five provinces with known TIP occurring among the top five of the 18 provinces by chance is approximately 1 in 122 (0.00817).

Figure 6: TIP Vulnerability Map for Lao PDR

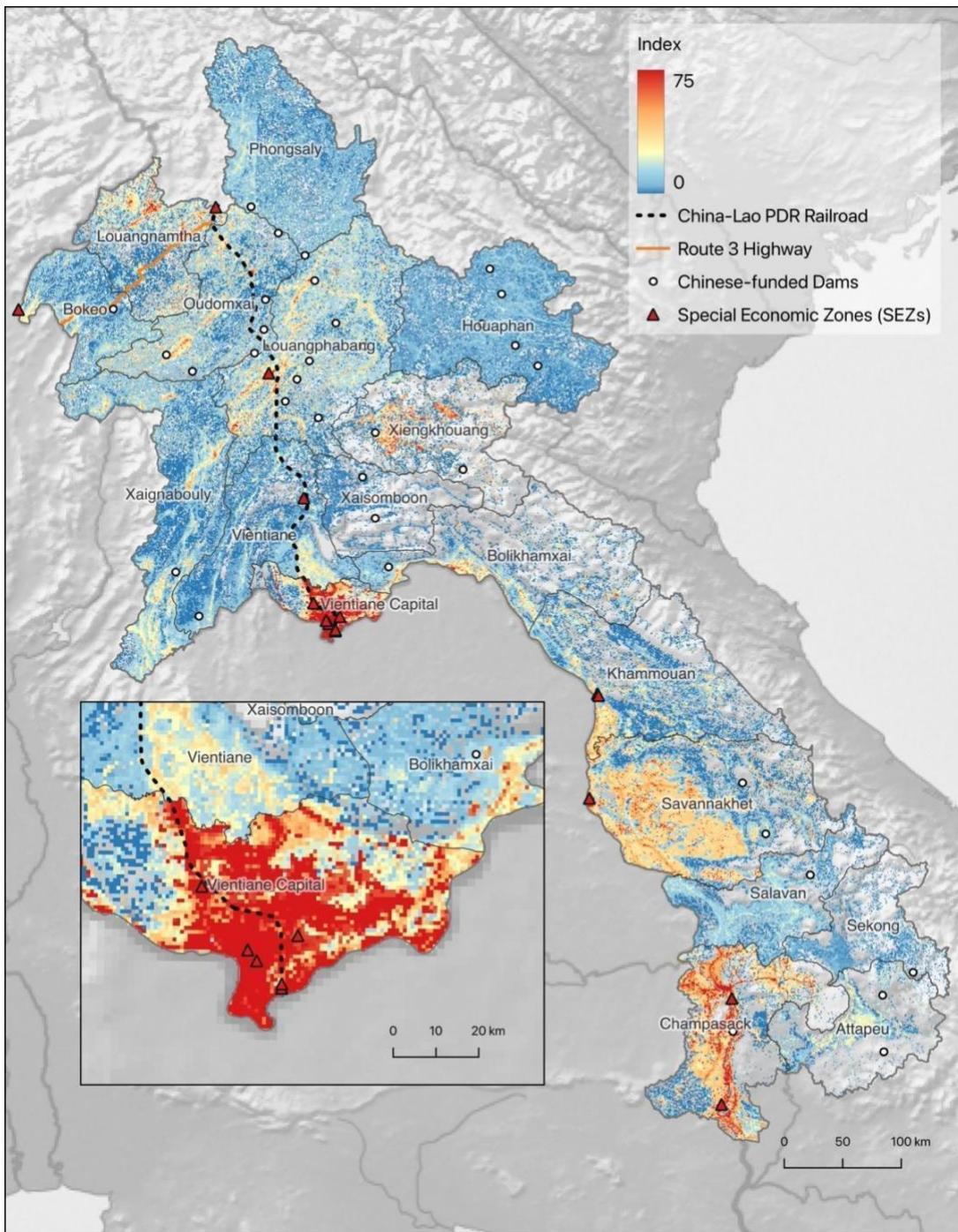


Figure 6 caption: Geospatial presentation of vulnerability to TIP, applying our vulnerability measure to values at the province level and to ambient population estimates at the scale of approximately 1km² (Rose et al., 2020). The map is composed of 284,055 discrete values. Province boundaries are shown in grey and labeled (Lao PDR National Geographic Department, 2019). SEZs are shown as red triangles (Google, 2021). Dam locations are shown as white circles (RFA, 2020). The Route 3 highway that connects to Thailand is shown as an orange line (Google, 2021). The China-Lao PDR Railroad is shown as a dotted black line (Treasures of Laos, 2018). The topographic base map is from Natural Earth (2020).

Table 2 includes for each province the vulnerability measure, the projected prevalence (per 1,000 population), and the projected number of TIP victims. The prevalence rate and number of victims are projected from the vulnerability measure. In allocating resources for CTIP, one is often looking to reduce the number of victims in the most cost-efficient manner. One therefore may want to prioritize areas where there is a combination of a high prevalence rate and a population that represents the highest density of potential victims. Prevalence estimates can be misleading when used by themselves. For example, a province with a low prevalence rate but high population can contain more TIP victims than a province with a high prevalence rate and low population. We therefore include projected victims with projected prevalence to account for population differences.

Table 2: TIP Vulnerability Measures by Province

PROVINCE	VULNERABILITY MEASURE	PROJECTED PREVALENCE	PROJECTED VICTIMS	POPULATION	RANKING
Vientiane Capital	0.174	33.24	27,243	819,466	1
Champasack	0.134	16.02	11,118	694,023	2
Louangnamtha	0.123	13.11	2,287	174,477	3
Savannakhet	0.100	9.61	9,248	962,373	4
Xiengkhouang	0.106	8.61	2,492	244,684	5
Louangphabang	0.098	8.30	3,244	431,889	6
Oudomxai	0.087	6.79	2,098	308,898	7
Bolikhamxai	0.086	6.67	1,826	273,691	8
Khammouan	0.079	5.87	2,535	390,657	9
Xaignabouly	0.072	5.17	585	381,376	10
Bokeo	0.058	4.00	717	179,243	11
Attapeu	0.058	4.00	559	139,628	12
Vientiane	0.048	3.46	1,449	419,090	13
Phongsaly	0.050	3.33	592	177,429	14
Salavan	0.033	2.54	1,006	396,963	15
Houaphan	0.028	2.31	566	289,393	16
Sekong	0.014	1.79	684	113,170	17
Xaisomboon	0.010	1.67	142	85,168	18

Table 2 caption: Corresponding vulnerability measures for the provinces ranked in order of highest to lowest vulnerability, with projected prevalence (per 1,000 population), projected number of victims, and population. Rankings were determined using the product of the vulnerability measure produced through weak-signal analysis and the log of the population for each province to better account for areas with high populations of more vulnerable individuals. The ranking color corresponds to the predominant pixel color in the map (Figure 6).

Broadly speaking, three areas of high vulnerability are: a) the border with Thailand, b) the border with China, and c) internal hotspots around SEZs and BRI infrastructure projects. Several provinces most vulnerable to TIP (e.g., Savannakhet and Champasack) share a border with Thailand. Extensive cross-border trade and new transportation infrastructure (such as the Route 3 highway) are likely to increase TIP along this porous border.

Oudomxai province, which borders China, has the most recorded TIP to China based on our victim profile database. All three provinces that border China (Oudomxai, Louangnamtha and Phongsaly) have above average child marriage rates of 40 to 50 percent. The construction of the China-Lao PDR Railroad and the Vientiane-Boten Expressway will increase Chinese tourism and business travel into Lao,

leading to higher vulnerability. Our analysis also indicates that China is the primary destination for trafficked brides. China was the destination for all TIP victims associated with foreign marriage where a destination was identified. This finding is consistent with estimates that at least 3,000 Lao women were trafficked to China through northern Lao provinces directly connected to China between 2008 and 2018 (Alliance Anti-Traffic & ECPAT International, 2019; RFA Lao, 2021; Yap, 2017).

SEZs are present in the top four most-vulnerable provinces based on our analysis. This finding is consistent with the 2021 TIP Report's findings, which recognizes SEZs as areas of high TIP vulnerability. BRI-funded projects are primarily SEZs, large hydropower projects, or transportation infrastructure development. Farmers represent about 80 percent of the total population of Lao PDR and about 60 percent of them are engaged solely in subsistence agriculture. Displacement from their land and livelihoods as a result of these large-scale infrastructure projects can lead to increased vulnerability. The China-Lao PDR Railroad crosses five provinces and includes direct connections to four SEZs, which leads to increased vulnerability to labor and sex TIP.

While one might assume that TIP is simply a result of poverty and unemployment, our data analysis reveals a more complex set of relationships. Within Lao PDR, there appear to be two groups of vulnerable populations: The first group is based in rural communities, where the country's youthful demographics yields large numbers of people entering the workforce each year, outpacing employment opportunities. The population of mostly agricultural workers and unskilled laborers are vulnerable to economic shocks, such as drought, and displacement, such as that resulting from loss of land to SEZs and BRI projects. Our analysis recognizes these populations through indicators such as "rural labor force," "females with no education/ECE," "unemployment," among others. The placement of these populations in a TIP-vulnerable ecosystem is largely involuntary and a result of consequences over which they have little or no control. Our findings are consistent with the expectation that excess labor, combined with a legal work age of 14, can incentivize children and young adults to drop out of school and leave rural areas for urban or foreign environments in search of employment opportunities (Crispin & Thompstone, 2011).

The second vulnerable group are middle-income individuals in more urbanized areas or with access to an urban area who are looking for opportunity and upward mobility. These populations have some resources and access to information and media, which enables them to seek employment opportunities in other parts of the country and abroad. However, they may not have sufficient information literacy or safe migration knowledge to avoid falling prey to trafficking. Our analysis recognizes these populations through indicators such as population density, average monthly income, middle wealth quintile, underemployment, and limited media consumption as reflected in the female-to-male ratio of any media consumption.

Confounding factors to both vulnerable populations include: a) proximity to international borders with Thailand and China and b) high levels of gender inequality. For the most impoverished, forced or child marriage to China may be a means of reducing a family's economic burden. For those seeking upward mobility and opportunity, the higher wages in Thailand may be seen as providing opportunities unavailable within Lao PDR. While our findings are more specific, they are consistent with the more general observation that TIP victims who are externally trafficked tend to be jobseekers looking for work abroad (US DoS, 2021). Both groups with high vulnerability are characterized by social norms of low female empowerment and high gender inequality. Our analysis recognizes these social norms

through both positively and negatively related indicators. Indicators positively related to TIP vulnerability represent a lack of female empowerment (e.g., the percentage of women with little or no education). Indicators negatively related to TIP vulnerability are associated with female empowerment and gender equality (e.g., the percentage of women whose husband is of similar age).

Gender inequality has been previously associated with increased vulnerability to human trafficking (Noeleen, 2002:3; UNODC, 2020). Lao PDR is a male-dominated, patriarchal society. It has a traditionally dominant male model of masculinity, where men are expected to take on the role of provider and guardian. These norms can be observed through unequal achievements in educational metrics. The female education gap in Lao PDR has improved at pre-primary and primary levels, but females are still less likely than males to achieve higher levels of education (World Bank, 2016).¹⁴ In patriarchal societies, educating females may be undervalued or even viewed as threatening to males (World Bank, 2016). Indeed, several studies globally suggest that perceived “threats to masculinity” or transgression of entrenched norms may incite violence against women due to the challenge posed to traditional gender roles (e.g., Duvvury et al, 2002).

In looking at future interventions, it may be important to differentiate female empowerment from gender equality. The United Nation’s SDG 5, to “achieve gender equality and empower women and girls,” links the concepts of female empowerment and gender equality. Female empowerment and gender equality share a sociocultural ecosystem, with historically little differentiation between them in the goals set by development organizations. Analyzing the two concepts as separate entities, however, may be helpful in better understanding how various societal factors affect the achievements and conversely, the subjugation of females, and their roles in the sociocultural ecosystems of TIP.

¹⁴ According to the Education Sector Development Plan 2016-2020, the Gender Parity Index for lower and upper secondary education was 0.94 and 0.87 respectively in 2015 (Lao PDR Ministry of Education and Sport, 2015, cited in World Bank, 2016).

III. RECOMMENDATIONS AND CONCLUSIONS

Detailed geographically-targeted recommendations specific to the most vulnerable provinces are presented in Annex I. The following consist of cross-cutting and more general recommendations that are based on the findings of our analysis and are supportive of the prioritized recommendations of the TIP Report (US DoS, 2021):

I) Consider investments in democracy, governance, and human rights as investments in CTIP

Our analysis of the relationship between the US State Department annual TIP reports, national GSI estimates of TIP prevalence, and various economic and governance measures, demonstrates that the traditional economic hypotheses that TIP arises from elevated poverty and unemployment may now be an oversimplification. Economic measures, such as unemployment rate, poverty rate, and GDP, have only weak relationships with both prevalence estimates and the US's TIP tier rankings. Lao PDR's indicators on the Democracy Index, Press Freedom Index, and Freedom in the World are well below the typical range for Tier 2 nations. The relationships between these metrics and the TIP tier rankings and prevalence estimates suggest that problems with governance, transparency, and corruption should be addressed as part of the overall CTIP strategy. See Annex 3 for more information.

2) Include the reduction of child marriage in CTIP

Our analysis reveals that child marriage and TIP are interrelated within a common socioeconomic ecosystem. Many of the same strategies that one would apply to reducing child marriage are strategies that will reduce vulnerability to TIP. See Annex 4 for more information.

3) Differentiate female empowerment from societal gender equality, and formulate strategies specifically designed to reduce societal gender inequality

Weak-signal analysis reveals several indicators strongly associated with vulnerability that reflect high gender inequality and traditional male-dominated, patriarchal norms. Indicators that reflect more narrowly female empowerment (e.g., female education) have weaker relationships. Our analysis indicates that CTIP efforts would strongly benefit from complementing efforts to increase female empowerment with interventions targeted specifically at reducing societal gender inequality. Intuitively, such interventions would need to address societal norms that propagate traditional male and female responsibilities, and include young males in female-focused development initiatives before age ten, when gender roles and expectations begin to be imprinted (Blum et al., 2017).

4) Increase CTIP training and awareness on the borders with China and Thailand, as well as internal TIP hotspots like SEZs

Weak-signal analysis reveals that several of the most vulnerable provinces are along the borders with China and Thailand or contain internal hotspots like SEZs. CTIP strategies should include: a) increasing awareness of human trafficking and safe migration practices along border regions, SEZs, tourism areas, and transportation hubs; b) training and incentivizing police, employers, and community leaders to identify, assess, and deal with trafficking; and c) raising the roles and prevalence of women in border police offices. Such border efforts should be complemented with community-based programs to increase awareness of human trafficking, safe migration practices, and fair labor practices. In addition, SEZs should contain victim support centers that disseminate information on human trafficking, fair labor practices, and resource access.

5) Proactively mitigate the spread of OSEC as internet use rises in Lao PDR

OSEC reduction strategies should include: a) raising awareness among children, parents, and teachers about what constitutes sexual abuse and online grooming, and what to do when they encounter such behavior online; b) criminalizing online grooming; c) making possession of child pornography illegal; d) requiring ISPs to report instances of OSEC; e) developing and implementing government guidelines for ISPs to install filtering software to block OSEC; and f) requiring electronic identification of internet cafe users.

6) Increase availability of TIP data already collected by the government

Data on human trafficking collected by the Lao PDR government are of enormous potential value in prioritizing and targeting CTIP efforts. These data should be anonymized but made available with geographic and demographic information. Data from the TIP hotlines run by Lao PDR Anti-Trafficking Department and the Lao Women's Union would improve TIP reporting and analysis.

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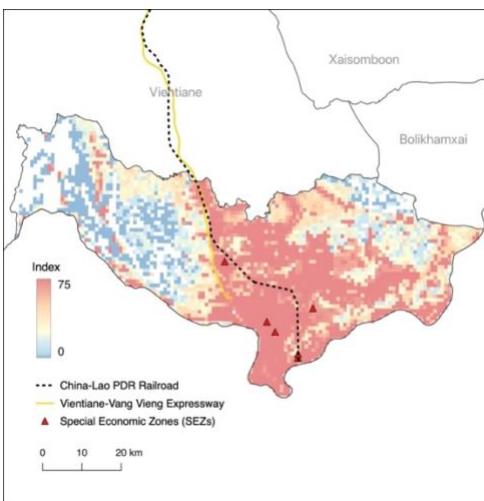
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ANNEX I. GEOGRAPHICALLY-TARGETED INTERVENTIONS BY PROVINCE

CONTENTS

- 1) Vientiane Capital
- 2) Champasack
- 3) Louangnamtha
- 4) Savannakhet
- 5) Xiengkhouang
- 6) Louangphabang
- 7) Oudomxai
- 8) Bolikhamxai
- 9) Khammouan
- 10) Xaignabouly

Vientiane Capital, Lao PDR



TIP Vulnerability Score

0.01 (lowest)	0.174	0.17 (highest)	Rank: 1 of 18
142 (lowest)	27,243	27,243 (highest)	Rank: 1 of 18
1.7 (lowest)	33.24	33.2 (highest)	Rank: 1 of 18

Socio-Economic Measures

Population: 819,466 (#2 of 18)	Males Head of Household: 78.8% (#18)
Percent Rural: 46% (#17)	Percent of Households with Internet Access: 4.4% (#3)
GDP per Capita: USD 867.67 (#1)	Percent of Women that have Moved in the Past 0-4 years: 14.9% (#3)
Multidimensional Poverty Rate: 5.2% (#18)	U15 Child Marriage: 2.3 % (#18)
Female Secondary School Completion: 10.9% (#1)	U18 Child Marriage: 16% (#18)
Percent of Informal Employment: 44.8% (#2)	Total Child Labor: 25.6% (#17)
Percent of Migrants (+10 yrs/o): 15.3% (#2)	

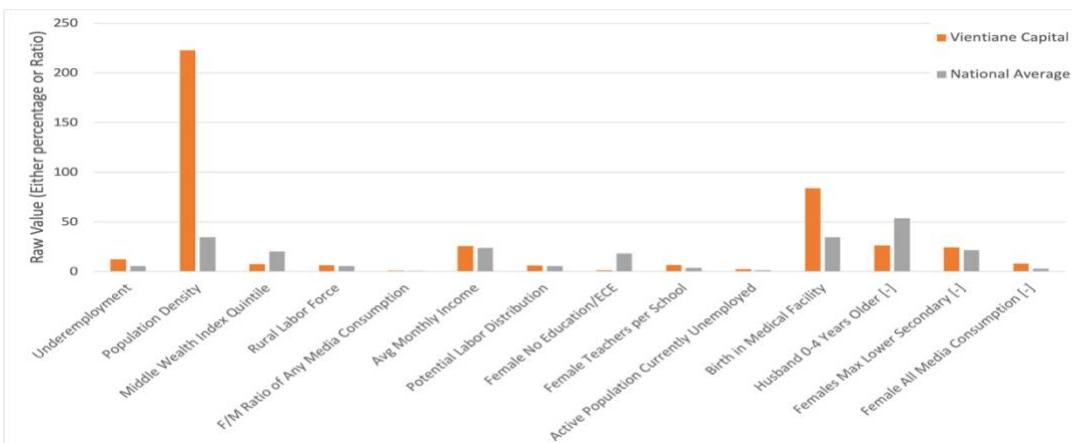
Special Economic Zones

Six SEZs are present in Vientiane Capital, the highest SEZ concentration of all Lao PDR provinces. Five are designated for trade, industry, and urban development, while one (*Dongphosy Specific Economic Zone*) is designated for tourism.

Belt and Road Initiative Infrastructure Developments

Three BRI projects are present in Vientiane Capital: the *China-Lao PDR railroad* (five of 30 total stations), the entry interchange of the Vientiane-Boten Expressway, and an upgrade to the *Wattay International Airport*. The *China-Lao PDR railroad* will connect the northern province of Louangnamtha to the southernmost point of Vientiane Capital, and internationally from Yunnan to Bangkok. Within Vientiane Capital, the railroad will connect two SEZs, *VITA Park* and *Dongphosy*. The *Vientiane-Boten Expressway* will connect the capital to Boten, the northernmost China-Laos border town in Louangnamtha. The *Wattay International Airport* upgrade has improved Vientiane Capital's capacity for international travel.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below.

Summary Description

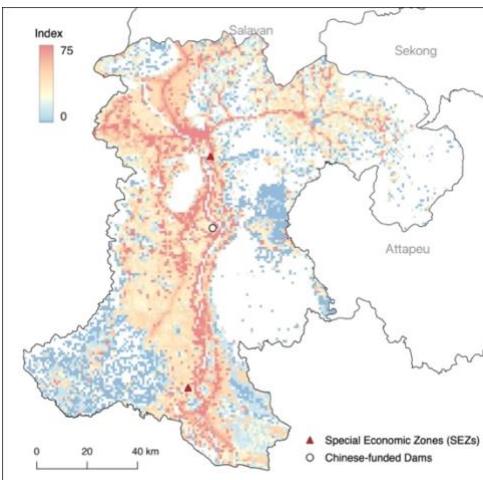
- Vientiane Capital holds the country capital, Vientiane Prefecture. Vientiane Capital is the most urban province of Lao PDR, with a population density more than six times the national average, condensed into the smallest province by land mass.
- Vientiane Capital is located on a bend of the Mekong River, linked to Thailand through river transport and over land by the First Thai-Lao Friendship Bridge, which connects to the Thai city of Nong Khai. 1.3 million Lao travelers left the country through Vientiane Capital in 2019, making it the busiest province of exit in the country. Regulation and enforcement of border crossings are hindered by legal loopholes (i.e., Laotians working in Thailand using tourist visas) and the geographical ease of crossing the Mekong River, which allows populations susceptible to TIP to leave the country untracked.
- As a historic city and the national capital, Vientiane Capital and the surrounding areas are tourist destinations. Nearly 1.9 million tourists arrived in Vientiane Capital in 2019, mainly via Friendship Bridge I and Wattay International Airport. Tourism is expected to expand as the tourism-designated Dongphosy SEZ gains traction and BRI infrastructure reduces travel time to the rest of the Mekong region. Vientiane Capital is also the second-largest destination for internal migrants in Lao PDR, with a positive net migration rate of 70 per 1,000 people, according to the 2015 Lao PDR Population Census.
- Vientiane Capital has the highest rate of female secondary school completion in Lao PDR at 10.9 percent, indicating comparatively strong female access to education. The percentage of females consuming all forms of media is more than twice the national average, indicating access to information and gender empowerment. However, the indicator for females with husbands zero to four years older is nearly lower by half than the national average.

Geographically-Targeted Interventions

As a high priority intervention in response to economic migration flows out of Lao PDR, Vientiane Capital should emphasize job creation and resources targeted at enterprise development within the prefecture itself. Support services for internal migrants coming to Vientiane Capital will also help internal migrants avoid TIP. For example, with the development of SEZs in Vientiane Capital, opportunities could be promoted for Laotians to work or start enterprises in the SEZs while ensuring that workers receive fair pay and decent working conditions. Educating border officials in the detection of signs of TIP; expanding TIP victim support resources such as TIP hotlines and safe migration training; and effectively informing Laotian migrants of how to access these resources will protect Laotians should they become trafficked. Vientiane Capital should take advantage of its strong media consumption of radio, TV, and newspapers to disseminate this information. With the rise of internet and smartphone use, online awareness and TIP reporting campaigns could also be launched on social media. As tourism expands, supporting existing and creating new TIP victim support centers and shelters in conjunction with facilitating TIP detection trainings for stakeholders such as employers, nonprofit organizations, and citizens will increase the detection of TIP and assist TIP victims.

Methods to decrease TIP within the SEZs should include labor inspections, the development of formal and transparent recruitment practices, instituting health and safety standards for certification, and educating workers, law enforcement personnel, and safety inspectors to recognize exploitative labor practices and identify victims. Programs should be implemented to provide management and leadership training for females. Security efforts should be complemented with community-based programs to increase awareness of human trafficking and fair labor practices. Vientiane Capital should leverage its health infrastructure to expand sex workers' access to health checkups, where providers can ask sex workers if they are experiencing TIP and offer resources.

Champasack, Lao PDR



TIP Vulnerability Score

0.01 (lowest) **0.134**

0.17 (highest) **Rank: 2 of 18**

Estimated Number of TIP Victims

142 (lowest) **11,118**

27,243 (highest) **Rank: 2 of 18**

Estimated TIP Prevalence

1.7 (lowest) **16.02**

33.2 (highest) **Rank: 2 of 18**

Socio-Economic Measures

Population: 694,023 (#3 of 18)

Males Head of Household: 81.4% (#16)

Percent Rural: 84% (#11)

Percent of Households with Internet Access: 1.1% (#6)

GDP per Capita: USD 344.29 (#10)

Percent of women that have moved in the past 0-4 years: 3.9% (#17)

Multidimensional Poverty Rate: 11.3% (#15)

U15 Child Marriage: 5.5 % (#17)

Female Secondary School Completion: 2.9% (#7)

U18 Child Marriage: 29.5% (#17)

Percent of informal employment: 25.2% (#14)

Total Child Labor: 30% (#16)

Percent of Migrants (+10 yrs/o): 4.8% (#15)

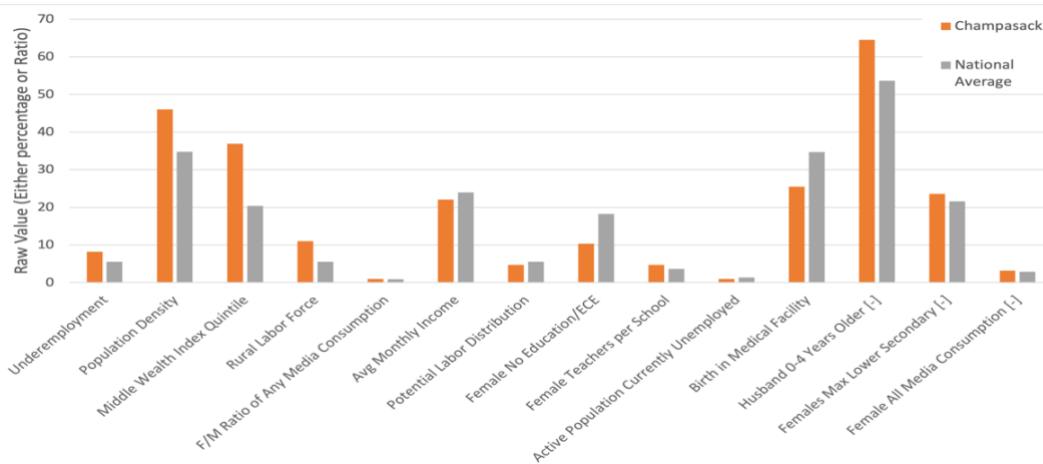
Special Economic Zones

Two SEZs are present: Champasack SEZ and Mahanathi Siphandone SEZ. They began development in 2015 and 2018, respectively, and cater to the service, tourism, and industrial sectors. At nearly 10,000 hectares, the Mahanathi Siphandone SEZ is the largest planned SEZ in Lao PDR.

Belt and Road Initiative Infrastructure Developments

There are two BRI infrastructure developments in Champasack: the Xeset 3 Hydropower Project and Vientiane-Pakse Expressway (Salavan-Pakse). The Xeset 3 Hydropower Project has been developed to meet local energy demands through hydroelectricity production. Hydropower dam production throughout Lao PDR has negatively affected fisheries and farms through the displacement of families. The Salavan-Pakse expressway connects Vientiane to Pakse, the two most populous cities. The expressway shortens the travel times across the southern portion of Lao PDR, enabling effective transportation for people and goods.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below.

Summary Description

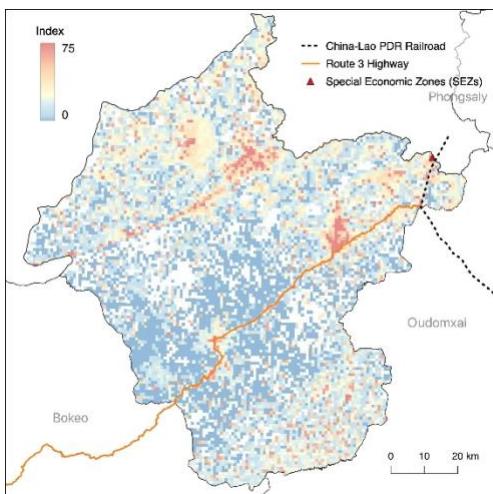
- Located on the southwestern tip of Lao PDR, Champasack borders Thailand to the west, Cambodia to the south, Salavan to the north and Attapeu to the east. Pakse, the provincial capital, is the second-most populated city in the country and serves as a main trade and travel link with Thailand via Vang Tao, which had over 200,000 arrivals in 2019; Cambodia via Nong Nok Khian, with nearly 52,000 arrivals; and Vietnam via Phoukeua in Attapeu with over 61,000 arrivals. Over 217,000 Lao travelers left the country through Champasack in 2019, making it the fifth-busiest province of exit. A UNESCO World Heritage Site, Vat Phou, is a tourist attraction.
- Champasack has the second-highest population density in the country and the largest middle wealth quintile. While the rural labor force of Champasack is twice the national average, its urban population grew by nearly 30 percent between 2005 and 2015. The underemployment rate is also 1.5 times the national average. Based on the 2015 Census, Champasack net migration rate is negative, and over 30 percent of migrants head to Vientiane Capital.
- The Champasack economy is agricultural, primarily coffee and tea. Rubber plantations on concessions leased by Vietnamese companies have been established. Several reserves of bauxite (Pak Song District), gold (Sukuma District) and iron (Patoumphone District) may be developed in the future.
- Champasack scores lower on several gender equality indices, including the percentage of females whose husbands are zero to four years older and the percentage of females with no education or only ECE.

