Working Paper

Methodologies for global and national estimation of human trafficking victims: current and future approaches

Bruce Kutnick[1]

Patrick Belser[2]

Gergana Danailova-Trainor[3]

International Labour Office
Geneva

February 2007 [4]

Foreword

In June 1998 the International Labour Conference adopted a Declaration on Fundamental Principles and Rights at Work and its Follow-up that obligates member States to respect, promote and realize freedom of association and the right to collective bargaining, the elimination of all forms of forced or compulsory labour, the effective abolition of child labour, and the elimination of discrimination in respect of employment and occupation.[5] The *InFocus Programme on Promoting the Declaration* is responsible for the reporting processes and technical cooperation activities associated with the Declaration; and it carries out awareness raising, advocacy and knowledge functions – of which this Working Paper is an example. Working Papers are meant to stimulate discussion of the questions covered by the Declaration. They express the views of the author, which are not necessarily those of the ILO.

As part of ILO activities to promote the Declaration, a Special Action Programme to combat Forced Labour (SAP-FL) was created by the ILO Governing Body in November 2001. Since then, SAP-FL's work has included research, awareness raising and technical cooperation, working with governments, employers, workers and others to abolish forced labour. And in all of these activities, particular attention has been given to the forced labour outcomes of human trafficking. The Special Action Programme to Combat Forced Labour (SAP-FL) has also provided special attention to the measurement of the quantitative dimensions of forced labour. In 2005 it produced – jointly with the Policy Integration Department - the ILO's first ever global estimate of forced labour and human trafficking, with indications of its regional distribution and broad forms. The main results of this effort were published in the Director General's 2005 Global Report *A Global Alliance against Forced Labour*, showing that forced labour affects at least 12.3 million people in the world, of which 2.4 million are victims of human trafficking. In parallel, the U.S. government published its own estimate that 600'000 to 800'000 people are trafficked every year across borders into sexual and labour exploitation.

The present paper provides a detailed comparison of the methodologies used by the ILO and the US government for computing global estimates, discussing strengths and weaknesses of both methods. The paper then goes on emphasizing the need for better country-estimates in the future, and reviews the different methodologies that could be used and/or developed for improving data collection. By doing so, I believe that this paper provides some useful background information and suggestions for researchers who wish to study in more detail the global, national or local dimensions of forced labour and human trafficking. The paper is also part of the ILO's broader effort to generate more and better

---

[5]The text of the Declaration is available on the following web site : http://www.ilo.org/declaration

quantitative information at the national level, with the view to facilitate efficient policy making and to provide benchmarks by reference to which progress can be measured over time.

Roger Plant

Head, Special Action Programme to combat Forced Labour

Programme on Promoting the Declaration

Table of contents

I.   Introduction

Trafficking in persons is a criminal activity, which has affected many countries across the globe. It encompasses the transnational and internal movement of people for the purpose of sexual exploitation and forced labour. Men, women and children become victims of international organized crime groups and other traffickers in countries of origin, transit and destination. This paper looks at the existing methodologies for estimating the scope of the problem at the global and national levels and contributes to the discussion of how to improve those estimates.[6] The paper is organized as follows:

Section II looks at the methodologies employed to produce the U.S. global estimate and the estimate produced by the International Labour Organization--the two organizations that have developed global estimates of human trafficking. The U.S. government estimates that there are 600,000-800,000 victims trafficked across international borders each year.[7] The ILO states that there are at least 2.45 million people caught in trafficking, both transnational and internal, in the world today.[8] We look at the data collection, entry, validation, analysis and estimation as well as the key assumptions and limitations. While the estimates are not directly comparable, we provide an in-depth interpretation of the two sets of results distinguishing between the number of victims "at any point in time", the annual "full-time equivalent" number of victims, and the annual average number of victims.

In Section III we turn our attention to national estimates. We first discuss country level statistics of identified victims. We then suggest a methodology for estimating the total number of reported victims at the country level, which builds on ILO's capture-recapture method applied at the national level. Finally, we outline some existing methods, such as victimization studies and survey methods, used to estimate the number of reported and unreported victims. In addition, we suggest alternative methodologies for estimating the total number of victims, which have been used in attempts to measure other hidden and elusive populations, such as drug addiction and irregular migration. These methods include the nominative technique, the residual method, and the 2-card method, and we suggest modifications to apply them to human trafficking situations.

Section IV concludes the discussion and offers some avenues for future research.

---

[6] Elements of this paper are contained in Human Trafficking: Better Data, Strategy, and Reporting Needed to Enhance U.S. Antitrafficking Efforts Abroad, GAO-06-825, July 18, 2006
[7] U.S. Trafficking in Persons Report, 2005.
[8] Belser, De Cock and Mehran , 2005

II.   Global Estimates

In this paper we focus on the methodologies used by the two organizations that have produced the available global estimates—the U.S. government and ILO.

USG Methodology

Data Collection and Entry

For the U.S. government estimates quoted in the 2004, 2005 and 2006 TIP reports, data collection and entry into a Microsoft Access database were performed initially by Mercyhurst College and later by the Federal Research Division at the Library of Congress. Trafficking events with quantitative information on cross border trafficking were entered into the database. A critical condition for an event to be included in the database was that it had information on the number of victims. The U.S. estimate is indicative of trafficking during the two year period of 2000 to 2001, with reporting through 2002 due to a lag between when trafficking occurs and when it is reported.