Geographically-Targeted Interventions

Economic development within Champasack should be prioritized as a long-term TIP preventative measure. For example, with the development of SEZs in Champasack, opportunities could be promoted for Laotians to work or start enterprises in the SEZs while ensuring that workers receive fair pay and decent working conditions. As agricultural products dominate Champasack's economic output, training and investments in value-added agricultural processing can increase the value of exported products. In addition, increased inspection of labor-intensive crop plantations such as rubber would support TIP detection, specifically if hired labor is involved. Furthermore, training and education for jobs in the hospitality and tourism sector could improve the quality of service and include information and resources on TIP detection to reduce vulnerability.

Champasack's high TIP vulnerability score is primarily attributable to the province's proximity and ease of travel to neighboring countries. Educating border officials in TIP detection; expanding victim support resources such as hotlines; safe migration training; and effectively informing Laotian migrants of how to access these resources will protect Laotians should they become trafficked. Resources such as TIP victim support centers and shelters should similarly be expanded in capacity and reliability to face the probable increase of need. To prevent labor exploitation for newly vulnerable populations affected by displacement due to infrastructure projects, those affected by development should be given full compensation for their losses at the onset of construction and be provided with training for safe migration. Methods to decrease TIP within the SEZs should include labor inspections, the development of formal and transparent recruitment practices, instituting health and safety standards for certification, and educating workers, law enforcement personnel, and safety inspectors to recognize exploitative labor practices and identify victims. Programs should be implemented to provide management and leadership training for females. Security efforts should be complemented with community-based programs to increase awareness of human trafficking and fair labor practices.

Louangnamtha, Lao PDR



Special Economic Zones

One SEZ is present, the Boten Beautiful Land SEZ, designated for tourism, trade, and agriculture. Completed in 2019, the SEZ is Chinese-funded, close to the border with China, and caters to Chinese tourists. A casino and several large hotels spurred economic activity until they were closed at China's request in 2011.

TIP Vulnerability Score

0.01 (lowest)	0.12	0.17 (highest)	Rank: 3 of 18
142 (lowest)	2,287	27,243 (highest)	Rank: 7 of 18
1.7 (lowest)	13.1	33.2 (highest)	Rank: 3 of 18

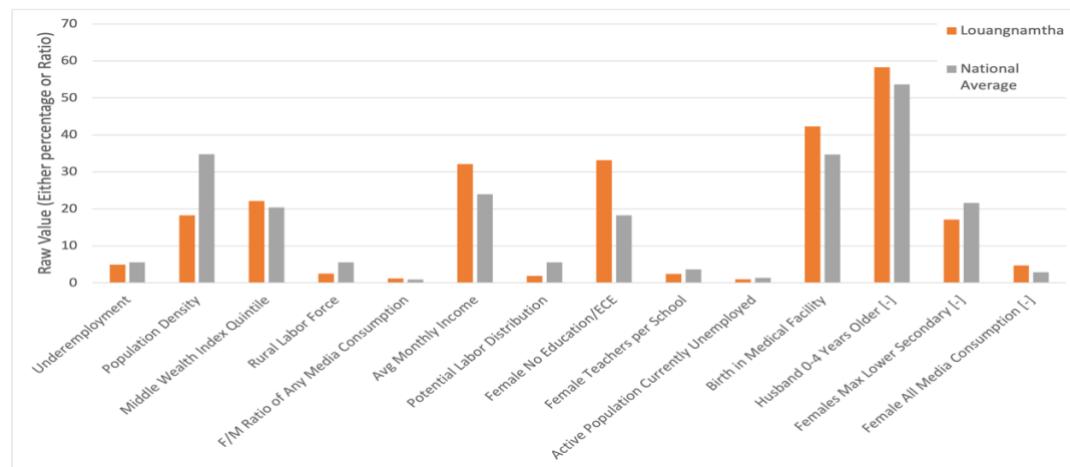
Socio-Economic Measures

Population: 174,477 (#15 of 18)	Males Head of Household: 92.7% (#5)
Percent Rural: 90% (#4)	Percent of Households with Internet Access: 6.8% (#2)
GDP per Capita: USD 251.22 (#11)	Percent of women that have moved in the past 0-4 years: 10.4% (#9)
Multidimensional Poverty Rate: 15.3% (#14)	U15 Child Marriage: 8.4% (#11)
Female Secondary School Completion: 2% (#10)	U18 Child Marriage: 36.3% (#10)
Percent of informal employment: 26.4% (#12)	Total Child Labor: 49.5% (#7)
Percent of Migrants (+10 yrs/o): 7.4% (#8)	

Belt and Road Initiative Infrastructure Developments

Two BRI initiatives are present in Louangnamtha: the *China-Lao PDR Railroad* (two stations) and the Oudomxai-Boten portion of the *Vientiane-Boten Expressway*. The *China-Lao PDR Railroad* will connect Louangnamtha domestically to Vientiane Capital and internationally from Yunnan to Bangkok. The *Vientiane-Boten Expressway* will also connect Boten, the northernmost China-Lao PDR border town in Louangnamtha, to Vientiane Capital. Both the railroad and expressway connect to and will increase national access to the *Boten Beautiful Land SEZ*. They are expected to drastically expedite cross-country travel, supporting trade and tourism.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below.

Summary Description

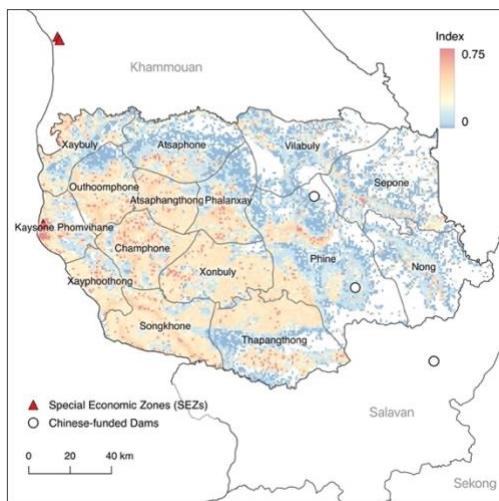
- Louangnamtha is located on the northwest tip of Lao PDR, bordering China to the north and Myanmar to the west. Domestically, Louangnamtha is flanked by Bokeo to the west and Oudomxai to the east and south. Boten, a town on the China-Lao border, is a popular destination for Chinese tourists and serves as an entry point for trade. With over 537,000 visitor arrivals in 2019, Boten was Lao PDR's third-busiest port of entry for arrivals.
- Louangnamtha is well-integrated into Lao PDR's northern corridor by road. The existing National Route 3, the China-Lao PDR Railroad, and the planned Vientiane-Boten Expressway each vertically integrate Lao PDR from the Chinese border through to Thailand. These routes are privy to and overlap with the paths of known TIP activity. Over 100,000 Lao travelers left the country through Louangnamtha province in 2019. Louangnamtha is also a minor destination for internal migrants in Lao PDR, with a positive net migration rate of over ten per 1,000 people, according to the 2015 Population Census.
- Economic activity in Louangnamtha is primarily agricultural, with production in staples like rice and corn for consumption, rubber, and rattan and bamboo for construction. The province has a total mineral production capacity of 300,000 tonnes per year of lignite (coal). Despite being illegal since 2005, opium poppy cultivation was surveyed in Louangnamtha and neighboring provinces by the United Nations Office on Drugs and Crime and the Lao PDR government in 2015. As one of the more minor opium producing provinces, it cultivated an estimated three percent of the national opium poppy production over an area of 180 hectares.
- Louangnamtha ranks second for households with internet use and has nearly twice the national average of females consuming media such as newspapers, TV, and radio. However, it ranks below average for female education measures. It has nearly twice the national average for females with no education or only ECE and has a lower than average rate of females who have completed lower secondary schooling.

Geographically-Targeted Interventions

High priority interventions for Louangnamtha include training and incentivizing border control and police to recognize human trafficking and aid potential victims. TIP victim support centers can be established, especially near the Boten Beautiful Land SEZ, together with support programs for recovery from opioids and other drugs which could be used to control TIP victims. Conducting inspections and screening along Route 3 will assist in identifying and supporting potential TIP victims along the highway and near construction sites. In addition, inspections of larger farms or plantations are recommended as labor-intensive crops like rubber may harbor labor TIP. Security efforts should be complemented with community-based programs to increase awareness of TIP and fair labor practices.

Methods to decrease TIP within the SEZs should include labor inspections, the development of formal and transparent recruitment practices, instituting health and safety standards for certification, and educating workers, law enforcement personnel, and safety inspectors to recognize exploitative labor practices and identify victims. Programs should be implemented to provide management and leadership training for females. With a higher-than-average rate of females with no education or only ECE, investments can be made to improve access to education and retention rates in schools, especially in rural areas. Training and education for jobs in the hospitality and tourism sector can expand job opportunities for people in Louangnamtha and should include information on safe migration, signs of TIP, and resources to reduce TIP vulnerability. Given Louangnamtha's relatively high indicators of household internet use and media consumption, the dissemination of information through the media and internet would be helpful in facilitating awareness of trafficking and resources available.

Savannakhet, Lao PDR



TIP Vulnerability Score

0.01 (lowest)	0.106	0.17 (highest)	Rank: 4 of 18
142 (lowest)	9,248	27,243 (highest)	Rank: 3 of 18
1.7 (lowest)	9.61	33.2 (highest)	Rank: 4 of 18

Socio-Economic Measures

Population: 962,373 (#1 of 18)	Males Head of Household: 86.3% (#14)
Percent Rural: 86% (#9)	Percent of Households with Internet Access: 0.6% (#16)
GDP per Capita: USD 416.26 (#7)	Percent of women that have moved in the past 0-4 years: 4.8% (#16)
Multidimensional Poverty Rate: 33.9% (#4)	U15 Child Marriage: 8.8% (#10)
Female Secondary School Completion: 3.4% (#3 – tied with Xiengkhouang)	U18 Child Marriage: 31.1% (#15)
Percent of informal employment: 15.6% (#17)	Total Child Labor: 42% (#13)
Percent of Migrants (+10 yrs/o): 4.8% (#16)	

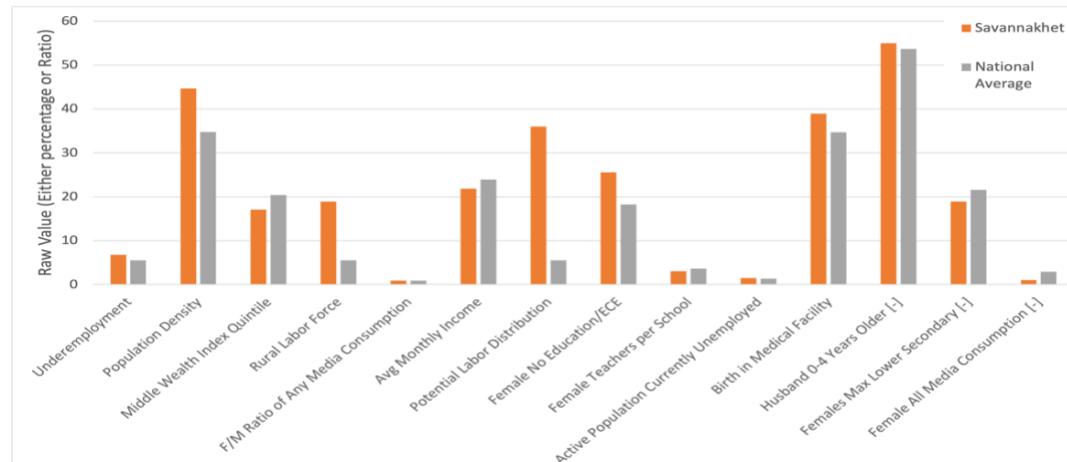
Special Economic Zones

Savan-Seno SEZ is designated for industry, commerce, and logistics. The Savan-Seno SEZ is Lao PDR's first SEZ. It began development in 2003 and was completed in 2017, with two sub-zones finishing in 2019.

Belt and Road Initiative Infrastructure Developments

There are currently three BRI infrastructure projects in Savannakhet: Vientiane-Pakse Expressway (Savannakhet-Salavan), Xelanong 1 Hydropower Project, and Xelanong 2 Hydropower Project. The expressway connects the center, Vientiane Capital, to the southern tip, Champasack, and passes through Savannakhet. The expressway shortens the cross-country trip and enables efficient trade routes. Both Xelanong Hydropower projects aim to meet local energy demands through hydroelectricity production. Hydropower dams have negatively affected fisheries and farms through the displacement of families.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below. See sections 2 and 3 above.

Summary Description

- Savannakhet is in the southern half of Lao PDR. It borders Thailand to the east and is the most populated province. Migrants often enter Thailand through the permeable border by crossing the Mekong River. Mittahab II Savannakhet International Airport operates domestic flights and one international flight route to Bangkok operated by Lao Airlines. Over 400,000 tourists crossed the Mittaphab Friendship Bridge II from Thailand into Lao in 2019, which was the country's fourth-most heavily used port of entry. Dane Savanh is a major port of entry from Vietnam, with over 236,000 visitors in 2019. Over 381,000 Lao travelers left the country through Savannakhet in 2019, making it the second-busiest province of exit.
- Savannakhet's rural labor force is approximately three times greater than the national average. Additionally, the percentage distribution of potential labor is seven times higher than the national average at 36 percent of the population, which suggests that economic opportunity is sparse.
- Savannakhet has the largest mine in Lao PDR, the Sepon Mine, for copper and gold reserves. Between 35,000 and 45,000 employment opportunities are linked to the mine. The province has a total mineral production capacity of 427,000 tons per year.
- Agricultural production represents half of Savannakhet's GDP, specifically tobacco and rice. Cross-border trade between Lao PDR and Thailand in Savannakhet and Mukdahan is facilitated through Subregion Cross-Border Transport Agreement and the establishment of SEZs in the province. The cross-border trade point has the second-largest official border trade between Lao PDR and Thailand.

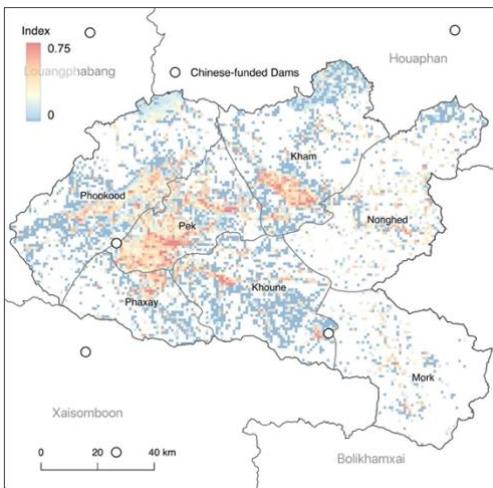
Geographically-Targeted Interventions

In Savannakhet, high priority interventions should include increasing female education rates and employment opportunities, addressing labor exploitation in the mining and tobacco industries, and increasing awareness of human trafficking among community leaders and law enforcement. Savannakhet has a large rural labor force and high unemployment, so a diversification of employment opportunities in smaller communities, such as value-added processing of agricultural goods, should be promoted to develop a broader economy. Increasing access to education and employment for females would also reduce the incentives for early and cross-border marriage. Programs should be developed to provide opportunities for females and to raise the status of working females. To improve the status of women in the society, the province should focus on empowering women through community programs, ECE programs, and education of both men and women on the benefits of gender equality, especially focusing on economic and social benefits.

Methods to decrease labor exploitation within the mining, tobacco, and rice industry should include labor inspections; the development of formal and transparent recruitment practices; the institution of health and safety standards for tobacco and rice certification; and the education of laborers, law enforcement personnel, and health inspectors to recognize exploitative labor practices and identify victims. Developing formal zero-tolerance policies in and around the Savan-Seno SEZ would directly support current TIP victims.

Border control efforts, particularly near the Mekong River on the Mittaphab Friendship Bridge II and at Dane Savanh, should include CTIP, specifically: a) training and incentivizing border patrols to identify and deal with trafficking, and b) raising the roles and prevalence of female officers within the border patrol. Such border efforts should be complemented with community-based programs to increase awareness of human trafficking and safe migration practices.

Xiengkhouang, Lao PDR



TIP Vulnerability Score

0.01 (lowest)

0.100

0.17 (highest)

Rank: 5 of 18

Estimated Number of TIP Victims

142 (lowest)

2,492

27,243 (highest)

Rank: 6 of 18

Estimated TIP Prevalence

1.7 (lowest)

8.61

33.2 (highest)

Rank: 5 of 18

Socio-Economic Measures

Population: 244,684 (#12 of 18)

Percent Rural: 87% (#8)

GDP per Capita: USD 409.7 (#8)

Multidimensional Poverty Rate: 27.5% (#8)

Female Secondary School Completion: 3.4% (#3 – tied with Savannakhet)

Percent of informal employment: 38.7% (#6)

Percent of Migrants (+10 yrs/o): 6% (#11)

Males Head of Household: 92.4% (#7)

Percent of Households with Internet

Access: 0.3% (#18)

Percent of women that have moved in the past 0-4 years: 13.8% (#5)

U15 Child Marriage: 12.7% (#2)

U18 Child Marriage: 40.2% (#3)

Total Child Labor: 66.4% (#1)

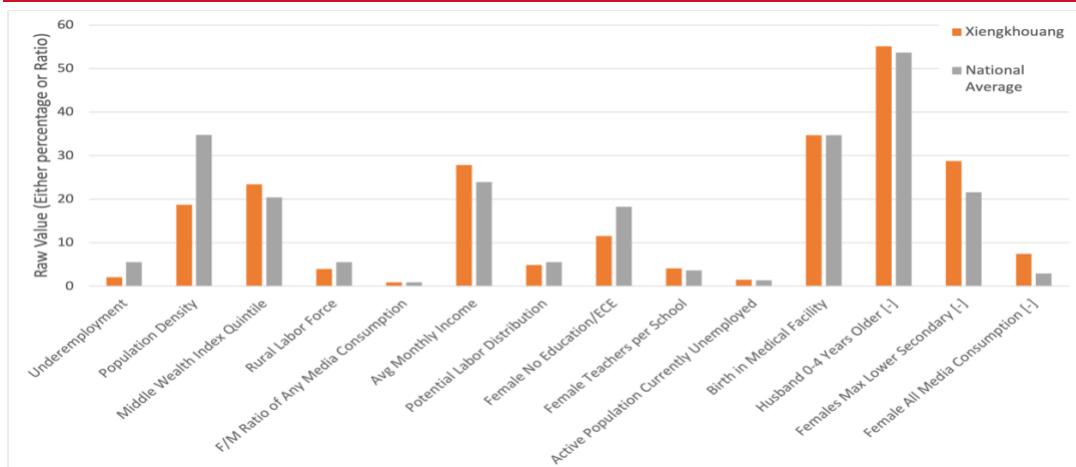
Special Economic Zones

There are zero SEZs present in Xiengkhouang.

Belt and Road Initiative Infrastructure Developments

There are three BRI initiatives present in Xiengkhouang: the Nam Ngiep 2 Hydropower Project, the Namngueum 3 Hydropower Project, and the Nam Chiane Hydropower Station (not shown). These hydropower projects have been developed to meet local energy demands through the hydroelectricity production. The production of hydropower dams in Lao PDR has negatively affected fisheries and farms through the displacement of families.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below. See sections 2 and 3 above.

Summary Description

- Xiengkhouang province is in northeastern Lao PDR, bordering Vietnam. It also borders Houphan to the north, Louangphabang to the northwest, Vientiane to the southwest and Bolikhamsai to the south.
- In 2019, over 61,000 visitors arrived in Xiengkhouang via the Nam Kan border crossing from Vietnam. The province is a regional tourist destination, with mountains, grasslands, as well as rich biodiversity and cultural heritage sites. In 2019, the Plain of Jars in Xiengkhouang became a UNESCO World Heritage Site, but unexploded ordinances from the Vietnam War make accessing tourist sites and natural areas challenging.
- Xiengkhouang is also the second-largest sending province for internal migrants, with a negative net migration rate of nearly 70 per 1,000 people, according to the 2015 Lao PDR Population Census.
- Xiengkhouang has the highest percentage of child labor among all provinces. It also ranks second for U15 child marriage and third for U18 child marriage, a sign of poor gender equality. However, it performs better on female education measures: it has higher than national average rates of females with lower secondary education and lower than national average rates of females with no education or only ECE.
- The main agricultural products are maize, rice, and vegetables like Chinese cabbage, cabbage, mustard greens, and garlic. Cattle is also exported to Vietnam and China. Tea production occurs in upland areas like Phousan. Despite being illegal since 2005, opium poppy cultivation has also been surveyed in Xiengkhouang by the UNODC and the Lao PDR government in 2015. Xiengkhouang cultivated an estimated eight percent of the national opium poppy production, over an area of 470 hectares. Mining of minerals such as gold, silver, and copper is another important economic activity.

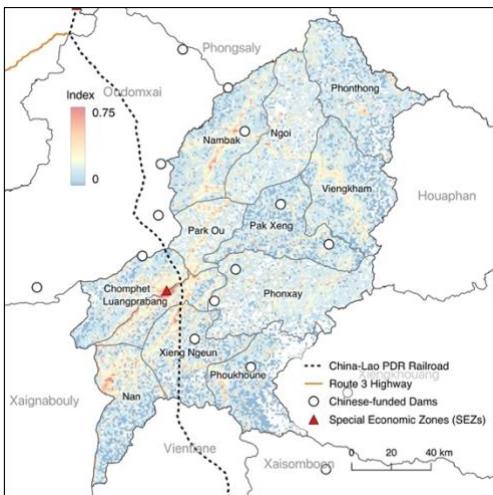
Geographically-Targeted Interventions

In Xiengkhouang, high priority interventions should include community programs and media campaigns that educate people on safe migration practices and channels. It is also important to train and incentivize border control to screen visitors, recognize human trafficking, and aid potential victims. TIP victim support centers can be established and combined with support for recovery from opioids and other drugs, which could be used to control TIP victims. There is also displacement and increased TIP vulnerability from planned hydropower projects (Nam Ngiep 2, Namngueum 3, and Nam Chiene). Full and timely compensation and support in obtaining new livelihoods, resettlement, or safe migration resources can reduce TIP vulnerability among displaced communities.

Long-term TIP prevention strategies should focus on job creation and the development of enterprises, particularly in the tourism industry and high-value export crops. Training and education for jobs in the tourism sector should include information on TIP detection and resources to reduce vulnerability. Road networks and signage leading to tourist sites and hospitality businesses can be improved. Also helpful is training and support for farmers for improved cultivation of market crops like tea and garlic and improved fattening of livestock for meat exports. Labor exploitation within the mining industry can be reduced by screening for TIP during labor inspections, developing formal and transparent recruitment practices, and instituting health and safety standards.

To promote gender equality, programs should be implemented to provide management and leadership training for females, in addition to support for female-owned businesses, such as tea plantations and cooperatives. To improve the status of women in the society, the province should focus on empowering women through community programs that educate both men and women on the benefits of gender equality, focusing on economic and social benefits. Community programs that reduce the need of households to rely on child labor can help reduce TIP vulnerability.

Louangphabang, Lao PDR



Special Economic Zones

The recently established *Luang Prabang SEZ*, directly outside of the city of Luang Prabang, is geared towards cultural and environmental conservation. The SEZ will develop public utilities in the area, including electricity and water supply systems, with a focus towards supporting tourism and logistics, such as hotels, shopping centers, and banks.

TIP Vulnerability Score

0.01
(lowest)

0.098

0.17
(highest)
Rank: 6 of 18

Estimated Number of TIP Victims

142
(lowest)

3,244

27,243
(highest)
Rank: 4 of 18

Estimated TIP Prevalence

1.7
(lowest)

8.30

33.2
(highest)
Rank: 6 of 18

Socio-Economic Measures

Population: 431,889 (#4 of 18)

Percent Rural: 80% (#15)

GDP per Capita: USD 383.04 (#9)

Multidimensional Poverty Rate: 23.4% (#11)

Female Secondary School Completion: 2.1% (#5)

Percent of informal employment: 37.9% (#7)

Percent of Migrants (+10 yrs/o): 6.9% (#9)

Males Head of Household: 92.4% (#7)

Percent of Households with Internet

Access: 1.7% (#4)

Percent of women that have moved in the past 0-4 years: 11.6% (#7)

U15 Child Marriage: 11.1% (#5)

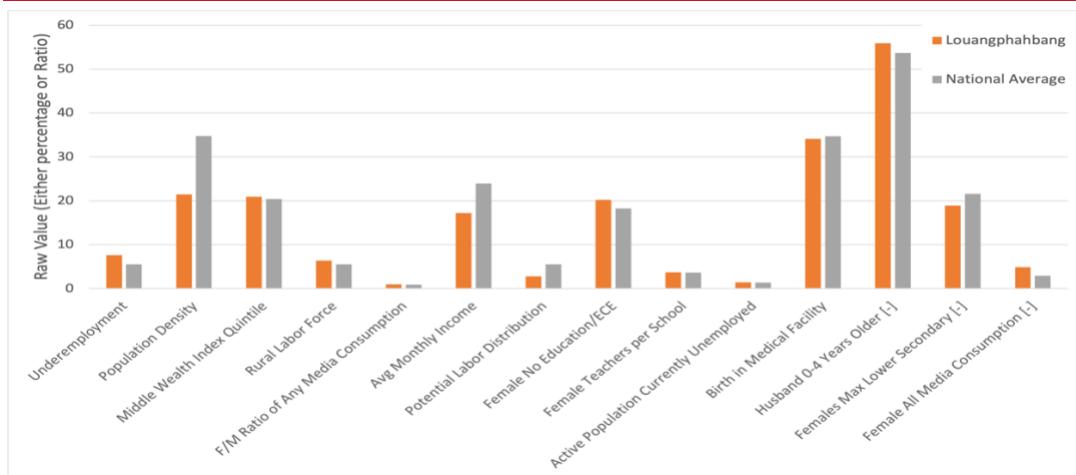
U18 Child Marriage: 39.5% (#6)

Total Child Labor: 55% (#4)

Belt and Road Initiative Infrastructure Developments

Louangphabang has seen the heaviest BRI development with **seven** projects, most prominently the *China-Laos Railway* (five of 30 stations), four dams in the *Nam Ou Hydropower Project*, and two portions of the *Vientiane-Boten Expressway* (*Vientiane-Vang Vieng* and *Vang Vieng-Louangphabang*). The rail and expressways are expected to logically integrate Louangphabang to China, Thailand, and southern Lao PDR by shortening travel times and improving trade. Louangphabang's Nam Ou dams provide a significant portion of the region's electricity at the ongoing cost of villager displacement and impacts on fishing for communities dependent on the river. Another five *Namxeung* hydropower projects are planned.

TIP Vulnerability Index for Province & National Average Values



Summary Description

- The province of Louangphabang has a strong rural-urban dichotomy, with a thriving urban center and a majority rural provincial population. The city of Luang Prabang, the fourth-largest city in Lao PDR, is a United Nations Educational, Scientific and Cultural Organization World Heritage Site and a major tourist destination. The province of Louangphabang is covered by the Nam Et-Phou Louey National Biodiversity Conservation Area. The economy of Louangphabang is buoyed significantly by natural, historical, and culinary tourism. Over 860,000 local and foreign visitors came to Louangphabang province in 2019, down to 211,490 in 2020 due to COVID-19.
- Louangphabang has the second-highest acreage of tea plantations in Lao PDR, after Phongsaly. Rubber is another cash crop cultivated in the province. A cement mine produces 100,000 tonnes per year. Opium poppy cultivation was observed by the UNODC and the government in 2015. It was the third-most opium producing province and cultivated an estimated eight percent of the national opium poppy production, over an area of 490 hectares.
- Louangphabang is also the fourth-largest sending province for internal migrants in Lao PDR, with a negative net migration rate of over 50 per 1,000 people, according to the 2015 census. Louangphabang's urban population also doubled between 2005 and 2015.
- Louangphabang is vulnerable to domestic TIP via sex tourism. With the establishment of the Luang Prabang SEZ and the China-Lao Railway, tourism and foreign presence is expected to grow. The province has also been observed to be a transit point for traffickers moving TIP victims from other provinces.

Geographically-Targeted Interventions

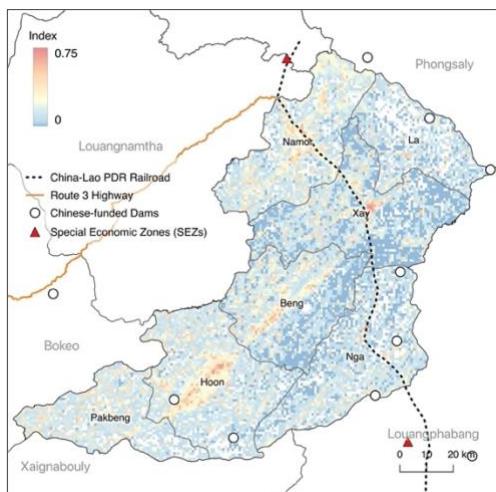
Louangphabang province has a high TIP presence and risk due to a combination of rural-urban migration within the province, out-migration from the province, new transportation infrastructure, and the presence of foreign visitors due to the international airport, Luang Prabang SEZ, and tourism industry. Thus, high priority interventions include training and incentivizing border control and police at the airport and railways to recognize human trafficking and aid potential victims. TIP victim support centers can be established, especially in Luang Prabang, along with support for recovery from opioids and other drugs that could be used to control TIP victims. Security efforts should be complemented with community-based programs to increase awareness of TIP and fair labor practices.

Methods to decrease TIP within SEZs, mining, and labor-intensive crops like rubbers should include labor inspections, the development of formal and transparent recruitment practices, the institution of health and safety standards for certification, and the education of workers, law enforcement personnel, and safety inspectors to recognize exploitative labor practices and identify victims. Programs should be implemented to provide management and leadership training for females. With a higher-than-average rate of females with no education or only ECE, investments can be made to improve education, especially in rural areas.

Long-term TIP prevention strategies should focus on job creation and the development of enterprises within rural areas. There is also displacement and subsequently, increased vulnerability from planned hydropower projects. Full and timely compensation, together with support in obtaining new livelihoods, resettlement, or safe migration resources can reduce TIP vulnerability among displaced communities. Training and education for jobs in the hospitality and tourism sectors could improve job prospects for people from Louangphabang and should include information on safe migration, recognizing signs of TIP and resources to reduce TIP vulnerability. Running social media campaigns that promote sustainable and responsible tourism, which also includes information on TIP resources and reporting TIP, can help reduce TIP vulnerability.

Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below. See sections 2 and 3 above.

Oudomxai, Lao PDR



TIP Vulnerability Score

0.01 (lowest) **0.087**

0.17 (highest)
Rank: 7 of 18

Estimated Number of TIP Victims

142 (lowest) **2,098**

27,243 (highest)
Rank: 8 of 18

Estimated TIP Prevalence

1.7 (lowest) **6.79**

33.2 (highest)
Rank: 7 of 18

Socio-Economic Measures

Population: 308,898 (#9 of 18)

Percent Rural: 90% (#4)

GDP per Capita: USD 221.26 (#13)

Multidimensional Poverty Rate: 34.8% (#3)

Female Secondary School Completion: 1.5% (#12)

Percent of informal employment: 50.8% (#1)

Percent of Migrants (+10 yrs/o): 5.7% (#12)

Males Head of Household: 92.1% (#9)

Percent of Households with Internet Access: 1% (#8)

Percent of women that have moved in the past 0-4 years: 10.3% (#10)

U15 Child Marriage: 11.2% (#4)

U18 Child Marriage: 40% (#4)

Total Child Labor: 46.4% (#10)

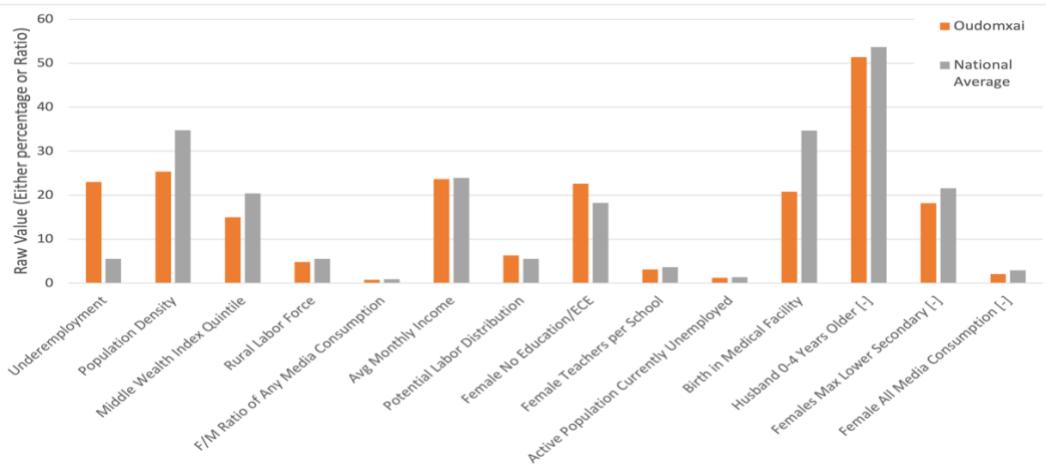
Special Economic Zones

Zero SEZs are present in Oudomxai. However, two SEZs are present in neighboring provinces Louangnamtha and Louangphabang, with a connection to the China-Lao PDR Railroad that runs through Oudomxai.

Belt and Road Initiative Infrastructure Developments

There are currently five BRI initiatives in Oudomxai: the *China-Lao PDR Railroad* (nine stations), the *Pakbeng-Ngeun Bridge*, the *Nam Beng* and *Pak Beng Hydropower Projects*, and the *Louangphabang-Oudomxai* portion of the *Vientiane-Boten Expressway*. The *China-Lao PDR Railroad* and *Vientiane-Boten Expressway* will connect the Chinese border through Oudomxai to the capital, spur increases in trade, and shorten travel times. Hydropower projects in Oudomxai produce electricity for domestic use and commercial sales to Thailand. However, development has displaced tens of thousands of Lao nationals.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below. See sections 2 and 3 above.

Summary Description

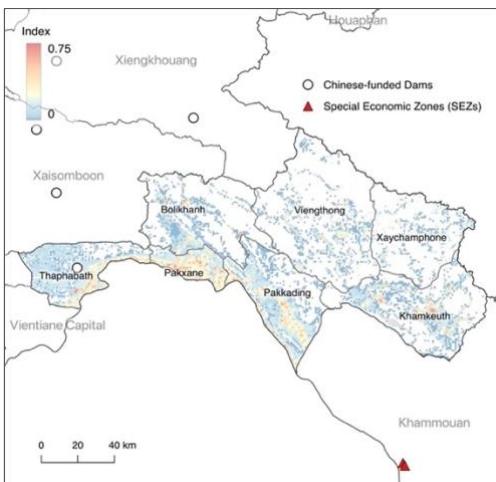
- Located at the center of five provinces (Bokeo, Louangnamtha, Louangphabang, Phongsaly, and Xaignabouly) and with a 9.3-mile border with China, Oudomxai is a crucial transit point for northern and central Lao PDR, despite its rural character. The urban population has increased by 1.5 times between 2005 and 2015, according to the 2015 census. It remains a minor net sending region with a low negative net-migration rate.
- Oudomxai is mountainous and crossed by approximately 60 rivers, which restricts travel through the province to major roads. A significant percentage of the province is protected land in the Upper Lao Mekong Important Bird Area. Most hospitality infrastructure is in the capital, Muang Xai and Pak Beng.
- Oudomxai produces much of Lao PDR's corn, sugarcane, tobacco, cotton wool, tea, and peanuts. Oudomxai is rich in minerals including iron, bronze, coal, and salt, but pollution from the mines led to a ban in 2016. Despite being illegal since 2005, opium poppy cultivation was surveyed in Oudomxai and its neighboring provinces by the UNODC and the Lao PDR government in 2015. Then, it cultivated an estimated seven percent of the national opium poppy production over an area of 420 hectares.
- The province has the third-highest multidimensional poverty rate and over one-third of the population is considered poor. Additionally, the underemployment rate is nearly five times higher than the national average, despite having an average unemployment rate. Oudomxai also scores lower on female education metrics. It has an above average rate of females with no education or only ECE. Oudomxai also has relatively lower medical access levels, with only 20 percent of births occurring in a medical facility, compared to the national average of nearly 35 percent.

Geographically-Targeted Interventions

TIP presence and potential in Oudomxai are high despite its highly rural landscape due to the location, which makes it a central transit point for both cross-border and domestic TIP activity. Established drug trafficking networks also increase risk of TIP. Ease of transit will soon increase with the upcoming completion of the regional China-Lao PDR Railroad and provincial Vientiane-Boten Expressway. Thus, high priority interventions include training and incentivizing police and staff at railroad stations to recognize TIP and aid potential victims. TIP victim support centers can be established, especially near railroad stations, along with support for recovery from opioids and other drugs like amphetamines that could be used to control TIP victims. Security efforts should be complemented with community-based programs to increase awareness of human trafficking and fair labor practices. Investments can be made to improve access to education and retention rates in schools, especially those in rural areas, as well as access to medical and healthcare facilities.

Long-term TIP prevention strategies should focus on job creation and the development of enterprises within rural areas. Agricultural products dominate Oudomxai's economic output, so training and investments in value-added agricultural processing can increase the value of exports. In addition, increased inspection of labor-intensive crop plantations would support TIP detection, specifically in larger plantations that rely on hired labor. The growing tourism industry can also lead to increased TIP vulnerability. Thus, facilitating TIP detection trainings for stakeholders such as employers, nonprofit organizations, and citizens will increase detection of TIP and assist TIP victims. Training and education for jobs in the hospitality and tourism sector could improve job prospects for people from Oudomxai and should include information on safe migration, signs of TIP, and resources to reduce TIP vulnerability.

Bolikhhamxai, Lao PDR



TIP Vulnerability Score

0.01 (lowest) **0.086**

0.17 (highest)
Rank: 8 of 18

Estimated Number of TIP Victims

142 (lowest) **1,826**

27,243 (highest)
Rank: 9 of 18

Estimated TIP Prevalence

1.7 (lowest) **6.67**

33.2 (highest)
Rank: 8 of 18

Socio-Economic Measures

Population: 273,691 (#11 of 18)

Males Head of Household: 86% (#15)

Percent Rural: 83% (#12)

Percent of Households with Internet Access: 0.7% (#15)

GDP per Capita: USD 170.74 (#16)

Percent of women that have moved in the past 0-4 years: 7.4% (#13)

Multidimensional Poverty Rate: 21.5% (#13)

U15 Child Marriage: 9.8% (#6)

Female Secondary School Completion: 2.5%

U18 Child Marriage: 39.7% (#5)

(#8)

Percent of informal employment: 42.3% (#3)

Total Child Labor: 63.3% (#2)

Percent of Migrants (+10 yrs/o): 9.1% (#4)

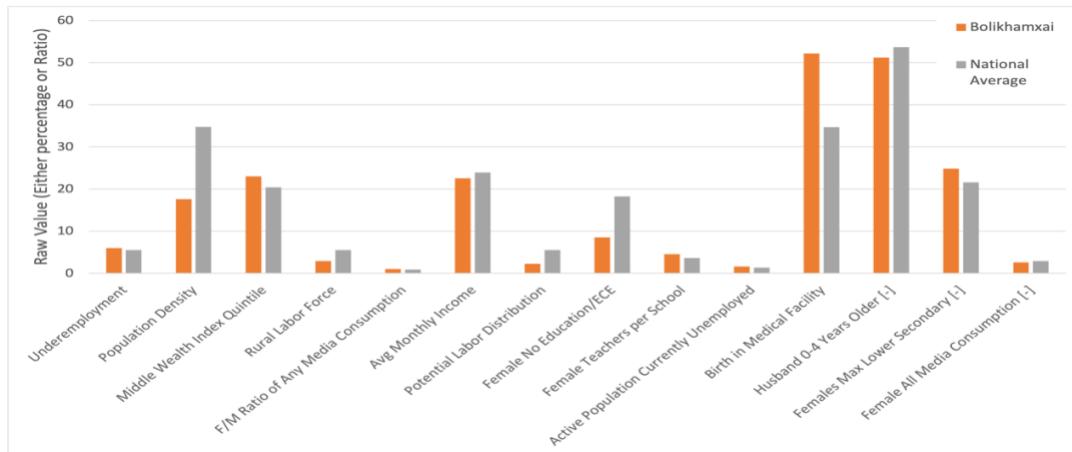
Special Economic Zones

Zero SEZs are present in Bolikhhamxai.

Belt and Road Initiative Infrastructure Developments

Three BRI projects are present in Bolikhhamxai: the Nam Mang I Hydropower Project, the Thavieng-Laksao & Nam Phay HPP-Thongkoun 2 Transmission Lines, and the Paksane-Thakhaek portion of the Vientiane-Pakse Expressway. Nam Mang I primarily sells electricity to Thailand for profit and expands local electricity access. The Vientiane-Pakse Expressway will connect Bolikhhamxai to Vientiane Capital and Pakse (Champasack), two populous cities. The Vientiane-Pakse Expressway is largely parallel to the southern Thailand border and when completed, will link to Vietnam through a connection to the Vientiane-Hanoi Expressway.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below. See sections 2 and 3 above.

Summary Description

- Bolikhhamxai is Lao's "bridge" province, connecting the northern and southern parts of the country. It also borders Thailand and Vietnam. In 2019, 128,000 tourists arrived in Bolikhhamxai via the Nam Phao border crossing from Vietnam, while 40,000 tourists arrived from Thailand via the Pakxan border crossing. Over 86,000 Lao travelers left the country through Bolikhhamxai province in 2019, making it the fifth-busiest province of exit in the country. Bolikhhamxai touches Vientiane Capital, Vientiane, Xaisomboun, and Xiengkhouang to the north, as well as Khammouan to the south.
- Bolikhhamxai is largely rural, and the population density is half the national average. Mountain ranges and rivers run through the province, notably the Pa Guang and Phou Ao ranges to the southwest and southeast. Bolikhhamxai is a destination province for migrants, with a slightly positive net migration rate.
- Bolikhhamxai's economy is predominantly agricultural, with production in tobacco, sugar cane, oranges, and rattan. The Nam Theun Dams, one of Lao PDR's largest hydropower projects, began operations in 2010 and sells electricity to Thailand. The Nam Kading National Protected Area, which crosses into Khammouan province, is a promising but underdeveloped ecotourism attraction. Gold mining is another important economic activity.
- Like most of Lao PDR, traditional gender norms appear strong in Bolikhhamxai: males are overwhelmingly the household head, child marriage rates are high (U15 and U18 marriage ranks sixth and fifth out of 18), and the percent of women who have moved in the past zero to four years (indicating freedom of movement and broadly female autonomy) is low, at 7.4 percent (ranked 13th). Bolikhhamxai scores high on female education and medical access indicators.
- Perhaps due to its central location and limited employment prospects, Bolikhhamxai has the fourth-highest percentage of migrants aged ten years or older. Children are expected to contribute to the household economy, with total child labor at 63.3 percent in the province (ranked second).

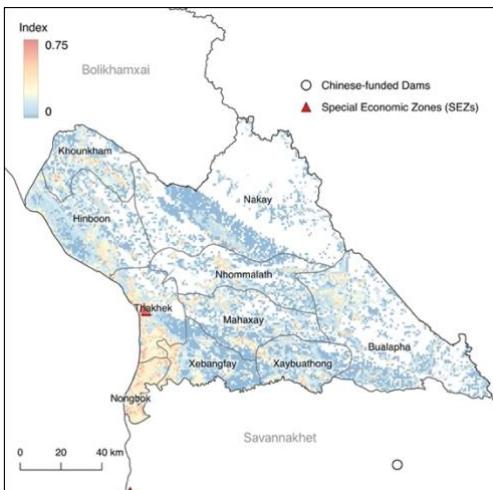
Geographically-Targeted Interventions

High priority interventions include educating border officials at Pakxan and Nam Phao in the detection of TIP signs; expanding TIP victim resources such as TIP hotlines and safe migration training; and effectively informing migrants of how to access resources. These will protect Laotians should they become trafficked. TIP victim support resources such as victim support centers and shelters should similarly be expanded in capacity and reliability to face a probable increase in need. Economic development within Bolikhhamxai should be prioritized as a long-term TIP preventative measure. Training and investments in value-added agricultural processing can increase the value of exported agricultural products. Increased inspection of labor-intensive crops would support TIP detection, specifically in larger plantations that rely on hired labor. Labor exploitation within the mining industry can be reduced by screening for TIP during labor inspections, the development of formal and transparent recruitment practices, and the institution of health and safety standards.

Investments in improving the local road network connections to the upcoming Vientiane-Pakse Expressway can improve market access for farmers and easier access through the Nam Kading National Protected Area for tourists. Training and education for jobs in the hospitality and tourism sector can expand job opportunities for people in Bolikhhamxai and should include information on safe migration, signs of TIP, and resources to reduce TIP vulnerability.

To further support gender equality and female empowerment, programs should be implemented to provide management and leadership training for females, in addition to support for female-owned businesses. To improve the status of women in the society, community programs can be created that educate both men and women on the benefits of gender equality, especially focusing on economic and social benefits. Community programs that reduce the need of households to rely on child labor and also promote opportunities for females and raise the status of working females can help reduce TIP vulnerability.

Khammouan, Lao PDR



Special Economic Zones

There are two SEZs present in Khammouan, the Phoukhyo SEZ and the Thakhek SEZ. Both are mixed-purpose SEZs, containing a range of activities from finance to entertainment and hotels. Development has been limited by a lack of supporting infrastructure.

TIP Vulnerability Score

0.01 (lowest) **0.079**

0.17 (highest) **Rank: 9 of 18**

Estimated Number of TIP Victims

142 (lowest) **2,535**

27,243 (highest) **Rank: 5 of 18**

Estimated TIP Prevalence

1.7 (lowest) **5.87**

33.2 (highest) **Rank: 9 of 18**

Socio-Economic Measures

Population: 390,657 (#7 of 18)

Males Head of Household: 79.6% (#17)

Percent Rural: 81% (#14)

Percent of Households with Internet Access: 0.8% (#11)

GDP per Capita: USD 619.21 (#2)

Percent of women that have moved in the past 0-4 years: 8.6% (#11)

Multidimensional Poverty Rate: 28% (#6)

U15 Child Marriage: 7.7% (#13)

Female Secondary School Completion: 2.4% (#9)

U18 Child Marriage: 29.7% (#16)

Percent of informal employment: 32.3% (#9)

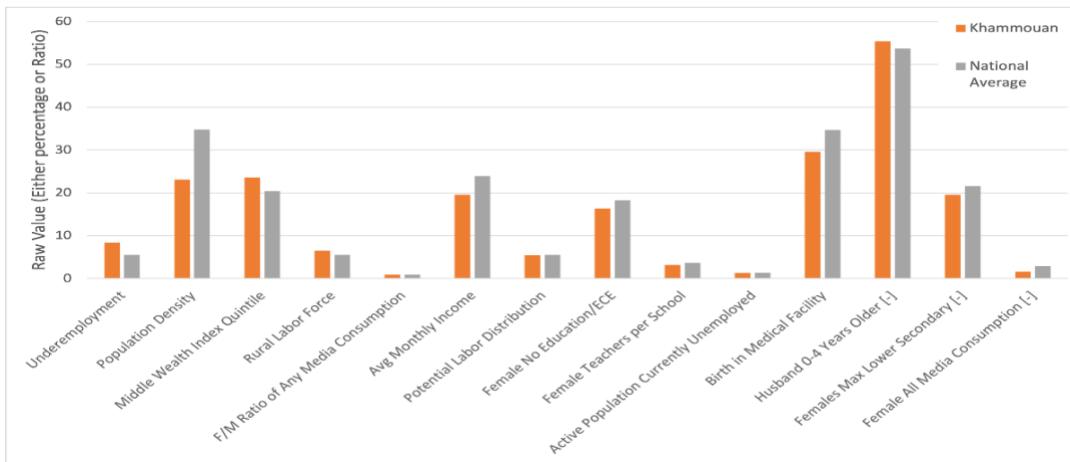
Total Child Labor: 42.2% (#12)

Percent of Migrants (+10 yrs/o): 4.8% (#14)

Belt and Road Initiative Infrastructure Developments

There is currently one BRI project present in Khammouan, the Vientiane-Pakse Expressway (Thakhek-Savannakhet). The Vientiane-Pakse Expressway will link the national capital, Vientiane Prefecture, to Pakse, Champasack at the country's southern tip, passing through Thakhek, the provincial capital. The expressway will shorten cross-country travel times, improve trade efficiency, and likely draw increased tourism to Khammouan's scenic karst landscapes, mountains, rivers, and forests.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below. See sections 2 and 3 above.

Summary Description

- Located in central Lao PDR, Khammouan borders Thailand and Vietnam. Khammouan accounts for 17 percent of total land area and is flanked by Bolikhamsai to the north and Savannakhet to the south. In 2019, over 94,000 visitors arrived from Thailand via the Mittaphab (Friendship Bridge III), while over 135,000 visitors arrived from Vietnam via Na Phao. In addition, over 68,000 Lao travelers left the country through the province.
- Despite an average-sized population (seventh) and a below-average population density, Khammouan has the second-highest GDP per capita, likely due to the presence of the Phoukhyo and Thakhek SEZ. Indicators show concentrated wealth and income inequality, with a high multidimensional poverty rate (sixth) and an average monthly income below the national average.
- Khammouan's economy is concentrated in agricultural production, primarily subsistence rice, but also profits from above-average yields in market crops including maize, root crops, and tobacco. Exports include timber products and increasingly, crops and livestock to other provinces and Thailand. Tourism to the protected nature areas Nakai-Nam Theun National Park, Hin Namno National Park, and the Phou Hin Poun National Biodiversity Conservation Area will benefit from shortened travel times from the Vientiane-Pakse Expressway. Gypsum, limestone, and tin are also mined in Khammouan, with over 600,000 tonnes of total mineral production capacity per year.
- As it sits at the nexus of multiple Mekong tributaries and the Xe Bang Fai, Nam Hinboun, and Nam Theun rivers, Khammouan has a history of large-scale hydropower projects predating the BRI, including the Nam Theun 2 Hydropower Project, which is the largest in the nation.
- With the second-lowest rate of male head of household (17th) and overall low child marriage rates, Khammouan outperforms other provinces in these gender equality indicators. However, it performs below the national average rate for females with lower secondary education.

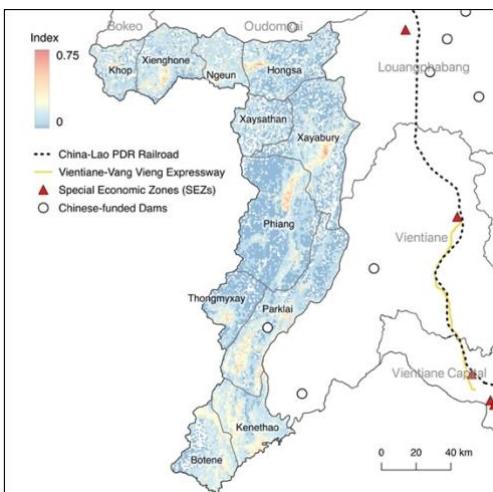
Geographically-Targeted Interventions

High priority interventions in Khammouan should emphasize supporting the development of enterprises and jobs in the tourism, forestry, and agricultural sectors. Training and funding could be provided for the establishment of ecotourism farms and accommodations in rural areas. Training and incentivizing border control and police to recognize TIP and aid potential victims needs to be expanded. There is also displacement and subsequent vulnerability from the Nam Theun 2 Hydropower Project, which, since 2012, has yet to complete compensation to the displaced populations. Investment and compensation activities should be complemented with community-based programs designed to increase awareness of TIP and safe migration channels.

In addition to upgrading the local road networks that connect to the upcoming Vientiane-Pakse Expressway, providing training and investment in value-added primary products processing could improve the market value of crops. Road networks to tourist sites and hospitality businesses can be improved. Farmers could be advised on growing crops that are in demand by the hospitality industry, especially as tourism demand grows. Furthermore, training and education for jobs in the hospitality and tourism sector could improve the quality of service and include information on TIP detection and resources to reduce vulnerability.

Methods to decrease TIP within the SEZs, mining, and tourism industry should include labor inspections, the development of formal and transparent recruitment practices, the institution of health and safety standards, and the education of workers, law enforcement personnel, and safety inspectors to recognize exploitative labor practices and identify victims. Programs should be implemented to provide management and leadership training for females. As one of only five Lao provinces with a consistent economic surplus, improved productivity in Khammouan directly benefits the economic health of Lao PDR as a whole.

Xaignabouly, Lao PDR



TIP Vulnerability Score	0.01 (lowest)	0.072	0.17 (highest)	Rank: 10 of 18
Estimated Number of TIP Victims	142 (lowest)	585	27,243 (highest)	Rank: 15 of 18
Estimated TIP Prevalence	1.7 (lowest)	5.17	33.2 (highest)	Rank: 10 of 18

Socio-Economic Measures

Population: 381,376 (#8 of 18)
Percent Rural: 78% (#16)
GDP per Capita: USD 449.04 (#6)
Multidimensional Poverty Rate: 22.2% (#12)
Female Secondary School Completion: 2.9%
(#6)
Percent of informal employment: 38.8% (#5)
Percent of Migrants (+10 yrs/o): 5.4% (#13)

Males Head of Household: 92.5% (#6)
Percent of Households with Internet Access:
0.8% (#11)
Percent of women that have moved in the
past 0-4 years: 2.6% (#18)
U15 Child Marriage: 7.9% (#12)
U18 Child Marriage: 38.7% (#7)
Total Child Labor: 36.7% (#14)

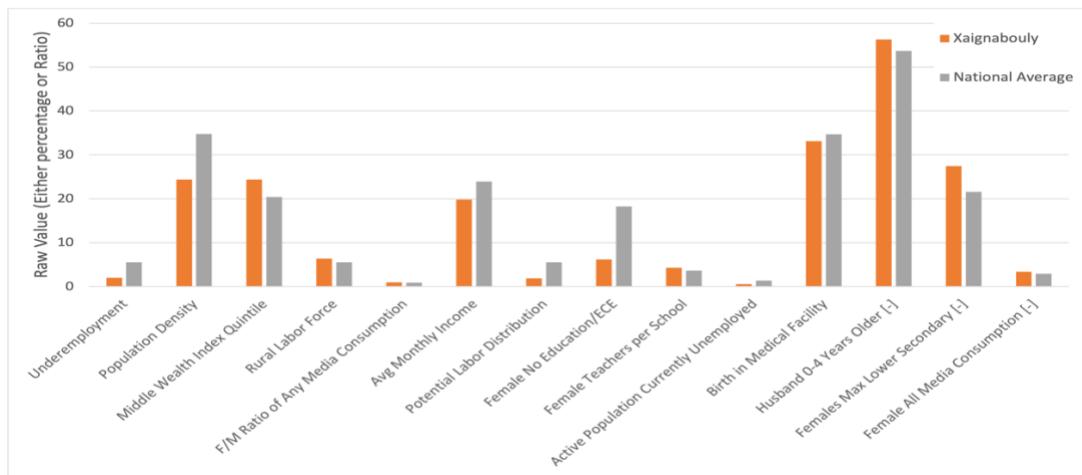
Special Economic Zones

There are **zero** SEZs present in Xaignabouly.

Belt and Road Initiative Infrastructure Developments

There are **three** BRI projects in Xaignabouly: the Pakbeng-Ngeun Bridge, the Pak Lay Hydropower Project, and Sanakham Dam. The Pak Lay Hydropower Project is slated for completion by 2030, while the Sanakham Dam on the Mekong is still in the consultation process. The production of hydropower dams throughout Lao PDR has negatively affected fisheries and farms through the displacement of families.

TIP Vulnerability Index for Province & National Average Values



Derived from over 2,000 indicators, the province vulnerability measure is composed of the subset of indicators and weightings that represent the optimal combination characteristic of the TIP ecosystem. The red bars are the values for the particular province. The blue bars represent the national averages. The statistical interpretation of these indicator combinations, their correlations with other factors, and the phenomena for which they serve as proxy measures, provide insight and evidence for summaries below. See sections 2 and 3 above.