The structure of the database contains source and event information in terms of fields filled by a researcher. Some of the fields entered for each event are: date, URL of the source and confidence in its credibility; organization which publishes the source and the primary source; title and text; is the report about trafficking (as opposed to smuggling); type of work—commercial sex work or other; route—origin, transit, destination city, country, state, or region; exit method (boat, foot, plane, train, vehicle, other), perpetrator and victim fate (arrested, retained, deported, repatriated, sheltered, released, other); start and end date of the event; nationality and ethnicity of the victims; number of victims by gender (male and female) and age (adult and minor), as well as a category for "women and children"; type of data—incident, aggregate or rate data; perpetrators involved and total number of perpetrators arrested, prosecuted and sentenced.

The researcher performed a search of open sources by key words, e.g. trafficking, trafficked, traffickers. The smuggling cases were then taken out of the database (about 30%). However, no search was performed by keywords such as smuggling, smuggler, etc. to identify those that relate to trafficking.

The open sources included the Foreign Broadcasting Information Service, Stop Traffic List Serve, International Organization of Migration, United Nations Office on Drugs and Crime, International Labour Organization and NGOs. FBIS is the U.S. government open source portal and provides publications from foreign periodicals translated into English. IOM provides assistance to trafficking victims in 27 countries, maintains a database and issues newsletters, press releases and

research publications. UNODC also maintains a trafficking database and issues reports and other releases. Stop Traffic List Serve is a community group on the internet which provides daily updates on trafficking issues. Publications originally appearing in the English language are likely to be found through this list serve and can be traced to the original source. ILO has collected data on human trafficking for the purpose of providing a global estimate of trafficking victims and issues reports and research publications.

Table 1 describes the data in the Library of Congress trafficking database that was used to make the U.S. government's estimate of annual trafficking. There are 1,594 trafficking events from 7 source categories. Press reports account for 69 percent and international organizations for the second largest number, 23 percent. Each event is classified as either incident, aggregate or rate data. Incident data will be interpreted as an actual reported number of trafficking victims whereas aggregate and rate data will in most cases be interpreted as describing both reported and unreported numbers. 39 percent of the events are incident and most of the remainder are aggregate.

The Library of Congress researcher subjectively assigned a credibility rating to each event based primarily on the source, but also the content. The middle section of the table describes the credibility ratings for the total and each of the 3 categories. Overall, 79 percent of the events were deemed "highly credible" or "credible" with only 8 percent deemed "suspect." About 25 percent of the incident events and 20 percent of the aggregate events were rated either "creditable but questionable" or "suspect."

The last section of the table provides the credibility ratings for each of the 7 source categories. For each source except "other", the vast majority of events were deemed "highly credible" or "credible." Of the 17 events reported by foreign government agencies, 4, or 24 percent were deemed suspect. 67 percent of the 18 reports from academic institutions were deemed credible and 33 percent creditable but questionable. None were deemed suspect. The press had both the largest number of reports and at 11 percent, the largest number of "suspect" reports.

Table 1: Characteristics and Credibility Ratings of Trafficking Events Used to Estimate International Trafficking during 2000-2001

		Events by Source		Incident	Aggregate	Rate	
		Number	%		Percent of total		
1	Press	1107	69.4%	52.5%	41.1%	6.4%	
2	USG agency	44	2.8%	22.7%	31.8%	45.5%	
3	Foreign Government Agency	17	1.1%	0.0%	100.0%	0.0%	
4	Non-Governmental Organization	25	1.6%	28.0%	60.0%	12.0%	
5	International Organization	371	23.3%	5.1%	83.8%	11.1%	
6	Academic Institution	18	1.1%	0.0%	77.8%	22.2%	
7	Other	12	0.8%	83.3%	16.7%	0.0%	
	Total events	1594	100.0%	627	828	139	
	Percent	100.0%		39.3%	51.9%	8.7%	
	Credibility	**Events by Credibility**		**Incident**	**Aggregate**	**Rate**	
		Number	%		Percent of total		
1	Highly Credible	410	25.9%	4.7%	39.3%	40.9%	
2	Credible	837	52.9%	70.5%	40.4%	48.2%	
3	Credible but Questionable	203	12.8%	16.8%	11.1%	5.1%	
4	Suspect	133	8.4%	8.0%	9.1%	5.8%	
	Not rated	[11]					
	Total rated events	1583		620	826	137	
	Percent		100.0%	100.0%	100.0%	100.0%	
		Events by Source		**Highly Credible**	**Credible**	**Credible but Questionable**	**Suspect**
		Number	%		Percent of total		
1	Press	1096	69.2%	2.7%	69.3%	16.7%	11.2%
2	USG agency	44	2.8%	70.5%	29.5%	0.0%	0.0%
3	Foreign Government Agency	17	1.1%	70.6%	5.9%	0.0%	23.5%
4	Non-Governmental Organization	25	1.6%	12.0%	68.0%	20.0%	0.0%
5	International Organization	371	23.4%	90.0%	8.4%	1.1%	0.5%
6	Academic Institution	18	1.1%	0.0%	66.7%	33.3%	0.0%
7	Other	12	0.8%	0.0%	25.0%	41.7%	33.3%
	Total rated events	1583	100.0%	410	837	203	133
	Percent	100.0%		25.9%	52.9%	12.8%	8.4%
	Note: There are 11 Press events that do not have confidence ratings.						