Summary Description

- Xaignabouly is at the northwestern border of Lao PDR, touching Thailand to the west and south, Bokeo and Oudomxai to the north, and Louangphabang and Vientiane province to the east. Visitors arrive in Xaignabouly from Thailand via the border crossings at the Nam Heung Bridge (nearly 70,000 in 2019), Phanh Keo, and Nam Ngeun (over 53,000). Additionally, over 69,000 travelers left through Xaignabouly in 2019, making it the sixth-busiest exit province.
 - The Nam Phouy National Biodiversity Conservation Area is famous for its wild elephants, which have also been used in the logging industry. The annual Elephant Festival is a tourist attraction in Hongsaa district.
 - The urban population in Xaignabouly doubled between 2005 and 2015, according to the 2015 census, from slightly over 20 percent to 40 percent.
 - Agricultural crops include wet season rice and upland cash crops. Livestock production includes cattle and pig farming. Some of these crops are exported to China (soybean) and Thailand (maize, Job's tears, and black sesame). Tea production occurs in upland areas, particularly in Maocha, which is processed into Yunnan Pu'er tea, which is highly sought after in China. Most workers on tea plantations are women.
 - The province performs better than average on female education measures: it has higher than the national average rates of females with lower secondary education and lower than the national average rates of females with no education or only ECE.

Geographically-Targeted Interventions

In Xaignabouly, high priority interventions should include educating border officials on the detection of signs of TIP, expanding TIP victim support resources such as TIP hotlines and safe migration training, and effectively informing Laotian migrants of how to access these resources. These will protect Laotians should they become trafficked. Victim support resources such as TIP victim support centers and shelters should similarly be expanded in capacity and reliability to face a probable increase in need.

Long-term TIP prevention strategies should focus on job creation and the development of enterprises in the province, such as improved cultivation practices for upland tea and in the tourism industry. Training and education for jobs in the hospitality and tourism sector could improve the quality of service and include information on TIP detection and resources to reduce vulnerability. There is also displacement and subsequent increased vulnerability from planned hydropower projects (Pak Lay and Sanakham Dam). Full and timely compensation, along with support in obtaining new livelihoods, resettlement, or safe migration resources can reduce TIP vulnerability among displaced communities.

To further support gender equality and female empowerment, programs should be implemented to provide management and leadership training for females, in addition to support for female-owned businesses and cooperatives, such as at tea plantations. To improve the status of women in society, the province should focus on empowering women through community programs that educate both men and women on the benefits of gender equality, especially focusing on economic and social benefits. Community programs that reduce the need of households to rely on child labor and also promote opportunities for females and raise the status of working females can help reduce TIP vulnerability.

ANNEX 2. TECHNICAL SUMMARY OF METHODOLOGY AND LIMITATIONS ON THE ANALYSIS

I. TECHNICAL SUMMARY OF METHODOLOGY

Novametrics' weak-signal analysis provides a means for predicting vulnerability and for identifying underlying causal relationships among multiple inter-related variables in a dynamic environment. It was originally developed through a series of research seminars at Princeton University and was supported with a USD 1.2M Small Business Innovation Research Award from the US Secretary of Defense to predict conflict in Sub-Saharan Africa. The analysis received an award for "Innovative Use of Data for Increasing Resilience" from USAID.

Weak-signal analysis begins with data fusion through a suite of statistical and regression algorithms for normalization, standardization, and vectorization, which subdivides populations into small units for which distinct attributes can be measured. A raw persistent data-storage layer contains all the raw data in its original form. A virtualized data layer provides an abstraction layer between the physical data sets and the analysis layer. This is where the data are cleaned, standardized, normalized, and vectorized. New indicators are created from the original raw data and stored in logical groupings. Singular-value decomposition is used as an unsupervised self-learning algorithm to identify agnostically key attributes and their relative weightings. The attributes are tested via resampling methods to confirm consistency and sensitivity. The outputs are sets of indicators (weak-signals) that are proxy measures for the underlying causal relationships.

We began with large volumes of data from diverse, mostly open-source datasets from NGOs, media, the USG, and the statistical authorities of local governments. These datasets included detailed national census data, health and educational survey data, remote-sensing data suitable for geospatial analysis, web-scraped data, and data from both formal and informal media sources. The Novametrics Lao PDR Database contains over half a million socioeconomic indicator values covering over 1,000 measures for 148 districts over 20 years, using 284,055 pixels, each with an area of 30 seconds x 30 seconds (approximately 1km²). We consider all data to be valuable. While datasets may be of varying quality and completeness, each has the potential to carry information that reflects a characteristic of a population, either by itself or, more commonly, through combinations with other datasets.

High-resolution geospatial data (typically 1km² for population, but down to ten-meter resolution for imagery) and remote-sensing data are converted into tabular data by determining the number of pixels of each data type within each administrative boundary and multiplying the pixel count by the area of each 30" x 30" pixel (approximately 1km²), totaling 284,055 distinct area-patches for Lao PDR. Depending on the data type, either we summed the values, e.g., to determine population, or we took a statistical measure of the values distribution, e.g., average travel distance to a road, market, or urban area. For each pixel, the population was derived from Oak Ridge National Laboratory's LandScan global population data and represents ambient population averaged over 24 hours.

We calculated indicators from raw survey data at the lower administrative levels. We aggregated and compared these indicators to reported values at higher administrative levels to confirm the accuracy of the aggregation. We then translated the responses into indicators based on the nature of the data. For example, we expressed a simple yes/no on whether a mother uses a mosquito net with a single indicator

(“Percentage of Mothers Using a Mosquito Net”), whereas we expressed the religion of a household more completely with multiple indicators (“Percentage of Buddhist Households,” “Percentage of Christian Households,” etc.). Other survey questions, such as “How many hours per week did your child attend school?” are aggregated with averages for each administrative unit.

Additional indicators were calculated by Novametrics either by combining two raw indicators in the database, or by calculating the raw data into more meaningful indicators. For example, we calculated the percentage of female teachers, a useful indicator of gender equality, from the reported number of female teachers and number of teachers.

Non-numerical data were reformatted into numerical values and processed statistically. For example, the typical Likert scale was used to survey attitudes with responses like “Strongly Agree,” “Agree,” “Neutral,” “Disagree,” and “Strongly Disagree”, with responses centered about zero. For some indicators where the data was a ranked-choice variable, the choices were converted to discrete numbers between -1 and 1, centered on zero.

Missing data were imputed using linear interpolation or a piecewise cubic polynomial that interpolates the given data if derivatives are specified at the interpolation points. If a region was missing so much data that imputation was unreasonable based on examining the distribution, and if there were significant events in the region that would make the data no longer representative, it was rejected from the analysis. Judgment was applied depending on the potential value of the indicator and the availability of alternative “proxy” indicators that might capture comparable phenomena within the socioeconomic ecosystem.

Administrative boundaries were sourced from the Lao PDR National Geographic Department. Names and boundaries were updated to the most current at the time of data analysis. Duplicate names that refer to different locations were differentiated by appending the name of the next administrative level up. In the US, this strategy would distinguish two familiar cities named “Springfield” as “Illinois.Springfield” and “Virginia.Springfield.”

Data on human trafficking victims, traffickers, and locations of origin or transit in Lao PDR have not been systematically compiled. While a nationwide survey on child trafficking occurred in 2004, no comprehensive TIP survey has been conducted (Lao PDR Ministry of Labour and Social Welfare, 2004). Household surveys, such as the UNICEF MICS surveys and the USAID DHS surveys, do not contain questions from which data on TIP can be distilled. While TIP prosecution data are collected and summarized by the Lao PDR government, these data are not publicly shared and geographic information is not included in the summary. We expanded the data reported by the government using an extensive review of formal and informal media sources and a literature review, including academic articles, NGO reports, and government reports dating from 2018 through 2021. Whenever available, we included sources, transit areas, and destinations within our database. Data on victim profile characteristics, such as gender, age, foreign marriage status, minority ethnicity status, and geographic origin were also collected. Although a large number of sources were used, double counting was avoided by screening dates and characteristics, which resulted in a Lao PDR TIP database of over 500 unique victim profiles. The Lao PDR TIP database sources include:

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- Cilento, C., & Phetsavong, T. (2019). Study on Repatriation and Social Reintegration Assistance: Lao Victims of Trafficking Returned from Thailand. Japan International Cooperation Agency Thailand.
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- Crispin, V., & Thompstone, G. (2011). Report on the Commercial Sexual Exploitation of Children in Lao PDR. https://data.opendevvelopmentmekong.net/library_record/the-commercial-sexual-exploitation-of-children-in-lao-pdr
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- Huijsmans, R. (2008). Children Working Beyond Their Localities: Lao Children Working in Thailand. Sage Publications.
- International Organization for Migration. (2018). Human Trafficking Snapshot: Lao People's Democratic Republic. Retrieved July 2021 from https://iomx.iom.int/sites/default/files/resources/files/lao20pdr20iom20x20human20trafficking20snapshot20201829_3.pdf
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- Protecting peace and prosperity in Southeast Asia: Synchronizing economic and security agendas. (2016). UNODC. <https://www.burmalibrary.org/en/protecting-peace-and-prosperity-in-southeast-asia-synchronizing-economic-and-security-agendas>
- RFA Lao (2017, February 13). Chinese Marriage Proposals Become Prostitution Nightmares for Some Lao Girls. Retrieved May 12, 2020, from <https://www.rfa.org/english/news/laos/chinese-marriage-proposals-02132017122352.html>
- RFA Lao. (2018, June 25). Lao Families Fear Getting Cheated by Developers of New SEZ in Champasak Province. Radio Free Asia. <https://www.rfa.org/english/news/laos/lao-families-fear-getting-cheated-by-developers-of-new-sez-06252018154852.html>

- RFA Lao. (2020, January 13). Laos' Champassak Province Hands Over Waterfalls Projects to Hong Kong Firm. <https://www.rfa.org/english/news/laos/laos-waterfalls-handover-01132020164323.html>
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- Wille, C. (2001, November). Thailand-Lao People's Democratic Republic and Thailand-Myanmar Border Areas Trafficking in Children into Worst Forms of Child Labour: A Rapid Assessment. ILO.
- Winrock International (2020). TOR Baseline 12 February 2020. Retrieved July 2021 from <https://winrock.org/wp-content/uploads/2020/02/TOR-Baseline-12-Feb-2020-Final1.pdf>

Data Preprocessing: Weak-signal analysis requires preprocessing the data for each indicator used in the analysis. If the indicator distribution resembled a Gaussian distribution, we typically subtracted the mean and normalized by the standard deviation. If the indicator distribution was Log-normal or Chi-squared, we used the logarithm or square-root, respectively. If the data distribution showed clustering asymptotically near an upper limit (e.g., percentages that concentrate near 100 percent), we subtracted the indicator values from this limit and computed the logarithm or square-root of the differences. We term this transform a “reverse-log” or a “reverse-sqrt.” Given limit value X_L and indicator data X_j , we compute scaled values X'_j as:

$$\text{Reverse-Log: } X'_j = -\log_{10}(X_L - X_j + e)$$

$$\text{Reverse-Sqrt: } X'_j = -\sqrt{(X_L - X_j + e)}$$

Where e is a small adjustable parameter to avoid singularities at $X_j - X_L = 0$, and the minus sign preserves the ordering of indicator values from smallest to largest. In each case, the rescaling preserved the size-ordering of data values, so that relative comparisons were maintained, and the data distribution met the requirement for the statistical analysis.

If data sets had outliers, we winsorized the data to reduce the influence of outsized data values in statistical correlations and regressions. We typically set the outlier values to three standard deviations from the mean, so that they exert strong, but not extreme, influence on statistical computations in the analysis. In some cases, where some data remained skewed in linear, \log_{10} and square-root scaling, with a substantial group (>3 percent) of indicators beyond 3-sigma, the Z-threshold for winsorizing was set to four to preserve the extreme values. Exceptions were applied to indicators whose values clustered in the neighborhood of an upper bound (e.g., literacy rates, which tend to cluster near 100 percent, but

have tails of values downward toward zero percent). In such cases, a reverse-log and a reverse square-root transformation were applied.

Development of the Vulnerability Index: Once the data were cleaned, the indicators were run through a Pearson Correlation Matrix by category for quality assurance and to identify redundant indicators that were highly correlated and did not exhibit sufficient statistical independence to contribute information to the full data set. Singular-value decomposition and varimax rotations were subsequently used as unsupervised self-learning algorithms to identify key attributes and their relative weightings. Thus, the algorithm pares down a large dataset into a smaller one comprised of the most defining and statistically important components. Running the analysis within specific subregions of the nation enables the identification of combinations of characteristics predictive of TIP while eliminating the combinations of characteristics that are neither conducive nor preventative. Attributes and attribute-combinations that are prominent in both areas of known high- and low-level TIP are thus deemed as inconclusive to TIP vulnerability. The attributes are then tested via resampling methods, in which the algorithm is run on different subsections of regions, to confirm consistency and sensitivity. As we want to explain as much of the variance in the data as possible but also avoid having an overly complicated measure, various threshold values for indicator weightings are used to identify the optimal subset of indicators. The weighted values of the selected indicators are then used as inputs to the composite measure to generate vulnerability measures for each province.

Development of the Projected Prevalence and Victim Estimates: The goal of this step is to rescale the prevalence rates to reflect their distributions more accurately. The vulnerability score is obtained from the indicator matrix, within which many of the indicators have been scaled logarithmically to decrease small values. When we transform from the indicator matrix into prevalence estimates, we reapply the scaling. In particular, prevalence estimates are typically lognormal in the indicator matrix because they range by many orders of magnitude. Therefore, exponentiating the vulnerability index enables proper scaling for our inferring province by province prevalence estimates.

2. LIMITATIONS ON THE ANALYSIS

Whenever possible, we have attempted to describe the uncertainties associated with weak-signal analysis in the presentation of our analytical results in the main report. When presenting the vulnerability index, we have also presented an evaluation of the “null hypotheses” that geographical fluctuations of indicator values, and their projections onto our vulnerability index, have occurred by random. We use 95 percent confidence for non-randomness as our threshold for statistical significance, though often the data relationships exceed this threshold greatly. For example, we can determine the statistical significance of the relationship between child marriage rates and the GSI prevalence by testing the alternative hypothesis that there is no relationship. In such a case, the slope would be zero using the t-distribution. The probability that there is *no* relationship between the child marriage and the GSI prevalence estimates (that the slope of their scatterplot is zero) is less than one in 10 million. Even at this confidence level, we do not assume a specific causal relationship, but we confirm that TIP and child marriage are inter-related within a common ecosystem.

Although our statistical arguments can be presented in probabilistic terms with associated confidence levels, there are many additional uncertainties due to the nature of our analysis and what we are trying to evaluate. The major limitations are associated with the nature of human trafficking itself.

Although our analysis can compute estimates of Lao PDR TIP victims in a province or a district down to single individuals, such precision is an untrustworthy artifact of the mathematics. First, the geographic variation in TIP vulnerability that we estimate across Lao PDR, in particular the relative numbers of TIP victims within different locations, is subject to a scaling uncertainty, depending on the accuracy of TIP-victim estimates. Second, TIP vulnerabilities are probabilistic in nature, expressing likelihoods of TIP activity within a location. If the ecosystem is conducive to TIP, but no activity has been reported, the activity may be unreported or else the vulnerable populations may not have yet fallen victim.

An analogy with earthquake hazards is useful. Maps of predicted earthquake motion are used to develop building codes, establish insurance rates, allocate resources, and guide development. Even in a region of high probability, no earthquake may occur for several years. Alternatively, a single earthquake can cause damage that exceeds the probabilistic values for multiple years. Despite the lack of precision, earthquake hazard maps have been extremely effective in dramatically reducing the impact of earthquakes by informing policymakers, insurers, architects, planners, and responders on where to prioritize strategies to reduce vulnerability. The TIP vulnerability index should be used in the same manner, focusing policymaker attention on building resilience in the most vulnerable locations, while maintaining baseline programs in regions with lower vulnerability.

Below are limitations associated with the analytical results. They are listed in a hierarchy based on our assessment of their impact.

I) Ambiguity in what we are trying to measure

Ambiguity and differences exist in the terms human trafficking, TIP, modern slavery, slavery, slavery-like practices, etc. The only international legally binding instrument that provides an agreed upon definition of TIP is the Protocol to Prevent, Suppress and Punish Trafficking in Persons Especially Women and Children, supplementing the UN Convention against Transnational Organized Crime (also known as the “2000 UN TIP Protocol” and one of three “Palermo Protocols”).¹⁵

Article 3 of 2000 UN TIP Protocol defines TIP:

- (a) “Trafficking in persons” shall mean the recruitment, transportation, transfer, harbouring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Exploitation shall include, at a minimum, the exploitation of the prostitution of others or other forms of sexual exploitation, forced labour or services, slavery or practices similar to slavery, servitude or the removal of organs;
- (b) The consent of a victim of trafficking in persons to the intended exploitation set forth in subparagraph (a) of this article shall be irrelevant where any of the means set forth in subparagraph (a) have been used;
- (c) The recruitment, transportation, transfer, harbouring or receipt of a child for the purpose of exploitation shall be considered “trafficking in persons” even if this does not involve any of the means set forth in subparagraph (a) of this article;

¹⁵ The other two Palermo Protocols are the Protocol against the Smuggling of Migrants by Land, Sea and Air and the Protocol against the Illicit Manufacturing of and Trafficking in Firearms.

(d) “Child” shall mean any person under eighteen years of age.

The 2000 UN TIP Protocol definition is considered to be a comprehensive definition because it specifies what constitutes the “acts” (recruitment, transportation, transfer, harbouring, receipt), “means” (threat, use of force, coercion, abduction, fraud, deception, abuse of power), and “purpose” (sexual exploitation, forced labour or services, servitude, removal of organs) of human trafficking (Clark, 2003). The US DoS uses the Palermo Protocol definition. It is, however, specifically noted in 2019 TIP report that “a victim need not be physically transported from one location to another for the crime to fall within this definition” (US DoS, 2019).

The USG generally follows the Palermo Protocol definition of TIP, which defines the meaning of “child” as any U18 person (Article 3(d)) and specifies that means are not relevant if the act involves a child (Article 3(c)). The TIP Reports reference child marriage as a contributing factor to girl’s vulnerability to exploitation, but it does consider it to be a form of human trafficking and do not include child marriage in their calculation of TIP victims.

In 2017, the ILO began counting forced marriage in their slavery statistics (ILO, 2017) under the general recommendation that “child marriage is considered to be a form of forced marriage, given that one and/or both parties have not expressed full, free and informed consent” (Article VI.B.20, CEDAW, 2014). The recommendation, however, contains the caveat that “marriage of a mature, capable child below 18 years of age may be allowed in exceptional circumstances, provided that the child is at least 16 years of age and that such decisions are made by a judge based on legitimate exceptional grounds defined by law and on the evidence of maturity, without deference to culture and tradition” (CEDAW, 2014).

Many organizations have attempted to measure human trafficking. The DoS included national estimates of human trafficking in their early TIP reports but abandoned the estimates after enduring criticism. The DoS uses the definition of human trafficking presented in Article 3 of the Palermo Protocol, and estimates that globally there are 25 million victims of labor and sex trafficking worldwide (US DoS, 2020b). The ILO published its first estimate in 2005 of 12.3 million persons trafficked as a minimum at any given time between 1995 and 2004. As of 2012, the ILO estimates that 20.9 million people suffer forced labor at any given point in time over the ten-year period 2002 through 2011, reporting a standard error of 1.4 million at a 68 percent level of confidence (ILO, 2012). The GSI uses a broader definition for TIP than the DoS and the ILO. The GSI estimates that globally there were 40.3 million victims of modern slavery in 2018, a decrease from their estimate of 45.8 million victims in 2016 (Walk Free Foundation, 2018; Walk Free Foundation, 2016). The GSI published prevalence estimates by country in 2012, 2014, 2016, and 2018. As with the DoS estimates, the GSI estimates have also been subject to criticism (e.g., Gallagher, 2014) and the 2012 and 2014 estimates are no longer distributed due to changes in the methodology. The GSI estimate includes forced marriage, child marriage, and child soldiers, while the DoS and the ILO treat these human rights abuses separately.

2) Use of data analysis in social science

Social science and international development research have been evolving from site visits and case studies to more data-based analysis. Identifying relationships in complex, dynamic systems requires statistical models. The results of the statistical models are expressed in probabilistic terms, for which there is debate over required levels of certainty. In our analysis, we quantify probability as the likelihood

that a particular result might have occurred by random chance. We reject the “null hypotheses,” the probability that the result occurred by chance, when the confidence level exceeds 95 percent. In other words, the probability of this occurring by random chance is less than one in 100.¹⁶

Quantifying probability in this manner requires assumptions about the statistical distributions of data sets. To the greatest extent possible, our analysis pre-processes raw data into data indicators whose statistical distributions are approximately Gaussian. We reference our uncertainties to Gaussian statistical models, using tools such as chi-squared and F variance-ratio distributions, singular-value decompositions, and bootstrap resampling techniques, depending on the application.

A common criticism of data analysis is that “correlation does not imply causation.” For example, deworming children may correlate with increased school attendance. Does this prove that deworming children was the cause of increased school attendance? It is extremely difficult to prove causal relationships in complex systems.

While a statistical relationship may not be proof of a causal relationship, it is evidence for a causal relationship. Without a statistical correlation, there cannot be causation. In fact, one powerful feature of correlation estimates is that they can be used to disprove causal assumptions that seem reasonable, but are not supported by the data. Lack of correlation argues that a causal relationship between social indicators is unlikely. More importantly, however, statistical relationships that are opposite to that expected, e.g., a positive correlation when looking for a negative one, can lead to a re-assessment of prior assumptions.

We do not assume in our analysis that correlation implies causation – also known as the fallacy “cum hoc ergo propter hoc” (“with this, therefore because of this”). As an example, we do not assume that a correlation between conflict frequency and male/female literacy rates implies that conflict is caused by a disparity in literacy rates between genders. We assume the indicators we can measure are proxies for sociocultural phenomena that we are unable to measure directly or perhaps even understand. In the example above, lower female literacy rate relative to male literacy rates may indicate gender inequality, religious tenets, shortages of resources (requiring the girls to spend their time collecting water, firewood, etc.), or economic change requiring girls to access markets for alternative income producing activities. Even when we categorize these events as measures of a population’s vulnerability, we both recognize and account for the fact that the indicators we are using may not be unique or even directly related to the categories in which they have been assigned. As an example, consider two population characteristics “A” and “B” that correlate with significant statistical confidence. There are at least five options:

Option 1: The correlation is the result of random coincidence and does not reveal any causal relationships between A and B.

Option 2: A is “causing” B, with the independent variable A causing the change in the dependent variable B.

¹⁶ The TIP vulnerability measure has an R-squared value = 0.33, and the p-value is less than 0.05, allowing us to reject the null hypothesis that the relationship occurred by chance. The probability of four of the five provinces with known TIP occurring among the top five of the 18 provinces by chance is approximately one in 122 (0.00817).

Option 3: B is “causing” A, with the independent variable B causing the change in the dependent variable A.

Option 4: A and B are both dependent variables, following an independent population characteristic C that has not been measured.

Option 5: A and B are part of a larger correlated system with no unique causal factor, that is, no independent variable.

Option 5 is characteristic of “coupled systems,” in which “causality” resides in the linkages between variables. In a fully coupled “holistic” system, no variable is truly independent. Such systems are common in natural ecosystems, and we assume they are also common in socioeconomic ecosystems. For example, in atmosphere-ocean interactions that lead to the El Niño and La Niña climate events, there are no dependent versus independent variables. Atmospheric pressure highs and lows induce winds that push surface seawater, and warm and cool patches of the sea surface induce variations in atmospheric pressure. Neither the atmosphere nor the ocean operates independently of the other. Neither can be taken as the independent variable in a causal relationship. Yet the relationship is unambiguous and allows us to predict both the atmospheric and oceanic effects with high degrees of certainty.

An ecosystem approach to complex, dynamic, and multi-variable problems such as human trafficking, child marriage, and violent extremism treats them as coupled systems that lack true independent variables, but nevertheless offer situations where we can predict outcomes and intervene to effect change. The big-data ecosystem approach finds inter-relationships among many variables, not only two. With many variables and many distinct populations, there may be multiple independent correlation patterns. The different patterns indicate the problem has multiple causes, and the causes vary for different places. In an ecosystem approach, the correlations among population attributes are treated as a coupled system that can be influenced at several points, rather than as a cause-effect process that can be modified only through its dependent variable. The advantage of an ecosystems approach is that it allows us to achieve our objectives by identifying the characteristics to be modified, therefore allowing us to identify options for the interventions that will provide the greatest return on investment.

3) The nature of self-identified victims

Victims of human trafficking generally self-identify and therefore include subjective assessments that are affected by different sociocultural norms.

4) Hidden populations

The population of victims is largely a hidden population, and it is therefore difficult to obtain a representative sample for statistical analysis.

5) Extrapolations

In any given survey, the number of self-identified alleged victims is generally small, and extrapolations from small numbers have significant uncertainty.

6) Respondent truthfulness

Survey respondents are not necessarily truthful, and their trafficking may not have been independently verified. They may claim to have been trafficked to receive perceived or actual benefits, or they may deny being trafficked to avoid social stigmas or involvement with the legal structure.

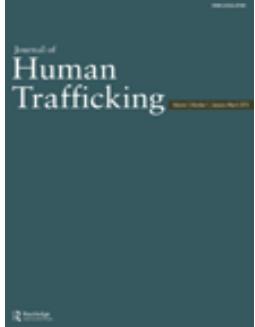
7) Human-Based data collection

Survey data is collected by human surveyors who may not faithfully follow the design of the survey or record responses accurately.

8) Definitions

International definitions are not consistent with national definitions and the local customs and laws of a particular country.

ANNEX 3. EMPIRICAL ANALYSIS OF THE US STATE DEPARTMENT'S ANNUAL TRAFFICKING IN PERSONS REPORT – INSIGHTS FOR POLICY-MAKERS



Empirical Analysis of the US State Department's Annual Trafficking in Persons Report – Insights for Policy-Makers

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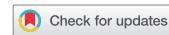


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Empirical Analysis of the US State Department's Annual Trafficking in Persons Report – Insights for Policy-Makers

Gregory E. van der Vink, Katherine N. Carlson, Jeffrey Park, Sabrina H. Szeto, Xinrei Zhang, Michael E. Jackson, and Erica Phillips

ABSTRACT

The State Department's annual Trafficking in Persons (TIP) Report is the U.S. Government's principal diplomatic tool to engage foreign governments on human trafficking. Each year, the report evaluates efforts to counter human trafficking, assigning each country to a tier level. We evaluate the relative role of various factors predictive of tier-level assignments, including (a) legislated changes to the ranking system, (b) party to the Palermo Protocol, (c) reported numbers of convictions, prosecutions, and identified victims, (d) independent estimates of prevalence, and (e) sample indicators of governance and economic development. We use singular-value decomposition to identify the relative influence among multiple inter-related factors across a matrix of tier rankings for twelve years and 189 nations. Our analysis indicates that investments in democratic institutions and individual rights may be significantly more influential than law enforcement, and the traditional economic theory for TIP vulnerability may be an oversimplification. Most significantly, the large number of attributes with small but statistically significant correlations with TIP tier levels confirms that TIP has many causal relationships. We affirm the need for Countering TIP (CTIP) strategies to apply an ecosystem approach with geographically targeted interventions consistent with Situational Crime Prevention.

KEYWORDS

Trafficking in persons; human trafficking; state department trafficking in persons report; tip; ctip; modern slavery

Introduction

The U.S. State Department's Trafficking in Persons (TIP) Report is the U.S. Government's principal diplomatic tool to engage foreign governments on human trafficking (United States Department of State [U.S. DoS], 2020a). The report is produced in accordance with the U.S. Victims of Trafficking and Violence Protection Act (TVPA) of 2000 (P.L. 106–386) and establishes U.S. anti-trafficking policy to (1) *prevent* trafficking, (2) *protect* trafficking victims, and (3) *prosecute* and punish traffickers (known as the “three Ps”)^{1,2}.

The TVPA was developed as domestic legislation concurrently and in a manner consistent with the principles set forth in the Protocol to Prevent, Suppress and Punish Trafficking in Persons Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime (also known as the “2000 UN TIP Protocol” or the “Palermo Protocol”) (U.S. DoS, 2020a).³ The TVPA requires the Secretary of State to produce an annual report ranking foreign governments based on their anti-trafficking efforts. The U.S. State Department's TIP report uses a ranking system in which the best-ranked countries are identified as Tier 1 and the worst ranked as Tier

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¹In addition, the State Department employs a fourth “P,” partnerships “as a complementary means to achieve progress across the 3Ps and enlist all segments of society in the fight against modern slavery.” U.S. Department of State, Policy Issues, “Human Trafficking,” at <https://www.state.gov/policy-issues/human-trafficking/>.

²The US passed the TVPA October 28, 2000. The UN adopted the Palermo Protocol a few weeks later, on November 15, 2000.

³The “Palermo Protocol” is actually one of three “Palermo Protocols”, the other two Palermo Protocols being: (a) the Protocol against the Smuggling of Migrants by Land, Sea and Air, and (b) the Protocol against the Illicit Manufacturing of and Trafficking in Firearms.