Source: Analysis of event data in the Library of Congress trafficking database.

Since 2002, information has been added to the database in order to possibly make a new estimate of trafficking in persons. In addition to the previous sources cited, the Library of Congress is also inputting information on trafficking being provided by the US embassies in various countries (information being forwarded to them from the State Department) and information from the Department of Justice. Clearly, this is not open source information available to the general public.

Data Validation and Reformatting

Once the data were collected and entered, they were sent to an analyst in another U.S. government agency. He re-checked and validated each event in the database received from the Library of Congress and Mercyhurst College.

As mentioned earlier, in the original database, events were classified into: (a) incident, (b) aggregate, and (c) rates data. Incident data referred to specific trafficking episodes with an attached numeric value of actual trafficking victims. Aggregate and rate (or flow) data were estimates of various institutions and organizations about overall trafficking flows. The aggregate and rate data came primarily from NGOs, foreign governments, IOM and ILO, but a breakdown of sources was not available. The aggregate and rate data were scrubbed for coding errors, duplicates, circular reports, etc. However, there is no written record of the analyst's work. In addition, if there was no end date entered for an event, the end date was estimated by simulation based on the available information from all other events.

The incident/aggregate/rate categorization underwent substantial processing prior to estimation of the total number of victims of trafficking. First, the data were mapped into "complete", "incomplete" and "completeness status unknown". Completeness referred to the analyst's judgment about whether or not a particular event included reported victims or was an estimate of both reported and unreported victims. In this sense, incident data were always incomplete and were used as a lower bound of the global estimate. Data from rates were typically complete. Data from aggregates could be mapped to incomplete or complete: some were clearly collections that were not intended to cover unreported cases, while others were complete estimates (e.g. prevalence/stock numbers and estimates of total flows). A handful of aggregates were designated as "completeness status unknown". These numbers could be argued as either lower bounds or estimates that approached actual victim totals. This uncertainty was accounted for in later steps of the analysis.

Second, the analyst recategorized the data into four types: (a) incident and incident-like aggregates, (b) flow estimates for specific time periods, (c) prevalence/stock, and (d) rates data. Categories (b), (c), and (d) were typically complete, while category (a) was always incomplete. The

majority of the data were incident or incident-like aggregates. If a prevalence or a "stock" number was provided, the analyst used an assumption on trafficking duration to convert the figure into a flow value. For example, if a stock figure for worker bondage was provided, the analyst used the Kevin Bales duration figure, worker bondage lasts about 5 years on average, to convert into a flow number, average number of bondage workers per year.

Data Analysis and Estimation

The incident data were assumed to be randomly right censored observations, which provided a lower bound for the number of victims of trafficking. Meta analysis was performed of the aggregate, flow and rates data by assuming that those were estimates of both reported and unreported victims of trafficking, i.e., they were complete data. When more than one estimate was available, an average was taken. This represented an estimate on the number of victims trafficked in that month. The global estimate was therefore a weighted average of aggregate, flow and rates data per month with incident data used as a lower bound of the parameter values. Annual flows were the average of 12 month summations of the monthly flows.

The 2000-2001 time period was divided into 24 months. The four categories of data were mapped into 24 month intervals. Depending on the information provided for a particular event, a number and/or range was placed in 1 or more of the 24 month periods. For each month, there were 50 parameters/cells to estimate. In all, there were 1200 estimations taking place: 50 parameters/cells*24 months. The 50 cells/parameters to estimate for each month were: (a) regional flow cells—6 origins multiplied by 7 destinations=42. There were six regions: Europe and Eurasia, Near East, South Asia, East Asia and the Pacific, Africa, and the Western Hemisphere. Unlike other countries, the US was tracked individually, so technically the Western Hemisphere was partitioned into the US and non-US Western Hemisphere, creating seven regions. The US as an origin was not within the scope of the project and was assumed to be negligible; (b) demographic and work type cells: 2 work types (sexual exploitation, other) multiplied by 2 age ranges (adult 18+, child) and two genders (male, female) created 8 cells. These were marginal worldwide cells—the data were judged insufficient to estimate individual demographic and work type rates for each region.

The estimate was based on 1500 events, which were reduced from around 1900. Unfortunately, there was no documentation about this process. Each event applied to one or more parameters/cells depending on the level of aggregation in the source report. Most of the individual events did not contain information for all cells or sets of cells by themselves. However, many of the events, in particular those coming from incident data, were mutually exclusive. To this end, mutually exclusive events were often batched together to at least provide a more informative lower bound or perhaps create

complete estimates, i.e., estimates of the total number of victims. For example, regional incident data were added together to create batches. Some parameters/cells were "sparse" if few events or batches of events applied. In particular, the estimates for adult males and for people trafficked to/from the Near East were derived from sparse reporting, as noted in the US estimate.

Once the 1500 events were parsed for accuracy, recategorized and batched, there were 137 batches of observations, each of which was applicable to estimating one or more of the cells. A majority of these batches—even some of those that were created from non-incident data—were incomplete and treated as randomly right-censored. For each of the parameter/cells, to fill in missing values Markov chain Monte Carlo (MCMC) simulation with Bayesian inference was used. This data augmentation procedure starts with what is available and tries to account for the uncertainty in the data that applies to the 50 parameters. Such uncertainty is due to the underlying reporting, including the reported numbers, time frame, the credibility of the sources, missing data, under- and over-counts. The estimate is based on Bayesian analysis which incorporates previous estimates and expert surveys. Therefore, it is a weighted average of all available information rather than an extrapolation from known cases. The prior distribution for the Bayesian inference was based on previous USG estimates and USG trafficking analyst assessments.

In the estimation procedure, the analyst assumed Gamma and Poisson distributions for the transition probabilities in the Markov chain process. There were no formal convergence criteria to determine when the procedure achieved sufficient accuracy.

Fields in the original database relevant for subsequent parameter estimation using MCMC with Bayesian inference were victim numbers, demographic and work-type cells, source and destination region, completeness, and date range. However, the values for some of those fields were often missing. Other fields, such as source credibility and if the report was indeed trafficking or smuggling, were relevant for the estimation but since they were entered based on the subjective judgment by the analyst, they had no missing values.

Assumptions, Limitations and Interpretation of the Results

The most critical assumption in the procedure used by the analyst to produce the global estimate of trafficking victims is that aggregate, rate and flow data are complete estimates of the total number of victims, i.e., both reported and unreported. This allows the use of the MCMC method with Bayesian inference as a data augmentation procedure applied to fill in missing values based on all available information rather than pose the need for applying an extrapolation technique from reported

victims only. To the extent that total estimates are reliable, the procedure produces an accurate and reliable global estimate.

The estimate has some additional limitations. Double counting was not a problem since (1) incident and (2) aggregate and rate data were not added together. However, independence of events could not be assured. Due to the high prevalence of missing data, the assumptions/factors to which the estimation was most sensitive were the assumption of random right-censoring, the initial parameter values and the initial distribution of the parameters (Bayesian prior), the values of the complete data (i.e., estimates of the total number of victims), and the lack of standard errors in the input data. Changes to these factors could lead to different parameter estimates not already reflected in the USG estimate, standard errors, and associated caveats. The analyst performed a number of sensitivity tests by changing some of the assumptions and then redoing the analysis.

The resulting estimate represents the average annual flow of trafficking victims across borders. The aggregate, flow and rates data, which were typically considered complete estimates of total victims, might not be reliable or comparable due to different definitions, methodologies, data sources, and data validation procedures. Moreover, the methodologies used to develop these estimates were generally not published and available for professional scrutiny. However, the procedure does take into account duration of trafficking and the estimated number can be interpreted as the annual average full-time equivalent number of victims. As will be shown later in the paper, this is the same as reporting the number of victims at a point in time.

ILO Methodology

In contrast to the methodology used to produce the U.S. global estimate, ILO's methodology for arriving at a global estimate of trafficked victims involved two extrapolations: first, from two subsamples of reported cases to an estimate of the total number of reported cases and reported victims using a capture-recapture methodology; second, from total number of reported victims to a total number of reported and unreported victims. Since the methodology has been discussed in detail in a published paper[9], here we only provide a brief overview, but expand the discussion by elaborating on some of the underlying assumptions and interpretation of the results.

---

[9] Belser, De Cock and Mehran, 2005

<u>Data Collection and Validation</u>

Two teams independently captured a sample from the population, rather than sequentially sample with replacement twice from the same population. Two assumptions were critical for this step—independence of each team and random sampling of the reported cases. To satisfy the first assumption the work of the two teams was organized separately and independently. The second assumption was addressed by stratifying the sample into 24 groups—by 6 regions and 4 types of forced labour.[10] The six regions were Industrialized Economies, Transition Economies, Asia & Pacific, Latin America & Caribbean, Sub-Saharan Africa, and Middle East and North Africa. The four types of forced labour were commercial sex exploitation, economic exploitation, state and military imposed, and mixed. Thus, the procedure assumed that the probability of capture varies across strata but is the same within each stratum.

The required information for a reported case was that the activity should be recognized as a type of forced labour, with a number of actual persons engaged in the activity, a geographical area where the activity took place, and a time period over which the persons where engaged in the activity. Two reported cases were considered distinct if at least one of these elements was different.

<u>Data Analysis and Estimation</u>

The data were grouped into three categories: (a) reported cases or incidents; (b) global estimates; and (c) reference data. The capture-recapture method was performed using only the validated data on reported incidents, since those were considered the most reliable data.

Forced labour as a result of trafficking in persons was considered a subset of all victims of forced labour, and included internal and transnational trafficking for the purpose of commercial sex exploitation, economic exploitation, and mixed. The total number of reported trafficking victims was found by multiplying the total number of reported cases by the average number of victims per reported case.

For each of the 24 strata, the capture recapture methodology provides an estimate of the cumulative total number of reported victims over a 10 year period N_t—1995-2004. According to ILO, N_t=2.45 million. The corresponding average annual number of reported victims over the 10 year period of data collection is N_{10}/T or 245,000 victims.