3. Between the best and worst rankings, the State Department classifies nations into two intermediate tiers, Tier 2 and the Tier-2 Watch List, the latter ranking a probationary level. There is also the designation of *Special Case*, which describes countries that are too affected by conflict or natural disaster for a proper analysis of government-led counter-trafficking efforts to be made.

Under the TVPA, Tier-3 countries are subject to potential restrictions on certain types of U.S. foreign aid and other U.S. and multilateral funds. In 2019, for example, certain types of assistance from the U.S. were restricted for the governments of 15 countries that were ranked Tier 3 (U.S.DoS, 2020b).

Placement of each country into one of the tiers is based *not* on the size of the country's trafficking problem, but on the extent of governments' efforts to meet the TVPA's minimum standards for the elimination of human trafficking (22 USC 7106). These standards are generally consistent with the 2000 UN TIP Protocol (U.S.DoS, 2019). The minimum standards used to determine a country's tier rankings are their efforts toward (1) prohibiting severe forms of trafficking in persons and punishing acts of such trafficking, (2) prescribing punishment commensurate with that for grave crimes, (3) prescribing punishment that is sufficiently stringent to deter and reflects the heinous nature of the offense, and (4) making serious and sustained efforts to eliminate severe forms of trafficking in persons.⁴ The State Department uses 12 "indicia" of "serious and sustained effort" for their evaluations, several of which have been noted to be subjective.

There are many criticisms of the TIP reports and the process through which nations are assigned to tier levels. The criticisms include not only the specific metrics that are purported to be used, but also the extent to which they are objectively applied. For example, one of the 12 indicia for determining the TVPA's minimum standards calls for reducing the demand for commercial sex acts and participation in international sex tourism. Some commentators consider the argument that certain forms of sex work can be considered legitimate enterprises rather than forms of trafficking (e.g., Jackson, 2019). In addition, there are a range of criticisms that the assignment to tier levels is not only subjective but also ultimately political in nature (e.g., DeStefano, 2007). Within the U.S. government, there are three reports by the Government Accountability Office (GAO) (2006, 2007, U.S.DoS, 2011) and two reports by the U.S. Congressional Research Service (CRS) (2013, 2019) that provide extensive reviews of the criticisms of the TIP Reports. While we recognize there are strong political and subjective aspects to the TIP reports, our goal is to present objective data analysis that both complements and informs the debates surrounding these criticisms.

The 2020 TIP Report evaluates 189 countries on their efforts to meet the TVPA's minimum standards. Figure 1 (a/b) illustrates both the percentage of countries at each tier level (left) and the

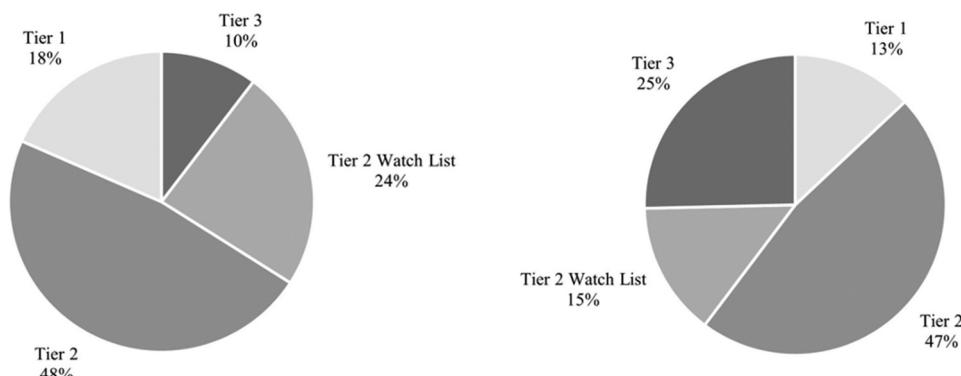


Figure 1. 2020 Global TIP Tier Rankings by Country and by Percent of Population. Only about 10% of the countries fall within Tier 3 — the lowest level. However, these 10% of the countries represent 25% of the global population. So, while more nations are in Tier 1 than Tier 3 (18% vs. 10%), only half as many people are in Tier 1 as Tier 3 (13% vs. 25%). Globally, almost 2 billion people live in Tier-3 nations. Population data from United Nations Population Division, 2020.

⁴In determining if serious and sustained efforts are being made (standard #4), 12 criteria are considered as indicators.

percentage of the global population (United Nations Population Division, 2019) at each tier level (right). While the percentage of countries in Tier 3 is small (10%), the number of people living in these Tier-3 countries makes up a quarter of the global population – almost double the percentage of the population living in Tier-1 conditions.⁵

In this paper, we explore the statistical relationships between TIP tier levels and appropriate national attributes. Our analysis includes not only information contained in the annual TIP reports, but also independent measures of TIP prevalence and sample indicators of economics and governance. Various statistical approaches are used to normalize, integrate and analyze the relationships between data sets and the TIP tier-level rankings. As an analytical summary, singular-value decomposition is used to determine inter-relationships among multiple indicators and their ability to explain variance among the TIP tier rankings. Our analysis attempts to provide insight on the following array of policy questions related to TIP:

1. What Has Been the Impact of Legislative and Diplomatic Efforts?
 - a) Have modifications to the TIP tier-ranking system motivated governments to intensify their Countering TIP [CTIP] efforts?
 - b) Does becoming party to the Palermo Protocol signify a meaningful commitment to enhancing CTIP efforts?
2. Do the efforts represented by TIP tier levels result in meaningful reductions in victimization?
3. What is the role of law enforcement in reducing TIP?
4. To what extent do economic and governance factors influence TIP tier levels?

The goal in understanding the strength and interconnected nature of relationships among the various data sets is to offer policy insights for CTIP strategies that will result in meaningful reductions in victimization.

Question 1: What has been the Impact of Legislative and Diplomatic Efforts?

Have modifications to the TIP tier-ranking system motivated governments to intensify their CTIP efforts?

Since the first TIP Report in 2001, the report's scope has expanded and there have been changes to the methodology for assigning countries to various tier levels. Of particular importance for this analysis are the following:

- (a) The Trafficking Victims Protection Reauthorization Act (TVPA) of 2003 added to the original law a requirement that foreign governments provide the Department of State with data on trafficking investigations, prosecutions, convictions (P.L. 108-193, 2003).⁶
- (b) The William Wilberforce Trafficking Victims Protection Reauthorization Act of 2008 limited the number of consecutive years a country may remain on the Tier-2 Watch List to four years (P.L. 110-457, 2008).⁷
- (c) The Trafficking Victims Protection Reauthorization Act of 2017, enacted in 2019, further reduced the number of consecutive years that a country may remain on the Tier-2 Watch List to three years, and reduced presidential waiver authority to one year (P.L. 115-427, 2017).
- (d) The Frederick Douglass Trafficking Victims Prevention and Protection Reauthorization Act of 2018, enacted in 2019, limited to one year the time a country may remain on the Tier-2 Watch List if they previously exhausted their time on the Tier-2 Watch List (P.L. 115-425, 2018).

⁵If China (a Tier-3 nation) is removed from the analysis, the percentage of the remaining global population within Tier 3 is reduced from 25% to 8%.

⁶The 2004 TIP Report collected data on prosecutions, convictions, and identified victims for the first time. The 2007 TIP Report showed for the first time a breakout of the number of total prosecutions and convictions that related to labor trafficking.

⁷The standard limit is two (2) years, but a country may be waived from the automatic downgrade by the Secretary of State for an additional two (2) years, should a country devote significant resources to a written plan that, if implemented, would constitute significant efforts toward meeting the minimum standards for the elimination of human trafficking.

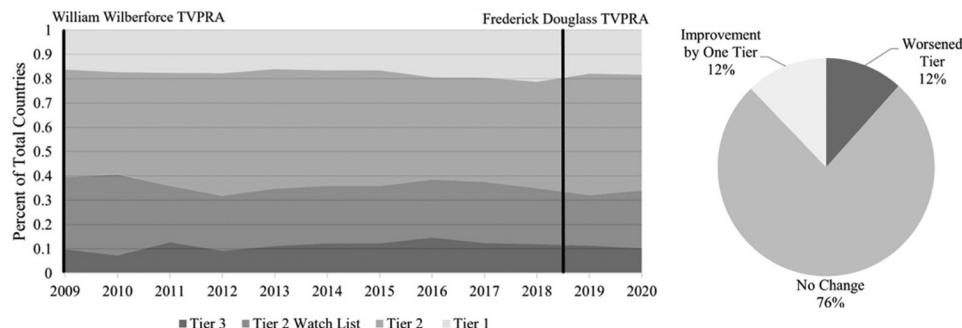


Figure 2. Percent of Countries and Global Population in Each Tier Since 2009. The percentage of countries at each tier level has remained relatively constant since 2009 (left). Of those that change tier level in a given year, equal numbers of nations (12%) improve their tier level as worsen their tier level (right) (United States Department of State annual Trafficking in Persons Reports, 2009-2019, 2020c).

Changes to the TIP Report's methodology are intended to strengthen the credibility of the TIP Report and increase its effectiveness in motivating governments to improve their anti-trafficking efforts. These changes, however, have also raised concerns that the ranking system could be seen as inconsistent, overly elaborate, or beyond reach, thus perhaps eroding some of the Report's effectiveness in motivating countries to improve their anti-trafficking efforts (U.S.CRS, 2019).

Figure 2 (a/b) shows the time-series of tier levels for up to 185 nations (special cases are excluded) from 2009 to 2020 capturing the impact of three changes to the tier-ranking system: (1) the William Wilberforce Trafficking Victims Protection Reauthorization Act of 2008, (2) the Trafficking Victims Protection Reauthorization Act of 2017, and (3) the Frederick Douglass Trafficking Victims Prevention and Protection Reauthorization Act of 2018 (U.S. DoS, 2009-2019, 2020c; P.L. 115-425, 2018).

Since 2009, the average number of countries improving their tier level is roughly equal to the average number of countries that worsen their tier level. The first year that a country received a downgrade to Tier 3 after remaining on the Tier-2 Watch List past the limit was in 2013.⁸ Since then, there have been 48 instances where a country was eligible for an automatic downgrade. Of these times, 25 (52%) improved their counter-trafficking efforts and subsequently moved to Tier 2, and 23 (48%) were downgraded to Tier 3. The more recent tier-level adjustments implemented through Congressional Reauthorizations – the Frederick Douglass Trafficking Victims Prevention and Protection Reauthorization Act of 2018 and the Trafficking Victims Protection Reauthorization Act of 2017, both of which further reduced the amount of time for which a nation may be placed on Tier-2 Watch List, have coincided with tier-level changes, although not with a net improvement. In 2020, 23 nations improved a tier level, and 22 nations dropped a tier level.

For certain countries of specific interest, the legislative action may have provided a motivating factor. As of 2020, however, the legislative modifications to the TIP tier-ranking system have yet to demonstrate a significant impact on increasing counter-trafficking efforts as measured by systematic global improvements in tier levels. The number of nations at each tier level has remained stubbornly constant over the last decade.

Does becoming party to the Palermo Protocol signify a meaningful commitment to enhancing CTIP efforts?

⁶The 2004 TIP Report collected data on prosecutions, convictions, and identified victims for the first time. The 2007 TIP Report showed for the first time a breakout of the number of total prosecutions and convictions that related to labor trafficking.

⁷The standard limit is two (2) years, but a country may be waived from the automatic downgrade by the Secretary of State for an additional two (2) years, should a country devote significant resources to a written plan that, if implemented, would constitute significant efforts toward meeting the minimum standards for the elimination of human trafficking.

In concert with the TVPA, the Palermo Protocol is considered a major diplomatic tool for Countering Trafficking in Persons. The Palermo Protocol was adopted and opened for signature, ratification and accession at the fifty-fifth session of the General Assembly of the United Nations on November 15, 2000, and entered into force on December 25, 2003.⁹ It is the only international legally binding instrument that provides an agreed-upon definition of trafficking in persons (United Nations, 2000). The Palermo Protocol definition is considered to be comprehensive because it specifies what constitutes the “acts” (recruitment, transportation, transfer, harboring, receipt), “means” (threat, use of force, coercion, abduction, fraud, deception, abuse of power), and “purpose” (sexual exploitation, forced labor or services, servitude, removal of organs) of human trafficking (Clark, 2003). Palermo defines the meaning of “child” to be under the age of 18 and specifies that the means of trafficking are not relevant if the act involves a child.

Becoming party to Palermo is considered part of a nation’s effort toward meeting the minimum standards of the TVPA for tier-level rankings, and has been included as a prioritized recommendation for nations within the State Department’s TIP Report. One would hope that becoming party to the Palermo Protocol would signal an increased effort by the nation to counter human trafficking, and that increased effort would correspond to an improvement in tier ranking.

While few nations became party to Palermo in 2001, most (107) became party over the following five years (2002–2006). Since 2007, 66 countries have joined (U.S.DoS, 2020a). Improvements in tier level should be detectable among nations that signed the Protocol, especially after the first wave of endorsements ended in 2006. Figure 3 shows the tier rankings by year for each nation that became party to Palermo since 2007.

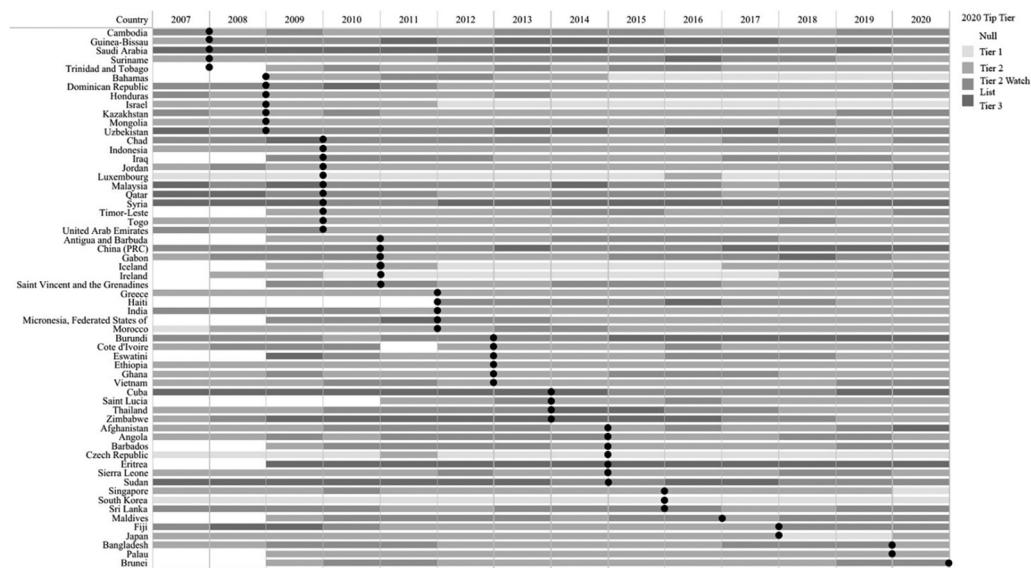


Figure 3. Parties to the Palermo Protocol 2007–2019. Since 2007, 66 countries have become party to the Palermo Protocol, 61 of which are included in the TIP Reports. The colors show the country’s tier-level ranking for each year, where the lightest gray is Tier 1, the darkest gray is Tier 3, and white (labeled Null) is a country excluded from that year’s TIP Report or designated as Special Case. The black dot represents the year the country became party to Palermo (USDoS, 2020a).

⁸There are discrepancies regarding these limits. For example, Malaysia was downgraded to Tier 3 in 2014 after four years on the Tier-2 Watch List. It is now on its third consecutive year on the Watch List again (since 2018). Additionally, Uzbekistan was downgraded in 2013 after four years on the Watch List and has been on it again since 2018.

Of the countries that became party to Palermo since 2007, 4 (8%) are currently in Tier 1, 27 (55%) are in Tier 2, 12 (24%) are on the Tier-2 Watch List, and 6 (12%) are in Tier 3. Only 21% of the nations that became party to Palermo improved their tier ranking within one year, and 5% fell in tier ranking. The remaining 74% of the signatory nations did not change tier level, which is the same rate of change as the average percent of countries moving in any given year.

If becoming party to the Palermo Protocol is meant to signify a nation's increased effort to CTIP, in most cases, it was not followed by an increased level of effort as measured by an improvement in tier level. While disappointing, this finding is consistent with recent research into global anti-slavery legislation which shows that despite near-universal adherence to international anti-trafficking norms, many nations have not transferred that commitment into domestic law (Schwarz & Allain, 2020), and that gaps persist between human-rights norms and implementation of those rights (de Felice & Graf, 2015).

Question 2: Do the efforts represented by TIP tier levels result in meaningful reductions in victimization?

In looking at the relationships between TIP tier levels and victimization rates, we compare levels of effort toward CTIP (as measured by tier-level assignments) with independent measures of victimization (as measured by national estimates of TIP prevalence). While the TVPA requires the Secretary of State to assign tier levels based on anti-trafficking *efforts*, rather than the extent of human trafficking in the nation, a logical assumption would be that nations providing stronger efforts toward CTIP, as indicated by their tier level, would achieve lower rates of TIP prevalence.

Early versions of the TIP Report included national estimates of trafficking victims. The U.S. GAO found such estimates "questionable" and noted "significant discrepancy" between the estimated and reported numbers of victims (U.S.GAO, 2006, 2007, 2011). Prevalence estimates are no longer included in the TIP reports. The State Department, however, does present global estimates of the number of victims in public statements (U.S.DoS, 2020b).

The State Department uses the definition of human trafficking presented in Article 3 of the Palermo Protocol and estimates that globally there are 25 million victims of labor and sex trafficking worldwide (U.S.DoS, 2020b). The International Labor Organization (ILO) published its first estimate in 2005 of 12.3 million persons trafficked as a minimum at any given time between 1995 and 2004. As of 2012, the ILO estimates that 20.9 million people suffer forced labor at any given point in time over the ten-year period 2002 through 2011, reporting a standard error of 1.4 million at a 68% level of confidence (ILO, 2012). The Global Slavery Index (GSI) published by the Minderero Foundation's Walk Free initiative uses a broader definition for TIP than the State Department and the ILO. The GSI estimates that globally there were 40.3 million victims of modern slavery in 2018, a decrease from their estimate of 45.8 million victims in 2016 (Walk Free Foundation, 2018, 2016). The GSI published prevalence estimates by country in 2012, 2014, 2016, and 2018. As with the State Department national estimates, the GSI national estimates have also been subject to criticism (e.g., Gallagher, 2014) and the earlier estimates (2012 and 2014) are no longer distributed, due to changes in the methodology.

The GSI estimate includes forced marriage, child marriage, and child soldiers. The State Department and ILO estimates treat these human rights abuses separately. The difference between estimates can be attributed not only to differences in scope of definition, but also to the inherent uncertainty of such estimates; specifically:

- 1) Ambiguity and differences exist in the terms human trafficking, trafficking in persons, modern slavery, slavery, slavery-like practices, etc.
- 2) Recorded victims of human trafficking generally self-identify and therefore include subjective assessments that are affected by different sociocultural norms,

⁹The first nations to sign the Protocol met in a December 2000 ceremony at the Palazzi di Giustizia in Palermo, Italy. Although the US Senate did not provide advice and consent to ratification of the Palermo Protocol until November 3, 2005, the US was one of the first signatories on December 2, 2000.

3) The population of victims is largely a hidden population and it is therefore difficult to obtain a representative sample for statistical analysis, and

4) In any given survey, the number of self-identified alleged victims is generally small, and extrapolations from small numbers have significant uncertainty.

In addition, international definitions may not be fully consistent with national definitions and the local customs and laws of a particular country. For example, “forced marriage” is prohibited through the prohibitions on slavery and slavery-like practices, including servile marriage; and “child marriage” can be considered to be “forced marriage”, as one and/or both parties by definition are not able to express free and informed consent (ILO & Walk Free Foundation, 2017). In many countries, however, parties under the age of 18 are legally allowed to marry. In the United States, for example, there is no federal law regarding child marriage, and each state has its own regulations.

The discrepancies in definitions and inherent ambiguity in victim identification can make estimating prevalence complex and subjective. TIP is notoriously difficult to measure and quantify. While methods that attempt to do so are imperfect, they still have merit and, as we will see, statistical significance with a nation’s CTIP programs and efforts.

As an example of the relationship between the TIP tier rankings and estimates of prevalence, Figure 4 shows the most recent GSI prevalence estimates (2018) grouped by TIP tier rankings. The distribution shows that Tier-1 nations generally have lower estimated prevalence rates, and prevalence rates generally worsen as tier levels worsen. Among Tier-1 nations, the median prevalence rate is 2.0 victims per 1,000 population. The median prevalence rates are 4.5 for Tier 2, and 5.7 for the Tier-2 Watch List. In Tier 3, the median prevalence rate is 10.6.

The overall trend is consistent with the assumption that nations with stronger efforts toward CTIP (as measured by the TIP tier rankings) achieve lower rates of TIP (as measured by the GSI index). Although we are not assuming causal relationships, the correlation between stronger TIP tier rankings and lower estimated rates of TIP is a significant statistical relationship, regardless of its cause. As

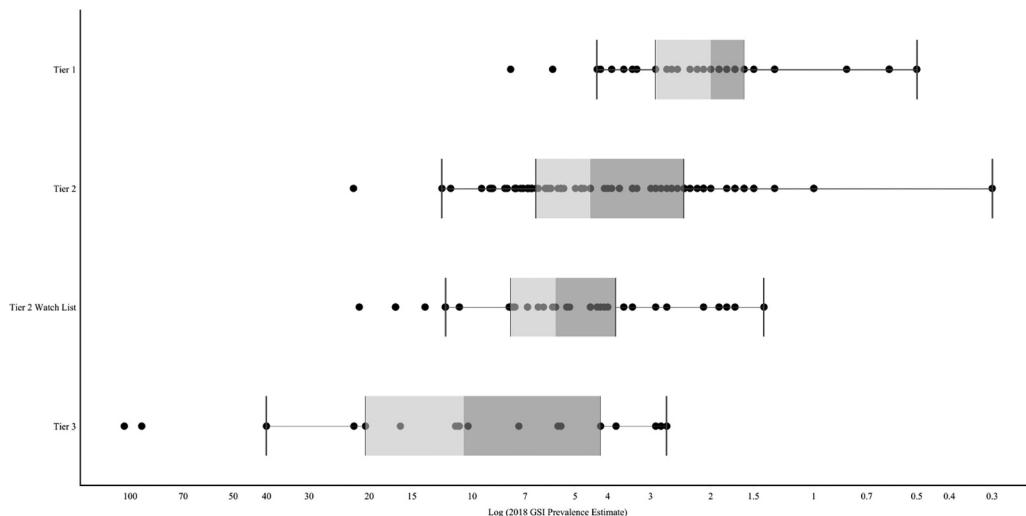


Figure 4. State Department TIP Tier Rankings and GSI Prevalence Estimates. GSI 2018 Estimates of TIP prevalence for each nation grouped by TIP tier assignment. In this box and whisker plot, each nation, represented as a dot, is plotted by its prevalence rate, where prevalence is defined as the estimated number of victims per 1,000 population. The median is marked by the change of shading in the box. The lower and upper hinges are the medians of the first and second halves of the data, roughly representing the 25th and 75th percentiles. The whiskers show the furthest data points within 1.5 interquartile ranges of the hinges. The United States is identified for reference. To increase the fidelity of the prevalence estimates and validity of the statistical representation, we have used the logarithm of the most recent GSI prevalence estimate. Prevalence rates decrease along the x-axis. The trend is consistent with the assumption that nations providing stronger efforts towards CTIP, as measured by the TIP tier rankings, have lower rates of TIP (as measured by GSI prevalence estimates).



Table 1. Factors statistically evaluated against tier levels of the US State department TIP report. Percentage of variance in TIP tier-level rankings explained by metrics presented in the TIP Reports, selected economic and governance measures, and independent estimates of TIP prevalence. Data were normalized based on their distribution for the statistical analysis. Polarity of the correlation was adjusted for consistency.

Indicator Category	Indicator	Source	Variance (%) Tier-Ranking Explained 2009-2020		Variance (%) Tier-Ranking Explained 2020	Normalization Method	Polarity of Correlation
			2009	2020			
Governance	Democracy Index	Economist Intelligence Unit	58.2	35.7	linear	negative	
Governance	Freedom Index	Freedom House	51.0	35.1	linear	negative	
Governance	Fragile-State Index	Fund for Peace	47.5	28.4	linear	positive	
Governance	Economic-Freedom Index	Heritage Foundation	45.9	24.3	linear	negative	
Governance	Corruption-Perception Index	Transparency International	43.7	27.7	linear	negative	
Governance	Ease-of-Business Index	World Bank	39.4	18.4	linear	negative	
Governance	Press-Freedom Index	Reporters Without Borders	37.7	25.0	linear	positive	
Economic Law	GDP per capita	World Bank	25.9	16.1	logarithmic	negative	
Economic Law	GDP PPP	World Bank	22.7	12.7	logarithmic	negative	
Economic Law	Poverty Rate	World Bank	10.9	3.2	logarithmic	positive	
Economic Law	Prosecutions/capita	TIP Report	8.9	11.2	logarithmic	negative	
Enforcement Law	Identified-Victims/capita	TIP Report	6.5	9.0	logarithmic	negative	
Enforcement Economic	GINI Coefficient	World Bank	4.4	0.9	linear	negative	
Enforcement Economic	Gross National Income Growth	World Bank	0.6	0.0	linear	positive	
Enforcement Economic Law	Unemployment Convictions/Prosecution	World Bank TIP Report	0.0	0.0	square-root logarithmic	positive negative	
<i>Independent estimates of prevalence from the Global Slavery Index (GSI) 2016 and 2018 reports</i>							
TIP Prevalence	2018 GSI prevalence	Global Slavery Index (2018)	35.2	26.4	logarithmic	positive	
TIP Prevalence	2016 GSI prevalence	Global Slavery Index (2016)	41.9	21.3	logarithmic	positive	

demonstrated demonstrated in [Table 1](#) the correlations between GSI prevalence estimates and either the 2020 TIP tier rankings, or decade-average tier rankings are many times larger than the 99% confidence level for nonrandomness. As demonstrated in subsequent sections, however, other factors show stronger relationships; and at the national level, variables such as war, natural disaster, and disease can become overriding factors.

Question 3: What is the Role of Law Enforcement in Reducing TIP?

Since 2004, law-enforcement metrics on prosecutions, convictions, and identified victims have been reported in the Annual TIP Reports ([Trafficking Victims Protection Reauthorization Act of 2003](#)). These data are compiled at the regional level and are included in many of the individual nation narratives. The 2020 TIP report, for example, presented totals of 11,841 prosecutions, 10,847 convictions, and 118,932 identified victims ([U.S.DoS, 2020b](#)). At the same time, the State Department presented an estimate of 25 million victims ([U.S.DoS, 2020c](#)). A comparison of the U.S. State Department's estimate of victims compared to the identified victims in the 2020 TIP report suggests that less than 0.5% (1 in 200) of the globally estimated victims of TIP have been identified.

Nevertheless, law-enforcement metrics reported in the TIP Reports are presented as evidence that government efforts stemming from the Palermo Protocol are working ([U.S.DoS, 2019](#)). Others have argued that viewing TIP as a “law and order” problem requiring an aggressive criminal justice response has resulted in hundreds of millions of dollars being invested with no appreciable reduction in the absolute number of people trafficked worldwide ([Chuang, 2006](#)). Others express concern that the emphasis on prosecution data means the socio-economic settings that enable trafficking in the first place are being ignored ([U.S.CRS, 2019](#)). The underlying debate is one that has been taking place in criminology theory for decades: What is the role of prosecutions in reducing crime?

To assess law enforcement’s role in CTIP, we first evaluate the relationship between the law-enforcement metrics reported in the TIP Reports and TIP tier assignments ([Figure 5](#)). We next look at the relationship between prosecution rates and changes in victimization rates, using independent measures of prevalence ([Figure 6](#)). For each nation in [Figures 5 and 6](#), we normalized the data to the population size and applied the prevalence estimates of the GSI ([Walk Free Foundation, 2018](#)) to the estimated size of the TIP victim population.¹⁰ In an effort to account for possible time-delays and variations in justice systems, we used the most recent three-year average of yearly prosecutions scaled by population, the three-year average of convictions scaled by prosecution, and the three-year average of yearly number of identified victims scaled by population.

[Figure 5](#) illustrates that the law-enforcement metrics reported in the TIP Reports generally trend with TIP tier levels, but the relationship is not strong. The weak relationship provides little support for the concern that TIP tier rankings are strongly influenced by the reported law-enforcement metrics. However, the remaining, and more relevant question, is whether law enforcement is an effective means for reducing TIP. To address this question, we use the more direct analysis of comparing changes in the reported prosecutions with changes in the number of victims. In other words, do increases in prosecutions result in decreases in TIP?