---

[10] ILO's estimate of trafficked victims was developed as part of an overall estimate of forced labour in the world. Therefore, the required information referred to forced labour rather than trafficking per se.

The number of reported victims at a point in time is $(N_{10}/T)*D$, where D is the average duration of victimization, in years, and T is the number of years of data collection. The total number of reported and unreported victims at a point in time X_t is $(N_t/T)*D/P$ where P is the ratio of reported to total number of victims, or, the probability of a victim being reported. Under the most conservative assumption P=1, and the number of reported victims is equal to the number of reported and unreported victims, i.e., there are no unreported victims.

Assumptions, Limitations and Interpretation of the Results

The ILO methodology assumes that the ratio $(D/T)/P >=1$ and based on an empirical observation sets it equal to 1. Given that T=10, this implies that (D/P)=10. This ratio does not depend on the time period T. Then, $X_{10} = (N_{10}/T)*D/P = (N_{10}/10)*10$ Therefore, $X_{10} = N_{10} = 2.45$ million. In other words, the cumulative total number of reported victims over the ten year period is equal to the total number of both reported and unreported victims at a point in time.

Suppose T=5, then $X_5 = (N_5/T)*D/P = (N_5/5)*10$. If capture-recapture is valid, then $N_t/T = N_{10}/10 = N_5/5$ and thus $X_5 = (N_5/5)*10 = (N_{10}/10)*10 = N_{10} = X_{10} = 2.45$ million. ILO does not estimate D, the average duration of victimization. However, given that (D/P) =10, under the most conservative assumption of P=1, D=10. Individuals who are trafficked for a very long duration will ultimately be reported. If, on the other hand, the average duration is 2.5 years, the ILO methodology implies that P=0.25 or that 1 in 4 trafficking victims is reported.

Experimenting with ILO/IOM Data: A minimum estimate of *reported* trafficking

Using:
   (a) 245,000 as an estimate of annual average number of reported victims;
   (b) average duration of victimization D=1.6 (based on analysis of IOM data below),
   (c) P=1 as the most conservative assumption, i.e., there are no unreported victims, the minimum number of total victims at a point in time is $X_{10} = (N_{10}/T)*D/P = 245,000*1.6/1 = 392,000$. The standard error for the 245,000 victims, which comes from capture-recapture can be computed using Thompson (1992). As discussed in Belser, et al. (2005), the relative standard error of an estimate x is roughly equal to the square root of (a+b/x), where a=0.04, b=12,000 and x is the estimate for which the relative standard error is to be computed. The standard error itself is then computed to be equal to x* relative standard error. The standard deviation computed in this manner captures two sources of uncertainty—variability due to sampling of reported cases and variability of the number of victims per reported case. Based on this discussion, Belser et al. find that the standard error of ILO's estimate of 2,450,000 victims at a point in time is 520,000.

For our case, x=245,000, and thus the relative standard error is 0.3 and the standard error is 73,082. If we assume that duration is a constant, then the linear transformation of 245,000*1.6 has a standard error of 116,931. Therefore, the global minimum estimate of reported trafficking, both internal and international is 392,000+/-116931 or roughly 275,068-508,931. This is an estimated minimum number of reported internal and external trafficking victims at a point in time as compared to the U.S. Government's estimate of a range between 600,000 – 800,000 annual external total trafficking victims. Unfortunately, in the latter case, we do not know how this range is computed.

However, average duration is not a constant but a random variable itself. Based on 2929 assisted victims by IOM, we have found that for international trafficking the average duration of a trafficking episode is 1 with a standard deviation of 1.16. Alternatively, based on 1012 internal trafficking victims, the average duration is 3.29 with a standard deviation of 56.6. Thus, the duration of an international trafficking episode is three times as small as that for an internal trafficking episode, but the uncertainty in measurement is very large. Finally, as mentioned earlier, for the whole sample of 3993 episodes involving both internal and international trafficking the average duration is 1.57 with a standard deviation of 28.52.[11]

The Meaning of Number of Victims at a Point in Time

ILO's methodology thus combines two concepts: the number of victims and the duration of trafficking. These concepts are related to the annual average number of victims and the average duration of victimization. The methodology that ILO uses computes the number of victims at any point in time or equivalently the annual average full-time equivalent number of victims.

We will use figure 1 to clarify these concepts. For simplicity we shall draw the figure symmetrically and later derive the general case mathematically.

Figure 1: Example of Victims Trafficked over a 5-year Period
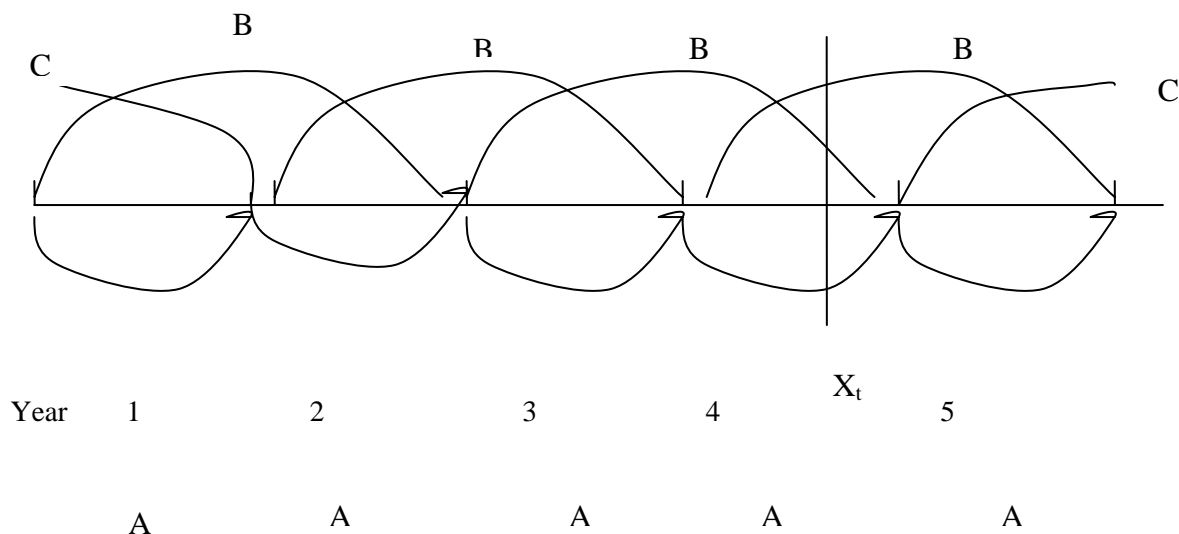
We shall count the cumulative total number of victims over a five-year period (T=5). Each curve represents one individual victim and the length of the curve represents duration. The bottom of the figure shows 5 victims each with duration of 1 year (A). The top shows 4 victims each with duration of 2 years (B), and two victims each with duration of 1 year (C). There are a total number of 11 victims. If you count the number of victims at any point over this 5-year interval, there will be 3 victims, such as at point X_t.

The method used to compute the number of victims "at any point in time" is equivalent to calculating the annual "full-time equivalent" number of victims. For example, in figure 1 there are 5 1-year 'A' victims, 2 1-year 'C' victims, and 8 (=4*2 years) full-time equivalent 1-year 'B' victims for a total of 15 full-time equivalent 1-year victims over 5 years, or an annual 3 full-time equivalent victims. It may be better to say an average of 3 victims at any point in time.

Table 2 provides an example of the methodology used to compute the full-time equivalent number of victims and the number of victims at any point in time. Suppose we count the cumulative number of victims over a 5 year period. Row 1 shows the duration of being trafficked in years, row 2 shows the corresponding number of victims per duration period. There are 7 victims of 1 year duration and 4 victims of 2 years duration. There is a cumulative number of 11 victims over 5 years or a simple average of 2.2 victims per year.

---

[11] The number of episodes used to find average duration is smaller than the total number of episodes in the database since we have excluded episodes for which duration cannot be computed due to missing values. Also, we have excluded two outliers with duration of about 1800 years.

Row 3 computes the full-time equivalent number of victim-years by multiplying the number of victims by the duration length. There is a cumulative total of 15 victim-years over this 5 year period or an annual average of 3 full-time equivalent victim-years.

We next compute the average (weighted) duration for these 11 victims. The weights are the fraction of the cumulative total number of victims that have been counted for each of the separate durations. For example, the weight is (7/11) for 1 year duration, (4/11) for 2 year duration, etc. The weighted average duration is 1.363636 years. The number of victims at any point in time is calculated by multiplying the average number of victims by the average duration. In this example the number of victims at any point in time is 2.2 x 1.363636 = 3.

Table 2

			N_t=Cumulative total over 5 year period	Annual average
Duration	1 year	2 years		
Number of victims	7	4	11	11/5 = 2.2
Full-time equivalent victim-years	7 x 1 year = 7	4 x 2 years = 8	15	15/5 = 3

Average (weighted) duration D = (7/11) x 1 year + (4/11) x 2 years = (7+8)/11 = 1.363636 years. Number of victims at any point in time X_t = (annual average number of victims) * (average duration) = [N_t / T] * D = 2.2 x 1.363636 = 3

The example demonstrates the difference between the average number of victims, [N/T], and the number of victims at a point in time, which has been shown to be the same as the full-time equivalent number of victims. Both terms describe the number of victims but must be interpreted differently. Suppose 60 individuals are counted over a 10 year period giving an average of 6 victims per year. If the average duration were six months or 0.5 years, than at any point in time we would count, on average, 3 victims. If the average duration were 1.6 years, than the average number of victims at a point in time would be 9.6 victims. Whether there were 3 or 9.6 victims at a point in time is important, but both are consistent with an average of 6 victims per year. It is important that the reader understands how the number should be interpreted. For example, the U.S. government *Trafficking in Persons Report* for 2006 states "In the 2004 Report….the estimated 600,000 to 800,000 men, women and children trafficked across international borders each year." The U.S. government methodology incorporates duration, but truncates the period to a maximum of 2 years. As discussed earlier, according to IOM's data the average annual duration of a transnational trafficking episode is 1 year.