In our analysis, we have used two different data sets that relate to human trafficking – one is the numbers of victims that are reported in the TIP reports (these are the numbers of victims identified “rates of victim ID”) ([Figure 5c](#)) and the other is the independent measures of TIP from the Walk Free Foundation’s Global Slavery Index. In the case of hidden crimes (such as TIP, but also including, for example, domestic violence and hate crime) we might expect to see victim identification increase at the same time as prosecution rates. A simultaneous increase between those two metrics could reflect that government and law-enforcement attention is increasing on the issue. We do see such a relationship, albeit weak, in [Figure 5c](#) and [Figure 9](#). We would, however, also expect to see a reduction in the estimated amount of criminal activity.

¹⁰The data distribution is similar for when the reported prosecutions, convictions, and identified victims are normalized to the nation’s population and to the estimated size of the number of victims in the nations, as derived from the Global Slavery Index prevalence estimates. Accordingly, we present only one of these figures in the paper.

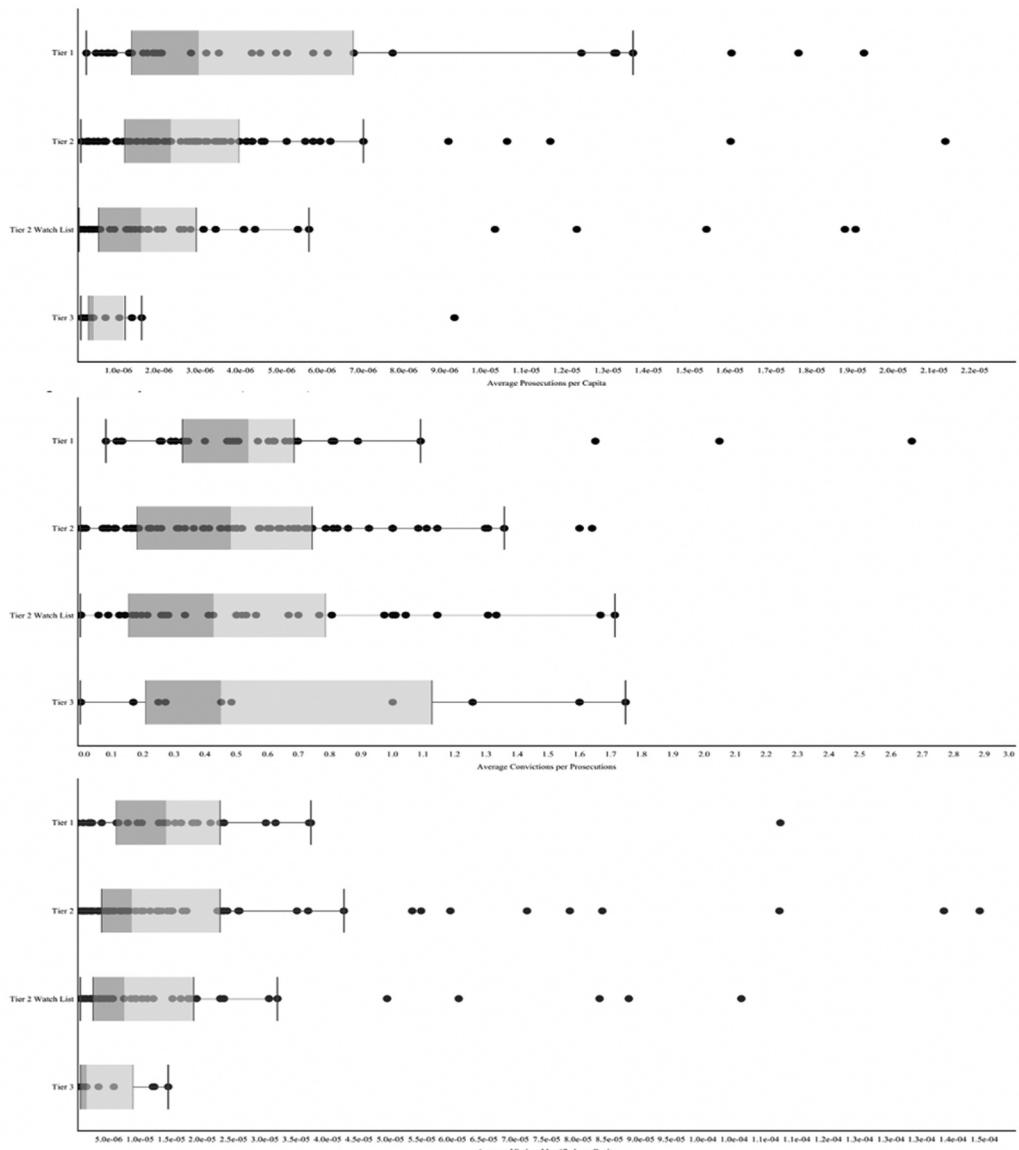


Figure 5. Prosecutions, Convictions, and Identified Victims by Tier Level. The box and whisker plot shows for each nation, the relationship between the law-enforcement metrics reported in the TIP Reports and the tier-level assignments. To make the figure more legible, two outlier countries with high rates of prosecutions per capita were excluded from the figure: Palau and the Federated States of Micronesia, both Tier 2. Three outlier countries with very high rates of convictions per prosecutions were excluded from the figure (although included within the statistical analysis): Ethiopia (Tier 2, with 751 yearly convictions on average and 10 yearly prosecutions on average for a ratio of prosecutions per conviction of 75.1), Suriname (Tier 2, with 9 yearly convictions on average and 1.3 yearly prosecutions on average for a ratio of 7), and Hong Kong (Tier-2 Watch List, with 6 yearly convictions on average and 1.3 yearly prosecutions on average for a ratio of 4.8). Three countries with high rates of victims identified per capita were also excluded: Palau (Tier 2), Saint Maarten (Tier 2), and Aruba (Tier-2 Watch List).

The analysis presented in Figure 6 is the relationship not between prosecutions and the number of reported victims, but rather the relationship between prosecutions and progress toward reducing the size of the TIP problem. In Figure 6, we are testing the hypothesis that over time, nations that devote effort toward decreasing TIP through increased prosecutions (*averaged* over 2015 to 2018 to account

for judicial time-lags) achieve decreases in the size of the problem within their country (change in estimates of TIP between 2016 and 2018).

If increased prosecutions resulted in decreases in TIP prevalence, we would expect to see the data points in [Figure 6](#) trending from the upper right to the lower left. In other words, we would expect to see TIP decrease as prosecution rates increase. The data does not exhibit such a relationship. As presented in the analytical conclusion section of this paper, our statistical analysis reveals that nation-by-nation variations in 2015–2017 prosecutions explain 0.3% of the variance in the change in TIP between 2016 and 2018 at the 51% confidence for nonrandomness. While additional prevalence estimates and time series would improve the analysis, the lack of correlation over this time period challenges the narrative that increasing prosecutions will decrease TIP.

Question 4: To what extent do economic and governance factors influence TIP tier levels?

Many of those who have criticized the focus on “law and order” metrics in the TIP tier reports, have emphasized the need for a more holistic CTIP strategy that addresses the societal vulnerabilities that lead to TIP in the first place (e.g., Bales, 2007; Gallagher & deBaca, 2018; Wooditch, 2011).

One approach to determining the extent to which tier rankings may be associated with national characteristics not directly related to TIP is to evaluate national economic development and governance measures against TIP tier levels. For this analysis, we use indicators that measure and score each country’s economy and governance.

In [Figures 7](#) and [8](#) each dot represents a nation, and the nations are grouped by their tier ranking. The sample economic indicators presented in [Figure 7](#) are: (1) Gross Domestic Product Purchasing Power Parity per capita (World Bank Group, 2020c), (2) Gross National Income Growth (World Bank Group, 2020d), (3) Gross Domestic Product per capita (GDP PPP) (World Bank Group, 2020b), (4) Poverty Rate (World Bank Group, 2020e), (5) Unemployment Rate (World Bank Group, 2020f), and, (6) GINI Index (World Bank Group, 2020d).

The sample governance indicators presented in [Figure 8](#) are: (1) Democracy Index (Economist Intelligence Unit, 2019), (2) Ease of Doing Business (World Bank Group, 2020a), (3) Press Freedom Index (Reporters Without Borders, 2020), (4) Corruption Perception Index (Transparency International, 2019), (5) Freedom in the World (Freedom House, 2020), (6) Fragile State Index (Fund for Peace, 2020), and, (7) Economic Freedom Index (Heritage Foundation, 2020).

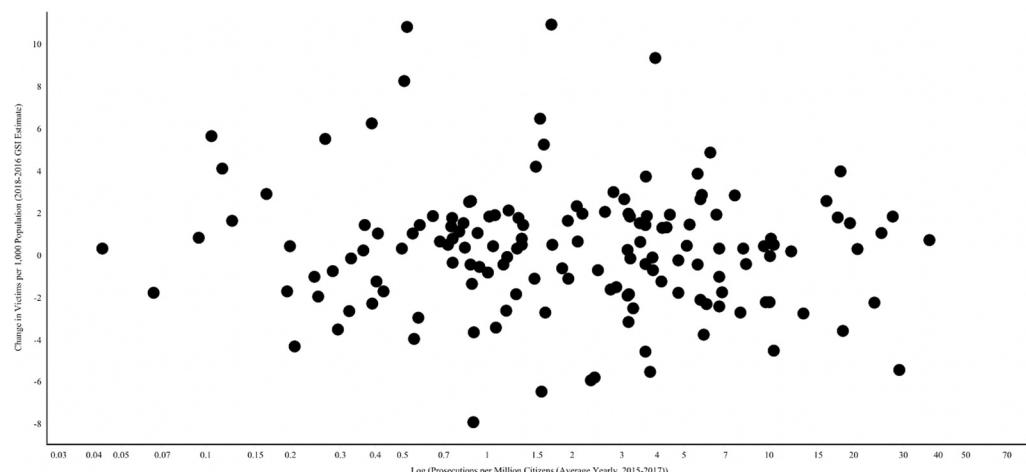


Figure 6. Relationship Between Prosecutions and Changes in TIP. Each dot represents a nation. The prosecution rates are normalized to the nation’s population and averaged from 2015–2017. The change in TIP (estimates per 1,000 population) are calculated using the difference between the 2016 and 2018 GSI estimates of prevalence.

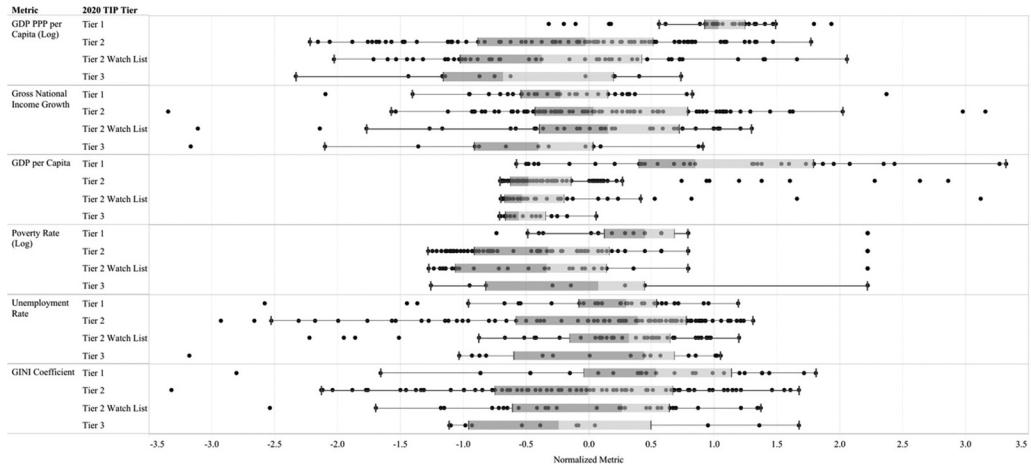


Figure 7. Economic Indicators by TIP Tier. Each dot represents a nation plotted against its economic indicator score. The nations are grouped by TIP tier level. The indicators are normalized to a common scale and adjusted so that larger x values indicate “better” performance.

To produce plots of economic and governance indicators, such that all the indicator values are on a common scale, we normalize the data using deviations from the mean. Indicators that do not demonstrate a normal (Gaussian) distribution across nations are first adjusted using the logarithm of the value, appropriate for logarithmic distributions (e.g., GDP PPP), or in some cases, using the square root of the value, appropriate for chi-squared distributions (e.g., unemployment), before applying the statistical analysis. For the indicators where a lower score is “better” (e.g., Poverty Rate, Corruption Perception Index), the normalized values are multiplied by negative one, flipping the curve over the y-axis so that all indicators can be plotted on the same graph with larger x values indicating “better” performance.

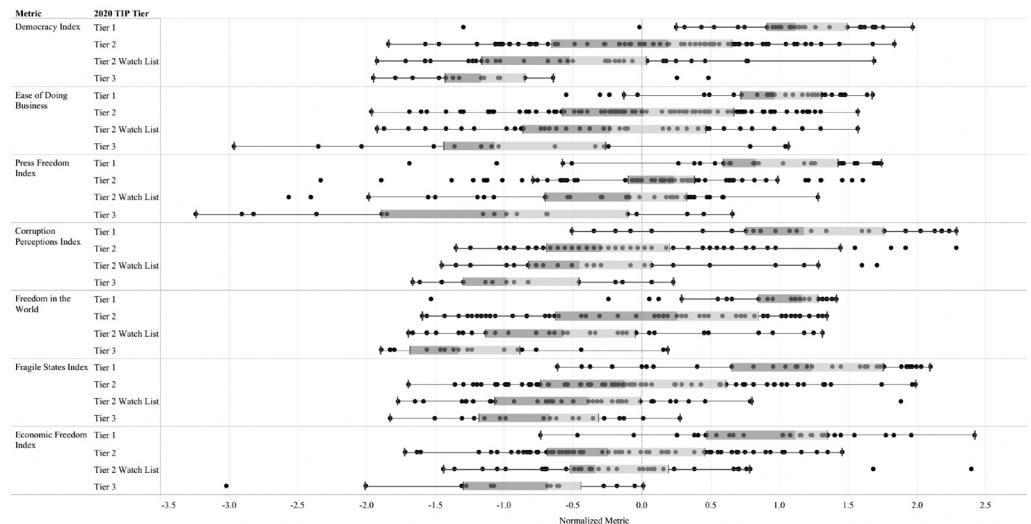


Figure 8. Governance Indicators by TIP Tier. Each dot represents a nation plotted against its governance score. The nations are grouped by TIP tier level. The indicators are normalized to a common scale and adjusted so that larger x values indicate “better” performance.

Figure 7 shows that countries with a higher GDP per capita and lower levels of income inequality (measured by the GINI Coefficient) are more often Tier 1 than Tier 3. The governance indicators shown in Figure 8 display an even stronger relationship with tier level. For example, the median Democracy Index value (a 0–100 score) is 80 for Tier-1 countries, 59 for Tier-2 countries, 43 for Tier-2 Watch List countries, and 29 for Tier-3 countries, indicating the importance of governance in a country's efforts to combat human trafficking.

Our analysis (Figures 7 and 9, and Table 1) shows there are correlations between poverty and TIP tier level (10.9% variance explained, which is twice the 99% confidence for nonrandomness). However, governance indicators correlate with the TIP tier levels more strongly than either economic indicators or law-enforcement indicators (Figure 9). For example, the democracy index explains 58.2% of the variance in the TIP tier rankings, far greater than poverty (at 10.9%), and the highest law-enforcement indicator (prosecutions at 8.9%).

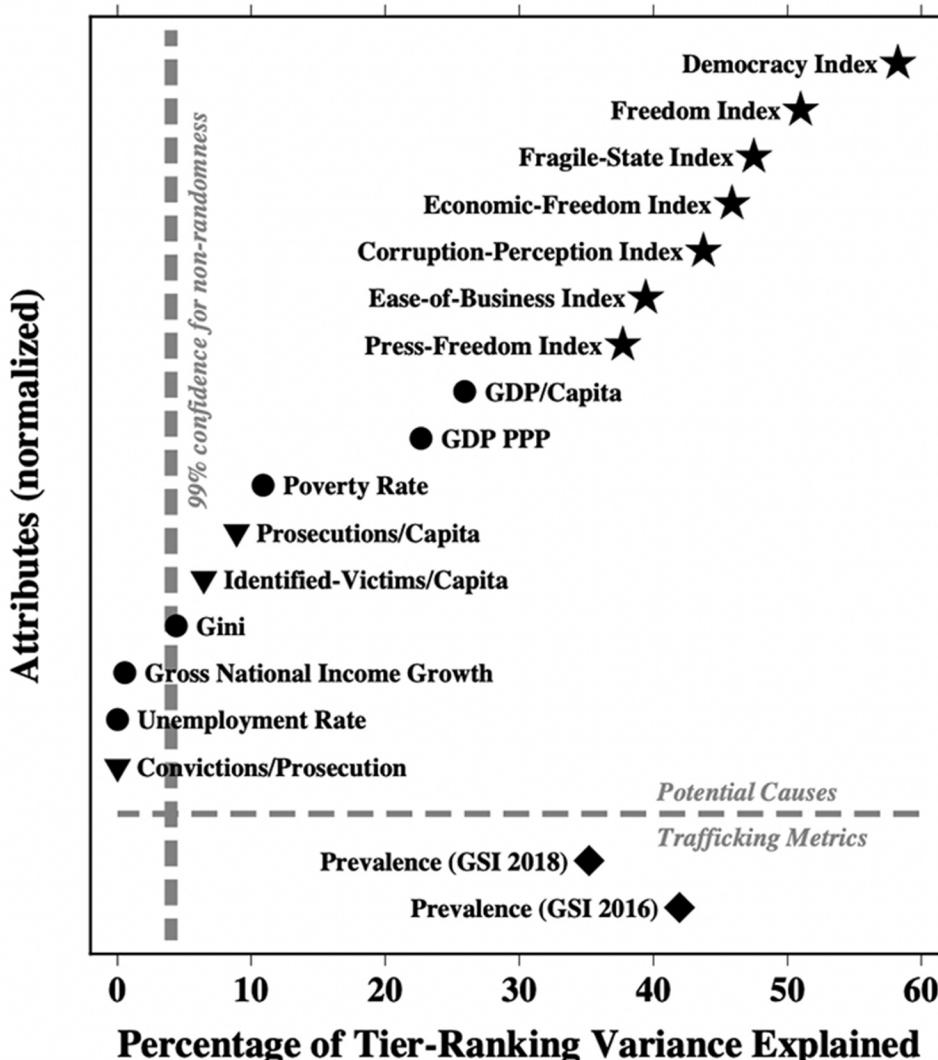


Figure 9. Percentage of Tier-Ranking Variance Explained by Various Measures.

Our sample of economic metrics traditionally associated with TIP (e.g., unemployment, poverty, etc.) are secondary to our governance measures in explaining efforts toward countering TIP, as represented by tier levels, and TIP prevalence rates. The traditional economic hypothesis that TIP arises from elevated poverty and unemployment appears to be an oversimplification. The broader question of why TIP and TIP tier rankings are more reflective of governance and social issues than economic factors is an important area of research (e.g., McGregor McGregor et al., 2013; Cho, 2015), but its full resolution is beyond the scope of this analysis. The strong relationship between governance metrics and tier assignments, however, does provide compelling support for those who have called for CTIP measures to include the promotion of democracy and individual rights (e.g., Landman & Silverman, 2019; Vidwans & Jamal, 2019).

At the broader international scale, it must also be recognized that open, democratic societies may still condone or export conditions of exploitation through transnational business practices. Many nations provide human rights protections for their own citizens but lose sight of their internal standards internationally. Legal protections for migrant workers, for example, are not yet reflected in TIP tier rankings; and international factors are also not accounted for within the Global Slavery Index prevalence estimates. Such shortfalls will perhaps be addressed in the future through revisions to the minimum standards of the TVPA.

Analytical Summary

In the previous sections, we examined relationships between tier-level assignments through time and various factors related to TIP. In this section, we summarize the analysis by quantifying the relationships in probabilistic terms. We use singular-value decomposition to identify the relative weightings among these multiple inter-related attributes across our matrix consisting of tier rankings for 12 years and 189 nations. In doing so, we estimate the relative importance to TIP tier rankings of the law-enforcement measures reported in TIP reports (reported prosecutions, convictions and identified victims), independent measures of trafficking prevalence (GSI prevalence estimates), and indicators intended to capture the nation's economic and governance conditions (e.g., indices of economics and governance). We recognize the limitations and political elements associated with the TIP tier rankings, and the weaknesses in the GSI prevalence estimates. We do not assume that correlations represent direct causal relations. Instead, we assume an ecosystem approach that treats all attributes as inter-dependent, with statistical correlations that measure the strength of the linkages.

Figure 9 and Table 1 summarize the percentage of variance among the TIP tier levels that can be explained by each of the factors analyzed. Table 1 includes the method of normalization applied to the data set before removing the mean and scaling to unit-average variance. Similar to Figures 7 and 8, for the indicators where a lower score is "better" the normalized values are multiplied by negative one so that larger values indicate "better" performance. Our null hypothesis is that the attributes of each nation are independent of the attributes of other nations. Assuming that nations are uncorrelated, the 99% confidence limit for a nonrandom correlation occurs for R-squared values of about 0.05. This means that an attribute can be considered statistically significant even though it explains only 4–5% of the nation-by-nation variance. Three metrics presented in this analysis are found to be statistically insignificant to the TIP tier levels. Two of them are economic measures: Gross National Income Growth, and Unemployment Rate. The third is the law-enforcement metric Conviction Rate (Figure 9).

Average tier rankings in the 2009–2020 TIP reports correlate best with national attributes that relate to governance (star-shaped symbols, Figure 9). The highest correlation involves the Democracy Index, accounting for 58% of its nation-by-nation variance among the 167 nations with index values. Other governance indicators correlate almost as strongly with tier rankings, but the variance explained by them tends to overlap with that explained by the Democracy Index. One of the indicators that augments the explained-variance significantly is the Economic Freedom Index; a joint regression of Democracy Index and the Economic Freedom Index explains 70% of the nation-by-nation variance in

the average tier rankings in the 2009–2020 TIP reports. Adding other national attributes to the regression does not increase this percentage significantly.

Many economic attributes (circular symbols, Figure 9) have relatively weak influence on tier ranking. The Poverty Rate explains only 11% of the tier rankings and the Unemployment Rate, Gross National Income Growth, and Convictions/Prosecution Rate are statistically insignificant. In addressing the underlying causal relationships, our sample of economic indicators suggests that the traditional economic theory of TIP being the result of poverty and unemployment may be an oversimplification.

The TIP tier levels are meant to measure a nation's efforts toward meeting the minimum standards of the TVPA. While special circumstances may apply to various nations at various times, the overall goal is to reduce the number of individuals who fall victim to human trafficking. Accordingly, one would expect that over time, nations that apply more effort would achieve better results than those that apply lesser effort. The GSI prevalence estimates vary greatly from nation to nation, with statistics similar to a log-normal distribution. After logarithmic scaling and demeaning, the 2016 and 2018 prevalence estimates explain 42% and 35%, respectively, of the nation-by-nation variance of the average 2009–2020 TIP Rankings (Figure 9).¹¹

Implications for Policy Makers

For policy-makers who wish to combat TIP effectively, the results of our study offer several insights. Some previously hypothesized relationships are confirmed, others are called into question, and a few unexpected relationships emerged. The unexpected relationships are the most intriguing, as they lead to a more sophisticated understanding that, in turn, offers new opportunities for more nuanced and effective approaches.

Changes to the TIP tier-ranking system, and requirements to report prosecutions, convictions, and identified victims, have been implemented through the Congressional reauthorization of the TVPA. These legislative efforts, designed to motivate nations to increase their CTIP efforts, have almost certainly been effective for specific nations at specific times. Similarly, an individual nation's decision to become party to the Palermo Protocol has, at times, signaled a genuine increased commitment to addressing TIP. There are compelling anecdotes suggesting these tools have been effective. Anecdotes, however, are best used as illustrations supporting analysis, not as substitutes for analysis, because they are not always representative of the overall circumstances.

Using attributes for 189 nations and averaging across 12 years of TIP reports to obtain stable assessments, our analysis reveals that the overall impact of changes to tier-ranking requirements and encouraging nations to become party to the Palermo Protocol has been ambiguous. While such diplomatic approaches promote an atmosphere of increased awareness and support for CTIP activities, their role in substantially motivating countries to increase CTIP efforts, as measured by changes in tier levels, is weak. The number of nations at each tier level has remained stubbornly constant over the last decade. Since 2009, 76% of countries have not changed tiers in any given year, while approximately equal proportions (12%) of countries either improved or worsened by one tier level. For nations that become party to the Palermo Protocol, only 21% improved their tier level the following year.¹²

It may be surprising to some that there is only a weak relationship between the law-enforcement metrics reported in the TIP reports (reported prosecutions, convictions, and identified victims) and the TIP tier rankings. In addition, nation-by-nation variation in prosecution rates do not convincingly

¹¹If the logarithmic-prevalence estimates for the two GSI surveys are combined, the correlation is even higher, explaining nearly 49% of the tier-ranking variance. This suggests that the GSI prevalence estimates have high uncertainties, but relatively small biases, so that averaging independent surveys may increase the overall accuracy of the prevalence estimate.

¹²At the same time, considerable changes have occurred in the landscape of CTIP over time. Tier rankings in successive years of the TIP report typically correlate with R^2 values of 0.75, but the correlations decrease as the time interval increases. Correlation between the 2009 and 2020 tier rankings has $R^2 = 0.32$.

correlate with decreases in estimates of TIP prevalence. Countries that report more prosecutions tend to report fewer identified victims the following year, but the relationship is disappointingly weak. Reported prosecutions can only explain about 5% of the variance of the reported identified victims. The relationship between prosecutions and independent estimates of *reduction* in prevalence from the GSI is even weaker. Nation-by-nation variations in prosecutions during 2015–2017 explain 0.3% of the change in estimated prevalence between 2016 and 2018, at the 51% confidence for nonrandomness, which is statistically insignificant. While prosecutions have an important role in the overall CTIP strategy, from these data, there is no evidence that prosecutions result in meaningful reductions in TIP.

While this analysis is not presented as exhaustive, it is sufficiently representative to call into question some of the prevailing narratives surrounding TIP. Accepting that the TIP tier levels are designed to measure each nation's efforts toward meeting the minimum standards of the TVPA, the apparent weak relationship between tier levels and traditional global metrics of CTIP effort – reported prosecutions, reported convictions, reported identified victims, and becoming party to the Palermo Protocol, is disappointing. Additionally, it is surprising that our sample of economic metrics traditionally associated with TIP (e.g., unemployment, poverty, etc.) are secondary to our governance measures in explaining TIP tier rankings. The traditional economic hypothesis that TIP arises from elevated poverty and unemployment may be an oversimplification. On the other hand, the strong predictive nature of governance metrics with tier assignments provides support for those who have called for CTIP measures to include the promotion of democracy and individual rights (e.g., Vidwans & Jamal, 2019).

What is perhaps the most compelling result is the high correlation of TIP tier levels and the Democracy Index. The Democracy Index explains 58% of the variance; the joint regression of the Democracy Index and the Economic Freedom Index explains 70% of the nation-by-nation variance in the average tier rankings in the 2009–2020 TIP reports. From an ecosystem perspective, the correlations are consistent with the expectation that nations with strong democratic institutions are more likely to resist the descent of their marginalized subpopulations into forced labor or sex-trafficking, and that nations where entrepreneurs can more easily pursue a legal path to profit are less tolerant of businesses that depend on the coerced labor of their fellow citizens. While no single attribute qualifies as the independent variable, our analysis affirms that nations can best address TIP if their governance is more democratic, their press less fettered, their business environment more open, and their societal institutions are strong.

The strong relationship of TIP to the Democracy Index and the Freedom of Press Index (Figure 9) resonates with the Nobel Prize-Winning Economist, Amartya Sen's observation that there has never been a famine in any independent and democratic country with a relatively free press (Sen, 1999). Sen's observation has been extended to natural disasters, finding that the Democracy Index is a leading predictive indicator of the human impact of natural disasters (van der Vink et al., 2007). The strong relationship between tier levels and indicators of governance suggests that investments in democracy, governance, and human rights are also investments in CTIP.

The most exciting and actionable finding for the development of more effective CTIP strategies is the discovery of the multiple independent linkages revealed by the data. These independent linkages indicate multiple causal relationships; and the multiple causal relationships have different relative priorities in different locations. This finding explains why universal solutions have had frustratingly little success in reducing TIP. Causal relationships are seldom direct, and the circumstances that foster vulnerable subpopulations vary from location to location. Just as there is no single cause for TIP, there is no single solution.