Therefore, the truncation has no significant impact on the estimated number of victims and the annual average number of victims is equivalent to the number of victims at a point in time.

III.   National Estimates

As evident from the previous section, both the U.S. government and the ILO have collected data from secondary sources and have created their own global databases. The U.S. government then used a Markov Chain Monte Carlo statistical method, while the ILO relied on a version of the capture-recapture methodology. The GAO report considers that the accuracy of global estimates is limited because of existing data gaps and also methodological issues. Both the U.S. and the ILO have recognized the limitations of their estimates, mostly due to low availability and poor quality of national-level data.

The ILO, for example, points out that it usually computes global estimates by aggregation of national estimates into regional estimates and, then, by summing up these regional estimates. But in the case of human trafficking, this method could not be used because of the scarcity, and often disparate nature, of national estimates. In its global report, the ILO (2005) makes clear that its "first global estimate must be seen as part of an ongoing process of generating more and better information" pointing out that "the real challenge is to develop reliable forced labour statistics at the national level, providing benchmarks by reference to which progress can be measured over time". Until this day, national data are only collected in a handful of countries, including the Netherlands, Germany, the U.S. and a few other countries. The IOM also collects data in the context of its victims assistance projects.

Identified victims

Identified victims include officially reported, certified, registered or assisted victims. The Dutch National Rapporteur (BNRM) centralizes statistics on trafficking and produces one of the most comprehensive annual reports on human trafficking. In 2005, the report indicated that an average of about 300 to 400 victims of sex trafficking were identified every year. Victims are essentially women - about 85 percent of which are above the age of 18[12]. A majority is from central and eastern European origin and one-fourth are from Africa, especially Nigeria. Every year, the police investigates about 25-55 cases and arrests about 100-200 suspects, including a few proprietors of sex establishments. About 25% of suspects are women and 40% are Dutch nationals. Half of the cases involve large criminal networks. The other half involves 5 persons or less. Since about 75% of all cases involve cross-border trafficking, recruiters are sometimes difficult to arrest. In 2/3rd of cases, victims had to hand over all the money to the traffickers. Financial criminal investigations are carried out in about 30% of cases, leading

---

[12] This figure is calculated on the basis of all cases where age is known

sometimes to the confiscation of profits. In 2003, about 100 suspects were prosecuted and sentenced to an average of about 2 years in custody.

Germany and the U.S. have also produced similar though less detailed data. The German Police issues a yearly report on human trafficking ("Bundeskriminalamt Lagebild Menschenhandel"), in which it mentions between 1,000 and 2,000 registered victims in the last few years. About 80% of the victims are typically from central and eastern Europe (in particular Russia, Romania, Bulgaria and Ukraine) and 10% are German. Only 5% of victims are below the age of 18. Of all the victims, about one third indicate that they had in fact agreed to work in prostitution but were deceived about the conditions, while half claim to have been tricked into prostitution and 10% have been forced through physical violence. Overall, half of the victims suffered violence – especially threats against their families in the countries of origin.

In the U.S., one report indicated that the number of recorded victims in the 20 prosecution cases opened during the fiscal year 2001-02 was 315 people. In addition, the number of suspected victims in the 128 open trafficking investigations probably ranged between 800 and 2,000, depending on whether we assume that i) the ratio of victims per case is the same in investigated cases as in prosecuted cases (i.e. 315/20=15.7 victims); or ii) that the average ratio of victims per case is the same as in prosecuted cases but discounting the exceptionally large case of *United States v. Kil Soo Lee,* which involved over 200 victims (i.e. 115/19=6 victims). However, despite concerted U.S. government efforts to locate and protect victims, the U.S. government certified fewer than 900 victims in the United States during the 4 ½ years between March 2001 and September 2005 or about 200 reported victims per year.[13] With average duration of 1 year for international trafficking from IOM's database, this also implies 200 reported victims at a point in time. If the probability of a trafficked victim being reported is 10% or 25%, then the estimated number of reported and unreported trafficking victims at a point in time ranges between 800-2000. All these numbers may be consistent with the relatively small number of HHS certified victims.

In addition to national institutions, the IOM also collects data on identified victims. The IOM indicates that it has assisted around 7700 victims since 1999 through 2005, with the majority being victims of sex trafficking. In addition to the insights on average duration of a trafficking incident discussed earlier, the database contains information on a plethora of victims' characteristics. For instance, about 20% of the victims had to pay a debt to the recruiter, transporter and/or other exploiters, and about 30% knew they were sold to other traffickers at some stage of the trafficking process. Most of

---

[13]Through certification by the U.S. Department of Health and Human Services, victims become eligible to the same extent as refugees for all federally funded or administered benefits and services including medical assistance, job training, housing and education assistance, etc. Under the TVPA, victims under the age of 18 do not need to be certified. For these victims, HHS issues letters of eligibility so that providers know they are eligible for services and benefits. Victims who are U.S. citizens do not need to be certified by HHS to receive benefits; as U.S. citizens, they are already eligible.

the victims had to work 7 days a week and retained a small fraction of their earnings[14]. Based on the assistance interviews at IOM missions, some victims of sexual exploitation have apparently suffered such physical and/or psychological abuse that when asked about the average number of customers per day, some replied 20, 25, even 40.