So how do we move forward in developing more effective CTIP strategies using the insights from this analysis? The short answer is that we adopt a different approach – an ecosystem approach similar to what has been used so effectively for crime reduction.¹³ By identifying the characteristics of

¹³The stability of many governance indices over time suggests that fundamental changes made in social ecosystems should be sustainable.

ecosystems that support TIP, we can formulate geographically targeted interventions to disrupt that system, and mitigate TIP in a more cost-efficient and effective manner. Ecosystem approaches have been proposed for addressing the sex trafficking of children (Finigan-Carr et al., 2019) and for building resilience to trafficking within communities (Gardner et al., 2020). Adopting an ecosystem approach for addressing TIP is consistent with the highly successful criminology theory of Situational Crime Prevention (SCP), and is focused toward the “Prevention” part of the “3P” paradigm for addressing TIP.

SCP focuses on the criminal setting and is different from most criminological approaches as it begins with an examination of the circumstances (“ecosystems”) that allow particular types of crime. By gaining an understanding of these ecosystems, mechanisms are then introduced to change the relevant ecosystems and reduce the opportunities for crime. SCP focuses not on apprehending criminals, but on reducing criminal opportunities. SCP is considered an essential part of the United Nations Economic and Social Council’s Guidelines for the Prevention of Crime (Resolution 2002/13) (United Nations Office on Drugs and Crime, 2010).¹⁴

While our analysis is not exhaustive, we feel it provides compelling evidence for an ecosystem approach to CTIP, consistent with SCP. In addition, it demonstrates the opportunity for further quantitative studies to tease out more sophisticated understandings of TIP, and the critical linkages among its array of underlying causal relationships.

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¹⁴Research has largely demonstrated that SCP does not necessarily lead to crime displacement (Clarke, 1995; Hesseling, 1994).

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ANNEX 4. CHILD MARRIAGE, HUMAN TRAFFICKING AND GENDER INEQUALITY: AN EMPIRICAL ECOSYSTEM ANALYSIS FOR BANGLADESH

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Keywords: child marriage, trafficking in persons, human trafficking, TIP, CTIP, modern slavery, gender inequality, female empowerment, human rights

ABSTRACT

While Bangladesh has among the highest child marriage rates in the world, it also has the opportunity to take a leadership role in ending the practice. The nation has enacted legislation prohibiting child marriage and closed the education gap between females and males. Notwithstanding these accomplishments, most girls marry before the minimum legal age, and illegal dowry payments remain common. While not all child marriage is currently classified as human trafficking, we demonstrate that child marriage and human trafficking share a common sociocultural ecosystem. We first evaluate the relative role of traditional factors predictive of child marriage: poverty levels, education, and rural vs. urban residence. We then explore the hypothesis that in patriarchal societies, female empowerment and gender inequality can be differentiated. Our analysis suggests that increases to female empowerment have been successful, gender inequality remains persistent. Future efforts to reduce child marriage would benefit from complementing female empowerment with efforts targeted at reducing gender inequality, specifically the attitudes of males. In addition to promoting further reductions in child marriage, reducing gender inequality will likely also benefit economic development, democratic governance, resistance to extremism, and the protection of human rights.

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I. INTRODUCTION: CHILD MARRIAGE AND TRAFFICKING IN PERSONS (TIP)

In Act I, scene ii of Shakespeare's Rome and Juliet, we learn that Juliet is thirteen. While girls could legally marry in Elizabethan England at age 12 with parental consent, Juliet's father is concerned about the adverse effects of early marriage – “too soon marred are those so early made” (I.ii.13).

In the ensuing four centuries, there has been remarkably little progress in resolving the debate over the suitable age of marriage, the age of free and informed consent, and how to balance cultural norms against potential violations of human rights. In the United States, for example, many states have what are termed “Romeo and Juliet” laws. These laws attempt to preserve the freedom of young couples to engage in loving relationships while simultaneously protecting children from predatory environments. The “Romeo and Juliet” laws are perhaps an unintentional allegory for child marriage. The Shakespearean play, often presented as a love story, is a tragedy in which a three-day romance results in the death of six people.

Attempts to address “child marriage” and “child, early, and forced marriage” are interwoven with Trafficking in Persons through a fabric of international agreements, domestic laws, and cultural traditions that contain different definitions on the age of a child, the minimum age of marriage, the age of free and informed consent, and the factors that constitute special circumstances. There is general agreement that trafficking and child marriage intersect when marriage is used both in conjunction with force, fraud, coercion, or abuse of power, and as a means to subject spouses to conditions of slavery, often in the form of domestic or sexual servitude (e.g., UNODC, 2020). When applied to different social norms, however, the definitions of these terms and the description of circumstances contain sufficient ambiguity to create inconsistencies regarding enforcement and even interpretation.

At the international level, child marriage can be considered a violation of human rights under a series of linked international agreements to which Bangladesh is party:

- 1) The United Nations Universal Declaration on Human Rights (UDHR) states as Article 16 (2) “Marriage shall be entered into only with the free and full consent of the intending spouses” (United Nations, 1948).
- 2) The Convention on Consent to Marriage, Minimum Age for Marriage, and Registration of Marriagesⁱ refers in its preamble to UDHR Article 16 (2), reaffirms the consensual nature of marriages (Article 1), requires the parties to establish a minimum marriage age by law (Article 2)ⁱⁱ, and requires parties to ensure the registration of marriages (Article 3) (United Nations, 1964).
- 3) The non-binding recommendation accompanying the Convention, “Recommendation on Consent to Marriage, Minimum Age for Marriage and Registration of Marriages” recalls Article 2 of the Supplementary Convention on the Abolition of Slavery, the Slave Trade, and Institutions and Practices Similar to Slavery and specifies (Principle II) that any minimum age “shall not be less than fifteen years of age” except “for serious reasons, in the interest of the intending spouses” (United Nations, 1965). The exception for undefined “serious reasons” makes enforcement difficult.

It can also be argued that child marriage is a “practice similar to slavery” under the United Nations Supplementary Convention on the Abolition of Slavery, the Slave Trade, and Institutions and Practices Similar to Slavery (United Nations, 1956). Although child marriage is not specifically addressed in the

convention (and no “suitable” minimum age is specified), child marriage is implicitly prohibited through article I(C), article I(D), and article 2.

- Article I(C) prohibits a woman to be promised or given in marriage without the right to refuse.
- Article I(D) prohibits “Any institution or practice whereby a child or young person under the age of 18 years, is delivered by either or both of his natural parents or by his guardian to another person, whether for reward or not, with a view to the exploitation of the child or young person or of his labour.”
- Article 2 states “With a view to bringing to an end the institutions and practices mentioned in article I (c) of this Convention, the States Parties undertake to prescribe, where appropriate, suitable minimum ages of marriage, to encourage the use of facilities whereby the consent of both parties to a marriage may be freely expressed in the presence of a competent civil or religious authority, and to encourage the registration of marriages.”

The United Nations Sustainable Development Goal (SDG) 5 is to achieve gender equality and empower all women and girls. Target 5.3 for that goal is to “eliminate all harmful practices, such as child, early and forced marriage and female genital mutilations.” To measure progress towards target 5.3, the United Nations uses indicator SDG 5.3.1, “the proportion of women aged 20–24 years who were married or in a union before age 15 and before age 18” (United Nations Sustainable Development Goals, 2015).

The United States Government generally follows the definition of Trafficking in Persons (TIP) contained in the Protocol to Prevent, Suppress and Punish Trafficking in Persons Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime, informally known as the Palermo Protocol.ⁱⁱⁱ The Palermo Protocol is the only international legally binding instrument that provides an agreed-upon comprehensive definition of trafficking in persons (United Nations 2000). The definition (Article 3(a)) is considered to be comprehensive because it specifies what constitutes the “acts” (recruitment, transportation, transfer, harboring, receipt), “means” (threat, use of force, coercion, abduction, fraud, deception, abuse of power), and “purpose” (sexual exploitation, forced labour or services, servitude, removal of organs) of human trafficking (Clark, 2003). It also defines the meaning of “child” as any person under the age of eighteen (Article 3(d)) and specifies that means are not relevant if the act involves a child (Article 3(c)).

The US State Department Annual Trafficking in Persons (TIP) Reports reference child marriage as a contributing factor to girl’s vulnerability to exploitation. They do not, however, consider it a form of human trafficking and do not include child marriage in their calculation of TIP victims. Some argue that if the State Department did consider child marriage as human trafficking and included measures to address it within their prioritized recommendations, governments would take it more seriously (Redfern, 2019).

In 2017, the International Labour Organization (ILO) began counting forced marriage in their slavery statistics (ILO, 2017) under the general recommendation that “child marriage is considered to be a form of forced marriage, given that one and/or both parties have not expressed full, free and informed consent” (Article VI.B.20, CEDAW, 2014). The recommendation, however, contains the caveat that “marriage of a mature, capable child below 18 years of age may be allowed in exceptional circumstances, provided that the child is at least 16 years of age and that such decisions are made by a judge based on legitimate exceptional grounds defined by law and on the evidence of maturity, without deference to culture and tradition” (CEDAW, 2014).

In Figure 1, each dot represents a nation. The Child Marriage Rates U18 on the vertical axis are estimates of the percentage of females (aged 15-49) ever married, divorced or in an informal union before age 18 (UN Dept of Economic and Social Affairs, 2017, UN World Marriage Data, 2017).^{iv} The GSI Prevalence 2018 Estimate on the horizontal axis is the Walk Free Foundation’s Global Slavery Index (GSI) estimate of the prevalence of “modern slavery” within each country (Minderoo Foundation, 2018). Each dot is colored by that nation’s tier assignment in the 2018 US State Department Annual Trafficking in Persons (TIP) report (US DoS, 2018). These tier levels, ranging from Tier 1 to Tier 3, are assessments of a country’s efforts to combat trafficking in persons, with a Tier 1 placement indicating the highest level of government-led CTIP effort. The dashed horizontal lines are the median child marriage rates for the countries in each TIP tier level. Even though child marriage rates are not incorporated in the calculation of TIP tier levels, there is an association. Tier 1 countries have on average two to three times lower child marriage rates than Tier 2 and 3 countries.^v

Figure 1: Child marriage and human trafficking are inter-related within a common ecosystem

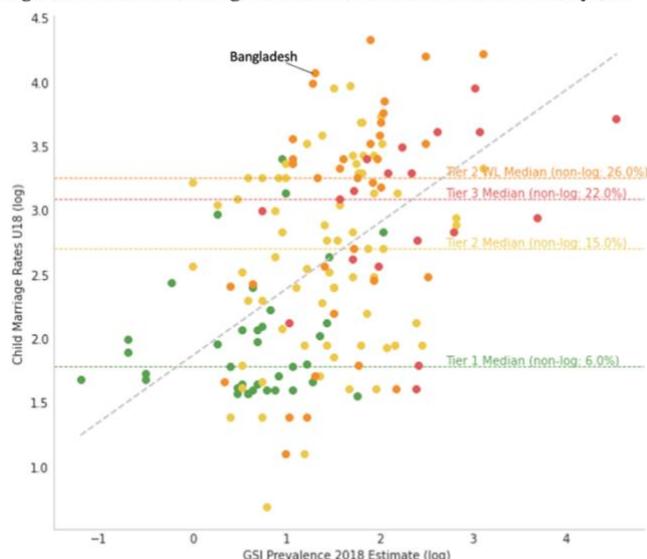


Figure 1 caption: The GSI Prevalence 2018 Estimate is the Walk Free Foundation’s Global Slavery Index (GSI) estimate of the prevalence of “modern slavery” within each country. The Child Marriage Rates U18 are estimates of the percentage of girls ever married, divorced or in an informal union before age 18, based on the 2017 UN Dept of Economic and Social Affairs and MICS UNICEF data. Each dot represents a nation, colored by that nation’s tier assignment in the 2018 US State Department Annual Trafficking in Persons (TIP) report. The dashed horizontal lines are the median child marriage rates for the countries in each TIP tier level.

Although “Forced Marriage” is a type of modern slavery, the GSI prevalence estimates do not specifically include child marriage. Countries with lower GSI prevalence estimates, however, typically have lower child marriage rates. While there is scatter in the data, the correlation between U18 child marriage rates and the GSI prevalence estimates (Figure 1) is statistically significant, explaining about 20% of the variance.^{vi}

While the reporting of child marriage rates, the estimating of human trafficking prevalence, and the assignment to TIP tier levels are distinct activities pursued by different organizations operating under different mandates, Figure 1 demonstrates that these metrics and the associated phenomenon they attempt to measure, are inter-related within a common ecosystem. Countries with higher child marriage rates typically have higher rates of human trafficking and are assigned worse TIP tier levels by the US State Department. Statistically, the chances of the “null hypothesis” being true — that child marriage and human trafficking are not related, is less than 1 in 10 million.^{vii}

While many claim that not all child marriage is TIP, the ecosystem of opportunities it creates for TIP and other negative impacts are so large, that there is increasing pressure to provide a minimum age for marriage and to classify marriage under that age as TIP. The hope is that by recognizing child marriage as a form of TIP, it will raise awareness and provide increased leverage for enforcement. If child marriage were classified as slavery, protection against it would be considered, like protection against torture and genocide, a responsibility of the international community as a whole. Under the International Court of Justice, protection could be equally enforced and independently adjudicated to all persons, entities (public and private), and states. The argument is compelling. Child marriage is recognized as a violation of human rights (UNICEF, 2020). Children, by definition, cannot provide free and informed consent. The treatment of a child, especially girls, as a commodity is consistent with the definition of human trafficking, regardless of whether that child is being exchanged in a transaction for money, goods, social status, protection, or family honor.

2. CHILD MARRIAGE IN BANGLADESH

Bangladesh is poised to take a leadership role in child marriage. The Prime Minister has pledged the nation to specific goals and timelines. Recent legislation has established a minimum age for marriage; and dowry payments have been outlawed.

- At the UK Girls Summit in 2014, Bangladesh's Prime Minister, Sheikh Hasina, committed Bangladesh to end marriage for children younger than 15 (U15) by 2021, and for all girls under age 18 (U18) by 2041; and to reduce by at least one third the difference – the number of girls married between ages 15 and 18 (U18diff) by 2021 (DFID, 2014).
- The Bangladesh Child Marriage Restraint Act of 2017 prohibits the marriage of children and defines in the case of marriage, an adult as having completed twenty-one years of age if a male, and eighteen years of age as a female (Section 2 (3)). A provision (Section 19), however, allows for marriage without a minimum age under “special circumstances when it is in the best interests of the minor” at the direction of the court and with consent of the parents or guardians of the minor. The “special circumstances” clause is demonstrably a major loophole in the legislation that makes the legislation all but ineffective, as the majority (59%) of girls in Bangladesh are still getting married before the age of 18.
- The Dowry Prevention Act of 2018 makes the demanding, giving, or taking of dowries an offense punishable by fines or imprisonment. It distinguishes (Section 2(b)) the current “dowry” system of payments to the husband from the traditional “dower” (or “mehr”) which is a religiously sanctioned part of Muslim marriage when a husband pays his wife out of honor and respect, and to show that he seriously desires to marry her with a sense of responsibility and obligation (Monsoor, 2003). While illegal, dowry payments remain pervasive in Bangladesh, perpetuating the use of a child as a commodity in a transactional arrangement^{viii}, and attracting considerable criticism both for creating incentives for harmful practices towards girls, and for being associated with violence against females (Suran et al., 2004; Siddique, 2011; Solotaroff & Pande, 2014,).

But as T.S. Eliot noted more than a century ago, between the idea and the reality falls the shadow. Bangladesh continues to have one of the highest child marriage rates in the world. Most females marry before the legal age; and the payment of dowries remains pervasive. The circumstances in Bangladesh are consistent with research into global anti-slavery legislation that shows that despite near-universal

adherence to international anti-trafficking norms, many nations have not transferred their commitment into effective domestic laws (Schwarz & Allain, 2020), and gaps persist between human-rights norms and implementation of those rights (de Felice & Graf, 2015).

While the current dowry system may seem to be a deeply entrenched cultural norm that has been pervasive throughout Bangladesh's history, it is not. The “dowry system” is not rooted in religious tenets or long-standing social norms, but rather a relatively recent practice instituted, most likely, in response to an imbalance between men and women of marriageable age. Prior to the 1960s, husbands paid a dower to the woman's family in accordance with Islamic law (Quran 4:4). In late 1960s, the practice changed, and the payment of dowries from the families of brides to grooms took hold. The speed of the transformation is reflected in survey data. Less than eight percent of women age 45-60 paid dowries, while over 46 percent of younger women age 15-25 paid dowries (World Bank, 2008). Coincident with this change was an increase in violence towards women by their husbands: 24 percent of women age 45-60 report ever having experienced violence by their husbands, while 30 percent of women age 15-25 have already experienced violence by their husbands (World Bank, 2008).

One explanation for this change in practice is the increased leverage of males during a period of high population growth and increased urbanization and education, resulting in men postponing marriage until they were 25-30 (Rozario, 1998). During a time of increasing population growth, the postponement of marriage by men, who then marry younger women, resulted in a shortage of marriage-age men relative to marriage-age women (Figure 2). Such a surplus of women relative to men of marriageable age coincides with the emergence of the dowry (Amin & Cain, 1997). The new “tradition” continues, even though the circumstances for its creation no longer exist, and in fact, are beginning to reverse.

Figure 2: Male and Female Population Percentages 1950-2020

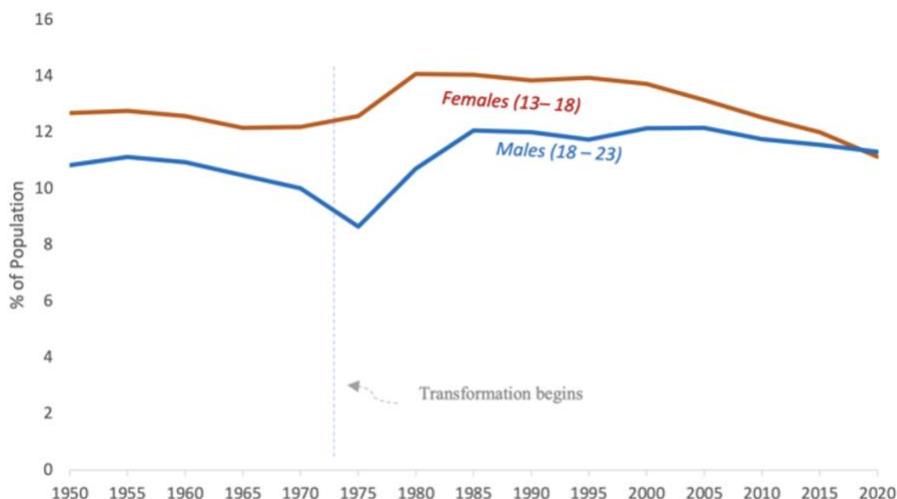


Figure 2 caption: Percentage of population for the age brackets for men and women is from the UN Department of Economic and Social Affairs, Population Division (2019). These two age brackets were chosen based on prevailing marriage practices in Bangladesh. In Bangladesh, the average age difference is currently 8.8 years.

Dowries can exacerbate child marriage because the payment to the groom is often less for a family of a younger bride. Younger brides are considered to be more desirable to Bangladeshi men, and therefore grooms are more willing to reduce their dowry “demand” to marry them (Chowdhury, 2010).

Over the last two decades, development in Bangladesh has been substantial. The poverty headcount ratio has decreased 20.0 percentage points (from 34.5% to 14.5%), and secondary school enrollment has increased 23 percentage points (World Development Indicators, 2021). During this time (2000-2017), marriage rates for children under the age of 15 (U15) have decreased 17.9 percentage points and marriage rates for children under the age of 18 (U18) decreased 9.8 percentage points (Figure 2). While progress has been substantial, the majority of girls (51.4%) are still getting married before their eighteenth birthday (UNICEF, 2019).

In Figure 3, the columns in blue are the percentage of females married under the age of 15 (U15). The columns in grey are the percentage of females married under the age of 18 (U18). The percentage of females married under 18 includes those married under 15. The difference between U18 and U15 is the percentage of females married at ages 15-17 and is designated U18diff. The data are derived from the Multiple Indicator Cluster Surveys (MICS) household surveys supported by the Bangladesh Bureau of Statistics and UNICEF (BBS and UNICEF, 2019), and the Demographic and Health Survey (DHS) implemented by National Institute of Population Research and Training (NIPORT) and ICF, supported by USAID (NIPORT and ICF, 2020). While there is significant difference between the MICS and DHS estimates, the trends within each survey are consistent. Child marriage rates have been decreasing, but the rate of decrease, over the last two surveys for both MICS and DHS, may be slowing.

Figure 3: Female Child Marriage Rates Under 15 (U15) and Under 18 (U18) from both the DHS and MICS Surveys

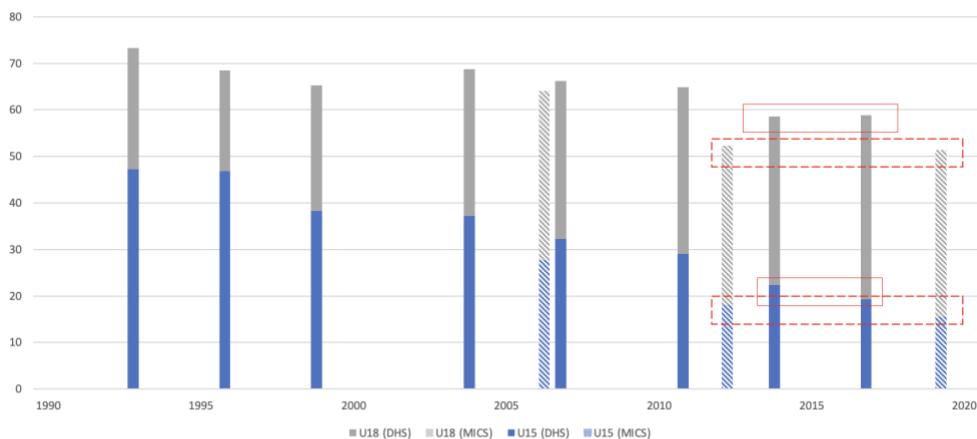


Figure 3 caption: Although child marriage rates in Bangladesh are decreasing, they remain the highest in Asia. U18 child marriage has been decreasing at a rate of about 0.6 percentage points per year (DHS 1993-2017/18), 1.1 percentage points per year (MICS, 2008-2019). U15 child marriage has been decreasing at a rate of about 1.0 percentage points per year (DHS 1993-2017/18), 1.3 percentage points per year (MICS, 2008-2019). Extrapolating these trends forward, Bangladesh is not on track to meet SDG 5.3 or the commitments made by the Prime Minister during the 2014 UK Girls Summit. Child marriage rates are from the USAID-funded National Demographic and Health Surveys (DHS) (solid) (NIPORT and ICF, 2020) and from the UNICEF Multiple Indicator Cluster Surveys (MICS) (dashed) (BBS and UNICEF, 2019).

As shown in Figure 3 there have been significant reductions over the last three decades. U18 child marriage has been decreasing at a rate of about 0.6 percentage points per year (DHS 1993-2017/18), 1.1 percentage points per year (MICS, 2008-2019). U15 child marriage has been decreasing at a rate of about 1.0 percentage points per year (DHS 1993-2017/18), 1.3 percentage points per year (MICS, 2008-2019). Extrapolating these rates using a simple linear regression curve (Table 1), reveals that, with the possible exception of the SDG 5.3 indicator goal for U15, Bangladesh is not on track to meet either its national or international goals. Furthermore, such an extrapolation seems optimistic given the apparent decrease seen in the estimated rates for the last two surveys by both DHS (2012 and 2017/18) and MICS (2012 and 2019). Neither survey shows any meaningful decrease in U18 child marriage.

Table 1: Progress towards meeting SDG 5.3 and UK Girl's Summit Pledge

	SDG 5.3 PROJECTION		UK SUMMIT PLEDGE PROJECTION		
	2030 UI5	2030 UI8	2021 UI5	2041 UI8	2021 I/3 15-17*
Goal	0.0%	0.0%	0.0%	0.0%	39.1%
Continuing at historical rate (DHS)	5.0%	53.0%	15.5%	47.4%	41.1%
Continuing at historical rate (MICS)	4.1%	39.1%	12.4%	28.6%	36.2%

* At the 2014 UK Girls Summit, the Prime Minister pledged to end marriage for children younger than 15 by 2021 and to reduce by at least one third the number of girls married ages 15 and 18 by 2021. For this calculation, the 2021 commitment is considered to be the equivalent of reducing the UI8 rate from the 2014 rate by one-third. In 2014, the UI8 rate was 58.6. Subtracting one-third of 58.6 = 39.1.

The MICS surveys report child marriage rates at the division level and at the zila level for some (about 30%) of the zilas. The survey data allows us to estimate rates at the for all of the zila level.^{ix} Using the full 2019 survey data set of 68,713 respondents for the women's MICS survey, we determined the percentage of women married under the age of 15 and 18 who are within the 20-24 age range. Our calculated estimates were aggregated back to the division level and compared to the reported values to confirm consistency. While there is increased uncertainty in the estimates using the smaller sample size, in each case there were over 100 female respondents age 20-24 per zila and our aggregated division values are within two percentage points of the reported values (Table 2).

Table 2: Calculated and Reported Child Marriage Rates at the Division and Zila Level

DIVISION/ZILA	# FEMALE RESPONDENTS (20-24)	REPORTED UI5 (%)	CALCULATED UI5 (%)	DIFFERENCE (% POINTS)	REPORTED UI8 (%)	CALCULATED UI8 (%)	DIFFERENCE (% POINTS)
Barisal	870	16.2	15.3	0.9	55.6	55.9	0.3
Barguna	138		12.3			60.9	
Bhola	152	19.0	19.1	0.1	60.0	60.5	0.5
Barisal	141		18.4			49.6	
Jhalokati	139		9.4			48.2	
Patuakhali	154	14.0	14.3	0.3	59.0	57.8	1.2
Pirojpur	146		17.8			57.5	
Chittagong	2,063	10.6	11.0	0.4	44.1	43.1	1.0
Brahamanbaria	165		14.5			46.7	
Bandarban	120		8.3			32.5	
Chittagong	410	7.0	7.6	0.6	39.0	39.5	0.5
Chandpur	159		13.8			49.7	
Cox's Bazar	184		9.8			37.0	
Comilla	231	10.0	10.4	0.4	53.0	53.2	0.2
Khagrachhari	152		12.5			42.1	
Feni	168		11.9			38.7	
Lakshmpur	163		13.5			48.5	
Rangamati	136		10.3			43.4	
Noakhali	175		12.6			42.9	
Dhaka	2,122	14.2	13.7	0.5	48.6	49.1	0.5

DIVISION/ZILA	# FEMALE RESPONDENTS (20-24)	REPORTED UI5 (%)	CALCULATED UI5 (%)	DIFFERENCE (% POINTS)	REPORTED UI8 (%)	CALCULATED UI8 (%)	DIFFERENCE (% POINTS)
Dhaka	432	16.0	16.5	0.5	41.2	41.0	0.2
Faridpur	149		14.8			57.7	
Kishoreganj	122		9.0			40.2	
Madaripur	147		8.2			43.5	
Manikganj	118		19.5			63.6	
Munshiganj	163		14.7			48.5	
Narsingdi	132		9.8			41.7	
Narayanganj	174		14.9			44.3	
Rajbari	131		9.9			55.7	
Gazipur	153		13.1			59.5	
Gopalganj	135		9.6			48.1	
Shariatpur	121		18.2			50.4	
Tangail	145	17.0	17.0	0.0	61.0	61.0	0.0
Khulna	1,548	19.1	19.1	0.0	61.8	62.7	0.9
Bagerhat	151	20.0	19.9	0.1	70.0	70.0	0.0
Chuadanga	159		14.5			60.4	
Khulna	143	18.0	16.8	1.2	59.0	58.0	1.0
Kushtia	169	18.0	18.3	0.3	59.0	59.2	0.2
Jessore	149		18.1			56.4	
Jhenaidah	159		22.6			67.3	
Magura	143		18.2			58.0	
Meherpur	163		14.1			58.9	
Narail	148	27.0	27.0	0.0	71.0	72.0	1.0
Satkhira	164		22.0			67.1	
Mymensingh	531	17.0	17.5	0.5	52.2	53.7	1.5
Jamalpur	125	22.0	21.6	0.4	59.0	58.4	0.6
Mymensingh	153	17.0	17.0	0.0	50.0	49.7	0.3
Netrakona	131	8.0	8.4	0.4	43.0	44.3	1.3
Sherpur	122	24.0	23.8	0.2	64.0	63.9	0.1
Rajshahi	1,110	25.1	25.4	0.3	66.7	65.9	0.8
Bogra	125	19.0	18.4	0.6	69.0	69.6	1.0
Joypurhat	134		14.2			50.0	
Naogaon	124	31.0	32.3	1.3	71.0	71.0	0.0
Natore	116		21.6			69.0	
Nawabganj	195	39.0	39.0	0.0	73.0	72.8	0.2
Rajshahi	139	28.0	27.3	0.7	70.0	69.8	0.2
Sirajganj	131		15.3			61.1	
Pabna	146		28.1			61.6	
Rangpur	1,238	18.7	18.2	0.5	57.9	58.1	0.2
Dinajpur	157		19.1			59.2	
Kurigram	159		22.0			50.3	
Salmonirhat	164		8.5			56.7	

DIVISION/ZILA	# FEMALE RESPONDENTS (20-24)	REPORTED U15 (%)	CALCULATED U15 (%)	DIFFERENCE (% POINTS)	REPORTED U18 (%)	CALCULATED U18 (%)	DIFFERENCE (% POINTS)
Gaibandha	124		25.8			62.1	
Nilphamari	173	16.0	15.6	0.4	59.0	57.8	1.2
Panchagarh	155		24.5			63.9	
Rangpur	138		18.1			59.4	
Thakurgaon	168		14.3			56.5	
Sylhet	876	7.3	7.4	0.1	31.0	31.8	0.8
Habiganj	204		6.4			32.4	
Maulvibazar	224		8.0			27.2	
Sylhet	261		5.0			27.2	
Sunamganj	187		11.2			43.3	
Totals	10,358	15.1	15.5	0.4	51.4	52.1	0.7

* Calculated from survey data. Statement about comparison with reported number of respondents.

Applying the same analysis to the previous MICS Survey (2012), we estimate the change in child marriage rates at the zila level over the last seven years (2012-2019) (Figure 4). Changes in the U15 child marriage rates are shown in blue. Changes in the child marriage rates of girls 15-17 (U18diff) are shown in grey. In some zilas, the decrease in U15 has been accompanied by an increase in U18diff, suggesting that girls who may previously have been married under the age of 15 are now being married in the 15-17 age range. In other zilas, the opposite appears to occur. U15 rates are increasing, while U18diff rates are decreasing. Such cases suggest that girls who may previously have married at ages 15-17 are now getting married younger.

Figure 4: Estimates of Changes in Child Marriage Rates (2012-2019) by Zila

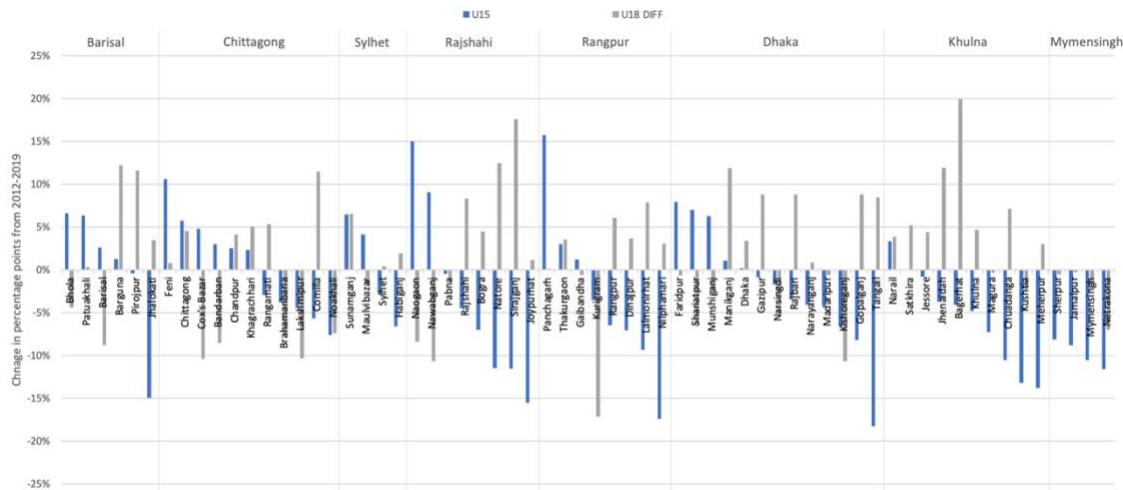


Figure 4 caption: Changes in both the U15 and U18diff child marriage rates among surveyed women aged 20-24 between 2012 and 2019 vary among zilas, even within the same division. In some zilas, the decrease in U15 has been accompanied by an increase in U18diff, suggesting that girls who may previously have been married under the age of 15 are now being married in the 15-17 age range. In other zilas, the opposite appears to occur. U15 rates are increasing, while U18diff rates are decreasing. Such cases suggest that girls who may previously have married at ages 15-17 are now getting married younger. Overall, there has been no significant reduction in child marriage during this time period. Changes in child marriage rates calculated from the 2012 and 2019 MICS (BBS and UNICEF, 2012, 2019).

The variation in progress, or recent lack thereof, towards reducing child marriage suggests that child marriage in Bangladesh has multiple causal relationships, and that further advancements may require strategies that go beyond universally-applied solutions. Multiple causal relationships indicate multiple

sociocultural ecosystems. Future progress is therefore likely to require additional, more geographically-targeted approaches.

3. CAUSES OF CHILD MARRIAGE WITHIN BANGLADESH

Child marriage in Bangladesh has been considered largely a consequence of poverty. Such a narrative is supported by the general trends between child marriage rates and measures of wealth, education, and urban versus rural populations. As progress has been made towards improving female education and reducing poverty, progress has also been made in reducing child marriage. As previously noted, however, more recent surveys show little or no meaningful reduction in child marriage, calling into question whether efforts successful in the past are sufficient for the future.

As reflected by the median age of first marriage (NIPORT et al., 2020), child marriage is most severe among the poorest wealth quintiles, the least educated, and the rural populations (Figure 6). These are also the populations where the most progress has been made (Figure 6). Since 2004:

- the median age of marriage for females with no education has risen 1.8 years (from 14.4 to 16.2), while the median age of marriage among females with secondary school education has decreased slightly (from 16.9 to 16.6) (Figure 6a);
- the median age of marriage for rural residences has risen 1.4 years (from 15.8 to 17.2), while the median age of marriage among urban residents has risen only 0.6 years (from 17.1 to 17.7) (Figure 6b); and
- the median age of marriage among the poorest wealth quintile has risen 1.7 years (from 14.5 to 16.2), while the median age of marriage among the wealthiest quintile has risen only 0.2 years (from 18.2 to 18.4) (Figure 6c).

Figure 5: Changes in Median Age of First Marriage 2004 – 2018

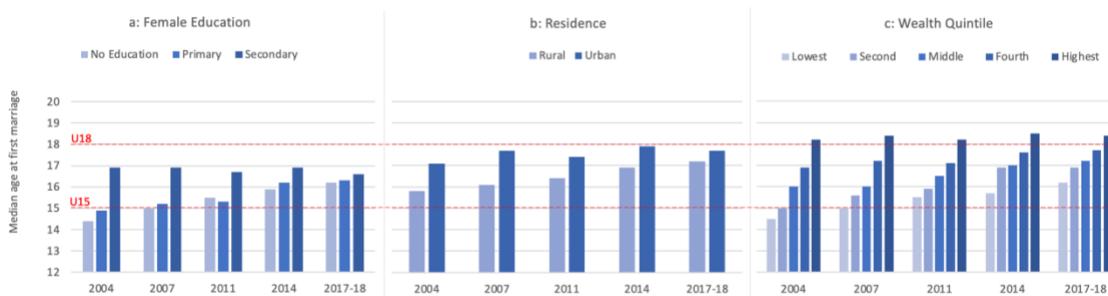


Figure 5 caption: Median age of marriage is lowest for the poor, those with less education, and who live in rural areas. These are also the populations where the most progress has been made (NIPORT et al., 2020). Ages 18 and 15 are shown with a red-dashed line.

Previously (1993-2011), female education was the single most significant determinant of child marriage (Kamel et al., 2014). Today, females have closed the education gap, and the differences in child marriage rate are less significant. The median age of marriage for those with no education, primary education, and secondary education is now within one year. The median age of marriage difference between rural and urban residence is now also less than a year. Wealth quintiles continue to be a more determining factor, with a difference in median age of two years, but that difference has decreased almost in half, with little change among the wealthiest quintile.

4. FEMALE EMPOWERMENT AND GENDER INEQUALITY

The United Nation's Sustainable Development Goal (SDG) 5, to “achieve gender equality and empower women and girls”, links the concepts of female empowerment and gender equality. Female empowerment and gender equality share a sociocultural ecosystem, with historically little differentiation between them in the goals set by development organizations.

Female empowerment can be defined as the “fostering of a woman's sense of self-worth, her decision-making power, her access to opportunities and resources, her power and control over her own life inside and outside the home, and her ability to affect change” (Peace Corps, 2021). Female empowerment is related to gender equality but is generally focused on a female's degree of autonomy on a personal level, independent of the attitudes and opinions of men.

Gender equality can be defined as a state “in which both men and women have equal opportunity to benefit from and contribute to economic, social, cultural and political development; enjoy socially valued resources and rewards; and realize their human rights” (USAID, 2012). To achieve gender equality, females must feel empowered on an individual level, but the broader societal structure must also allow for equal opportunities, rights, and representation regardless of sex.

Analyzing the two concepts as separate entities, however, may be helpful in understanding how various societal factors affect the achievements and conversely, the subjugation of females, and their roles in the sociocultural ecosystems of child marriage. To evaluate the hypothesis that female empowerment and gender inequality can be differentiated, and that advances in female empowerment may not necessarily correspond to advances in gender equality, we select sample indicators consistent with our definitions of female empowerment and gender equality. We take an ecosystem approach selecting sample indicators that reflect empowerment at an individual level and indicators that reflect societal norms. There is a subjective component to the selection of indicators, and we recognize other researchers might characterize individual indicators differently. Afterall, female empowerment overlaps with gender equality, as female empowerment is a necessary pathway towards gender equality.

While recognizing the overlap, we differentiate female empowerment indicators as more representative of an individual's capacity in the decision-making process, while gender equality indicators are more representative of a society's attitudes towards women as a whole. We consider, for example, a female's attitude towards violence against women as an indicator of female empowerment, while we consider the prevalence of violence against women as an indicator of gender equality. Similarly, we consider female education to be a measure of female empowerment, while we consider a female's ability to participate in the work force as a measure of gender equality.

Increasing education, specifically female education, has been a focal area for reducing child marriage by enhancing female empowerment. Both female and male education rates have been rising in Bangladesh, with female rates improving at about twice the rate of males (slope of 1.5 vs. 0.7) (Figure 7). A generation ago (age cohort 40-45), the median years of schooling for females was near zero at 0.1 and males had almost four (3.8) more years of education than females. Today, females in the age 20-24 age cohort have a median level of education of 7.5 years and are as educated as their male peers.

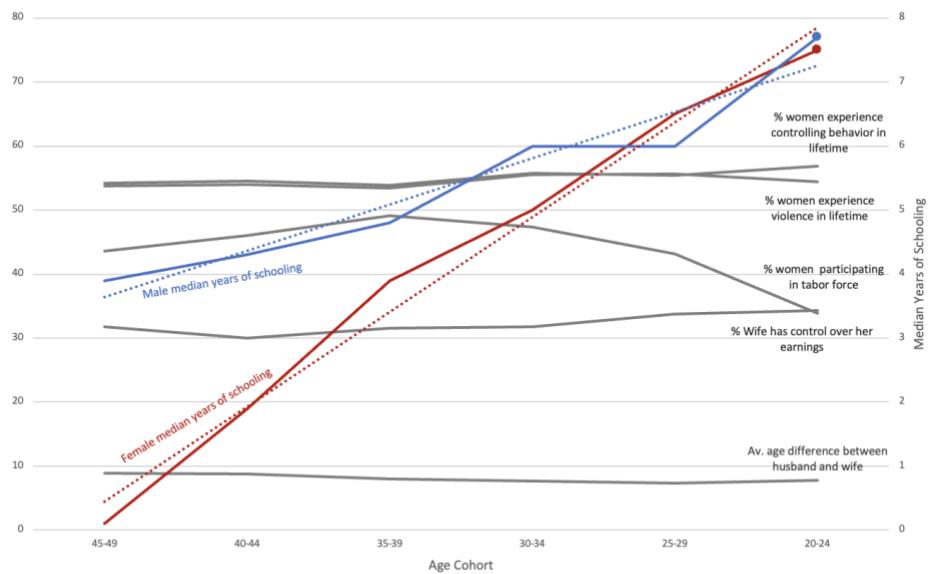
Figure 6: Female Education and Sample Indicators of Gender Equality

Figure 6 caption: Both female and male education rates have been rising in Bangladesh. With female rates improving at about twice the rate of males (slope of 1.5 vs. 0.7), females have closed the education gap. Despite this increase in female education, many measures of societal norms indicative of gender inequality, remain unchanged.

Despite the increase in female education, many measures indicative of gender equality, such as exposure to controlling behavior and violence, age disparity between husbands and wives, a woman's ability to control her own earnings, and participation in the workforce, show little change. As illustrated in Figure 7, females in the age 20-24 cohort are as likely to have already been exposed to violence and controlling behavior^x as the previous generation (age 40-45 cohort) (BBS, 2016). The age disparity between husbands and wives has remained an average of eight years (BBS, 2019). Little more than a third of women have the ability to control their own earnings (NIPORT and ICF, 2020). Less than half the women at every age bracket participate in the labor force (ILO, 2020). The experience of physical violence is a leading indicator of societal inequality, and statistically explains 13.5% of the variance in child marriage rates among the 64 zillas in Bangladesh. While females have closed the education gap within a generation, many of the societal norms that support inequality stubbornly persist.

5. THE GENDER INEQUALITY AND CHILD MARRIAGE IN THE GLOBAL CONTEXT

The relationship between gender inequality and child marriage can be seen also at the global scale. Several national-level indices have been developed by various organizations to measure gender inequality among nations. The major ones are listed in Table 3.

Table 3: Sample Gender Inequality Indices Evaluated Against Child Marriage Rates

INDEX NAME	SOURCE	BASIS	INCLUSION IN ANALYSIS	REFERENCE
Gender Development Index (GDI)	UNDP	Ratio of Human Development Index using indicators of health, education, income.	Yes	UNDP 2020a UNDP 2020b
Gender Inequality Index (GII)	UNDP	Measures disparities in reproductive health (maternal mortality and adolescent birth rates), empowerment (parliamentary seats and education), economic status (labor force participation)	Yes	UNDP 2020c
Gender Social Norms Index (GSNI)	UNDP	measures gender equality in politics, work, and education.	No (recent data not available)	UNDP 2020d
Gender Parity Index (GPI)	UNESCO	measures relative access to education for females and males	No (limited to education data)	UN Statistics Division, n.d.
Global Gender Gap Index (GGGI)	World Economic Forum	measures gender equality in economic participation and opportunity, educational attainment, health and survival, and political empowerment.	No (inconsistent with other indices due to weightings (Stoet and Geary, 2019))	World Economic Forum, 2020
Social Institutions and Gender Index (SIGI)	OECD	measures of social inequality using discrimination in the family, restricted physical integrity, restricted access to productive and financial resources, and restricted civil liberties. ^{xi}	Yes	OECD, 2020
Gender Equity Index (GEI)	Social Watch	measures the gap between women and men in education, the economy, and political empowerment.	No (data is not as recent as other indices that cover similar metrics)	Social Watch, 2012

Rather than select any one of these indices, we combined the Gender Inequality Index (GII), the Gender Development Index (GDI), and the Social Institutions and Gender Index (SIGI) into a composite measure, so as to capture a broad range of indicators. The indices were collected for all countries, transformed to adjust for skewness in the data distribution, statistically standardized using z-scores, and averaged. The composite average was plotted against the U18 marriage rates (UNICEF Data, 2020; United Nations Department of Economic and Social Affairs, 2017) (Figure 9).^{xii}

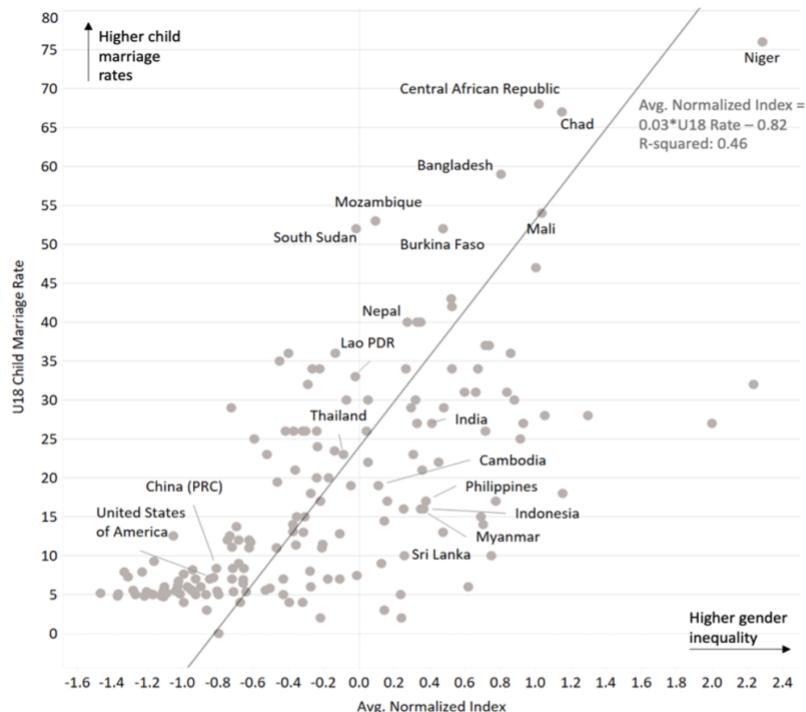
Figure 7: Gender Inequality Indices and Child Marriage at the National Level

Figure 7 caption: As gender inequality increases, so does child marriage. The Average Normalized Gender Inequality Index is a composite of the Gender Inequality Index (UNDP, 2019), the Gender Development Index (UNDP, 2018), and the Social Institutions and Gender Index (OECD, 2018). The combined measure encompasses a variety of indicators (Table 2). These indices were collected for all countries, standardized using z-scores, and then the average of the three normalized scores for each country was plotted against U18 child marriage rates (UNICEF Data, 2020; United Nations Department of Economic and Social Affairs, 2017). The relationship between the averaged gender inequality indices and the U18 child marriage rate has an R-squared value of 0.46.

Child marriage rates (U18) increase with increasing gender inequality (Figure 9), with an R-squared value of 0.46. The U15 child marriage rate (not shown) has a similar relationship, with an R-squared value of 0.43. Bangladesh fits within this relationship. The nation is high, both in the combined gender inequality measure and in child marriage. The relationship between gender inequality and child marriage that we see among zillas within Bangladesh, we also see among nations at the global scale.

5. CONCLUSIONS

Internationally, there is increasing pressure to provide a minimum age for marriage and to classify marriage under that age as TIP. Our data analysis reveals that the sociocultural ecosystem that supports child marriage has attributes in common with the sociocultural ecosystem that supports TIP. Child marriage rates statistically correlate with TIP prevalence rates and with efforts to counter TIP as represented in the TIP tier level rankings of the US State Department's Annual TIP Report. The chance of the null hypothesis being true — that child marriage rates and human trafficking metrics are not related — is less than 1 in 10 million.

Bangladesh has a potential leadership role in ending child marriage. They have set national goals, enacted domestic legislation, and become party to international agreements. The Prime Minister committed Bangladesh to end marriage for children younger than 15 by 2021, and for all girls under age 18 by 2041. The Child Marriage Restraint Act of 2017 prohibits the marriage of children and defines the

age of a child. The Dowry Prevention Act of 2018 prohibits the payment of dowries. Internationally, Bangladesh is party to the series of United Nations conventions that provide a basis for prohibiting child marriage and classifying it as a slavery-like practice. Bangladesh is also among the selected countries covered under the United Nations Population Fund-UNICEF Global Programme to Accelerate Action to End Child Marriage (UNICEF, 2020).^{xiii}

Within a generation (between the age cohorts of 45-49 and the age cohort of 20-24), the female education gap has been eliminated. The female rate of increased education is twice that of males. Other benefits for women and girls have also been realized over this time period. The age of first child has increased from 17.7 years to 18.6 years (NIPORT and ICF, 2020), and female life expectancy has increased from 66 years to 75 years (World Bank, 2021). While many of the negative consequences associated with child marriage have been mitigated, the broader consequences of gender inequality persist. Despite the 2017 Marriage Act, Bangladesh still has among the highest child marriage rates in the world with most girls marrying before the legal age of 18. The illegal dowry system continues. Most women experience violence during their lifetime, and 17.1% of women in 2015 (14.9% of women in 2011) are restricted from contact with their families by their spouse (Bangladesh Bureau of Statistics (BBS), 2016).

Bangladesh is not on track to meet either their national goals or SDG 5.3, which aims to end marriage for all girls under age 18 by 2030. Even assuming continuation of their overall rate of reduction, the U18 child marriage rate will be 39-53% by 2030 and 36-41% by 2041. Perhaps even more worrisome is that the last two MICS and DHS surveys show no meaningful reductions in U18 child marriage rates, suggesting the rate of progress may be stalling. How can a society in which females have taken such strong strides in education maintain such high levels of gender inequality?

Bangladesh is a male-dominated, patriarchal society. It has a traditional dominant male model of masculinity, where males are expected to be the providers and guardians. Rural areas are highly influenced by mullahs (local religious leaders), imams (mosque prayer leaders) and d'objectifs (village political elites) that promote patriarchal hierarchies and male-dominated social norms (Rahman, 2020).

Several studies globally suggest that perceived “threats to masculinity” or transgression of entrenched norms may incite violence against women (e.g. Duvvury et al, 2002). The threat to the traditional male masculinity model may be due to long-held cultural perceptions that men hold roles in society as providers and protectors. Such roles can be threatened by programs that focus on empowering women. If women are provided opportunities that are not available to men, it can foster resentment and exacerbate violence against women (Rahman, 2020). Perhaps we are seeing such an effect in Bangladesh.

Early efforts to address child marriage in Bangladesh correctly focused on empowering women through education and career resources, giving them more options and opportunities in life, which in some cases can threaten traditional masculinity. It is not clear that gender inequality can be addressed within a patriarchal society without consideration of masculinity (Mel, Peiris, and Gomez, 2013). There is the possibility that by encouraging circumstances within a patriarchal society whereby women are more educated and have emerging roles as family providers, we are threatening the traditional dominant male model of masculinity and inadvertently exacerbating gender inequality (Karim et al., 2018). Without addressing masculine gender roles, the effectiveness of initiatives designed to empower women may be

limited, and there is increasing recognition of the need to engage men in women-focused development initiatives (Karim et al., 2018).

Our data analysis provides empirical support for these theories being applicable to child marriage. We find that while there is strong overlap between female empowerment and gender equality, the two concepts can, and perhaps need to be differentiated. While efforts to promote female empowerment have been successful, as evidenced by improved education and changes in female attitudes towards gender-based violence, the impact of female empowerment in promoting sociocultural norms of societal gender equality has been disappointingly slow. Violence against women is unchanged, dowries remain prevalent, and the marriage age difference is unchanged.

Our analysis suggests that further reductions in child marriage may require complementing efforts to increase female empowerment with interventions targeted specifically at reducing gender inequality. Such interventions would need to encourage men to revise their patriarchal attitudes and views of masculinity, address societal norms that propagate traditional male and female responsibilities, and include males in female-focused development initiatives. When men are encouraged to value women as equals and are actively involved in the process of empowering women, societal attitudes shift away from viewing women as commodities for early marriage and child-rearing.

The nearly forty percentage point variation in changes of child marriage rates among zilas suggest a need to move from universally applied solutions to geographically-targeted interventions customized to the varying sociocultural ecosystems that drive child marriage. Such an undertaking may seem disproportionate to the problem of child marriage, especially when it can be argued that many of the negative consequences of child marriage are being mitigated. However, addressing gender inequality in concert with female empowerment is likely to have significant additional benefits beyond reducing child marriage. There is an emerging recognition that gender inequality undermines economic development, security, and democracy and that raising the status of women and girls has been shown to increase GDP, improve global health, combat radicalization and extremism, improve the chances of lasting peace, and strengthen democracy (Bigio & Vogelstein, 2020). Investments in reducing child marriage by specifically targeting gender inequality are therefore likely to be investments that also contribute to improvements in democracy and human rights.

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END NOTES

ⁱ The Convention on Consent to Marriage, Minimum Age for Marriage, and Registration of Marriages is a treaty agreed upon in the United Nations on the standards of marriage. The treaty was opened for signature and ratification by General Assembly resolution 1763 A (XVII) on 7 November 1962 and entered into force 9 December 1964

ⁱⁱ The Convention on Consent to Marriage, Minimum Age for Marriage, and Registration of Marriages also contains the statement that “No marriage shall be legally entered into by any person under this age, except where a competent authority has granted a dispensation as to age, for serious reasons, in the interest of the intending spouses.”

ⁱⁱⁱ The “Palermo Protocol” is actually one of three “Palermo Protocols”, the other two Palermo Protocols being: a) the Protocol against the Smuggling of Migrants by Land, Sea and Air, and b) the Protocol against the Illicit Manufacturing of and Trafficking in Firearms.

^{iv} Many western nations were missing U18 child marriage rates in the MICS UNICEF surveys. The missing values were imputed using the linear relationship between the U15 ($U15 = 0.423 * \text{Child Marriage Practice} - 1.232$, $r^2 = 0.716$) and U18 values ($U18 = 1.141 * \text{Child Marriage Practice} + 4.7$, $r^2 = 0.809$) from the UN Child Marriage Practices survey (UN World Marriage Data, 2017). The latter survey measures the percentage of women aged 15-19 ever married, divorced, widowed, or in an informal union. Thus, there are discrepancies between the age groupings of the two datasets, but given the high r-squared values in the relationship between the rates, the interpolation was suitable.

^v It is notable that seven of the 10 countries with the highest U18 child marriage rates, are on the Tier 2 watchlist.

^{vi} We determine the statistical significance of the relationship between child marriage rates and the GSI prevalence, by testing the alternative hypothesis that there is no relationship. In such a case, the slope would be zero using the t-distribution. The probability that there is no relationship between the child marriage and the GSI prevalence estimates (that the slope is zero), is less than one in 10 million. We are not assuming a causal relationship, but rather confirming that TIP and child marriage are inter-related within a common ecosystem.

^{vii} The data distributions were skewed, so a logarithmic transformation was applied to both variables (Child Marriage Rates and GSI Prevalence Estimates) for a more accurate statistical analysis. The relationship in Figure I has an equation of $\log(U18) = 0.518 \times \log(GSI) + 1.868$ and r^2 of 0.188.

^{viii} As a nation that is party to the Optional Protocol to the Convention on the Rights of the Child on the sale of children, child prostitution and child pornography, Bangladesh has a specific obligation because dowry payments can constitute a sale of children as defined in article 2 (a) of the Protocol (United Nations, 2000).

^{ix} The DHS reports required specific unknown sampling to get results similar to the reported values and therefore could not be used to calculate child marriage rates at the zila level

^x Controlling behavior by a partner is defined as experiencing any of these acts; he restricts you from the company of your friends and parental family, going to your parental homes, insist on knowing (with a suspicious mind) what you are doing and where you are at all times, ignore your feelings and opinions without caring or thinking about your priorities, angry if you speak with your relative or non-relative males, suspicious that you are unfaithful, expects you to ask permission before seeking health care for yourself, gets angry without any reason, forces you to use contraception method or forbids using them (BBS, 2016).

^{xi} The SIGI index includes U18 child marriage rates, however, it is one of 32 indicators used to construct the index and so its influence is considered minimal.

^{xii} U15 and U18 child marriage rates used were primarily by UNICEF (UNICEF, 2020), which compiled values obtained mostly from the Multiple Index Cluster Surveys (MICS) and the Demographic Health Surveys (DHS) dating back to 2006 at the earliest. These report the number of women aged 20-24 who were married before the age of 15 or the age of 18. However, some countries did not have values in this dataset. Another source used was the UN Child Marriage Practices (United Nations Department of Economic and Social Affairs, 2017). This dataset reported the percentage of girls aged 15-19 years ever married, divorced, widowed or in an informal union. While this is a slightly different metric than the UNICEF metric, it was used to impute missing data from the UNICEF dataset by plotting the UN Child Marriage Practices against both the U15 and U18 rates. The equations and R-squared values were as follows: $U15 = 0.423 * \text{Child Marriage Practice} - 1.232$ ($R^2 = 0.716$) and $U18 = 1.141 * \text{Child Marriage Practice} + 4.7$ ($R^2 = 0.809$). For those countries missing a U15 or U18 rate but who had a Child Marriage Practice value, the least-squares regression line was used to calculate an estimate of the percentage of women married before age 15 or 18.

^{xiii} The National Plan of Action to End Child Marriage (2018-2019) consists of a) enhancing the agency and voice of adolescent girls, b) investing in and supporting adolescent girls through community engagement and positive behavior, c) increasing resources and opportunities for adolescent girls, d) strengthening legislative and policy frameworks to protect and promote the rights of adolescent girls, and d) generating and using robust data and evidence.

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