In the future, data collection efforts at the national level should be continued and broadened such as to include not only trafficking for sexual exploitation, but also trafficking for labour exploitation. Furthermore, all countries which are signatories of the U.N. Palermo Protocol should set up programmes to collect trafficking data.

Estimation of the total number of reported victims at the country level

Capture-Recapture at the Country Level

In arriving at the global estimate of trafficking victims, the methodology employed by ILO involved as a first step an estimation of the total number of reported victims from two subsamples of reported victims using a capture-recapture sampling technique. This methodology can be applied at the country level as well. As an experiment, we used U.S. data on transnational trafficking collected by the two teams for the ILO database and estimated the total number of reported victims in the U.S.

There are three sources of uncertainty in estimating the number of reported victims at a point in time, and thus three random variables with respective probability distributions:

a) Average number of incidents (cases, or episodes) from capture-recapture;

b) Average number of victims per incident;

c) Average duration of a trafficking incident.

Thus, the distribution of the number of reported victims at a point in time is the product of three marginal distributions. We imposed a distribution for the number of incidents from capture-recapture and used the three most common criteria, i.e., Chi-square, Kolmogorov-Smirnov, and Anderson-Darling, to find the best fitting distributions for the other two variables. For the number of incidents from capture-recapture we imposed a triangular distribution with a minimum value of 0, likeliest (mean) of 24, and maximum of 43.2. The mean value came from the mean number of captured incidents over the 10 year period of data collection from capture-recapture. The maximum was constructed by adding three times the standard error to the mean, where the standard error was also derived from the variance of an estimate based on capture-recapture variance computations. The triangular distribution was imposed in order to eliminate the negative numbers from a normal

---

[14] All estimates based on analysis of IOM data.

distribution. However, the final results are not affected by the choice of a triangular rather than normal distribution for the average number of incidents. For the average number of victims per incident, the best fitting distribution was a lognormal distribution with a mean of 158.1 and standard deviation of 1444.8. The imposed parameters came from the mean and standard deviation of the actual reported cases in the database. For the average duration of a trafficking incident, the best fitting distribution was also a lognormal distribution with a mean of 1 and standard deviation of 1.32. These parameter values were taken from IOM's database discussed earlier in this paper. An important implication of these values is that the number of victims at a point in time and average annual number of victims are the same.

We performed Monte Carlo simulation with 10,000 trials. Based on these assumptions and the estimation methodology we applied, we found that the mean number of victims at a point in time is 3747.8 with standard error of the mean 628.82 and standard deviation of 62,882.27. Also, we found that the median number of victims at a point in time is 214.36. This is surprisingly close to the actual annual number of HHS certified victims of 200. The skewness of the distribution is striking and shows the importance of the choice for the measure of central tendency used in policy evaluation studies, i.e., the simple mean vs. median. 80% of the observations fall between 10.13 and 4250.67. As mentioned earlier, the results are not significantly different if instead of a triangular, a normal distribution is imposed for the average number of incidents. The mean number of victims of 4182.10 (standard error of the mean = 712.45) and the median of 246.73 are slightly higher, with an 80% interval between 12.02 and 4739.30.

The following graph depicts the distribution of the average number of reported victims from the performed simulation:

Number of Victims at a Point in Time
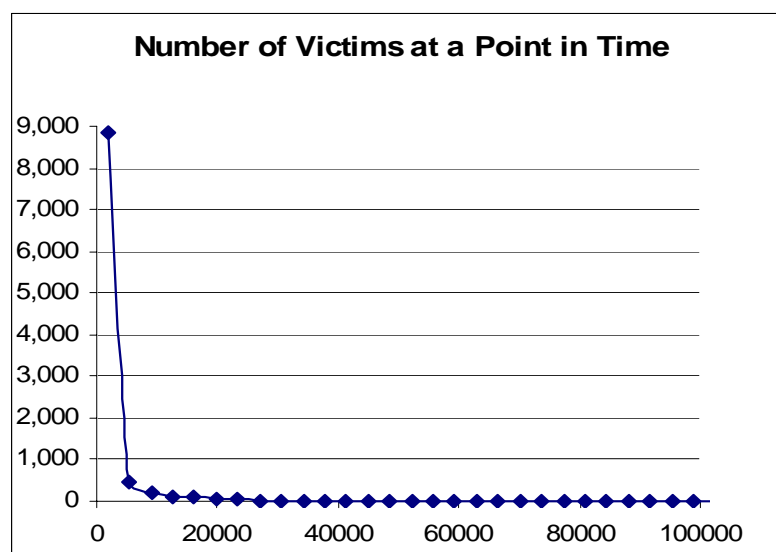
We found the best fitting distribution to this empirical distribution. It is lognormal with a mean of 3,774.10 and standard deviation of 71,475.73. The next best-fitting distributions are Pareto and Weibull, respectively.

The analysis of variance gives a sense of the contribution to total variance of each source of uncertainty. The average number of victims per incident has the largest impact on the variation—78.5%, followed by the average duration of an international trafficking incident—17.5%, and the average number of incidents from capture-recapture—4%.

The methodology we used here focuses on what we currently know and estimates the number of total reported victims by accounting for three sources of uncertainty. Since we do not know the ratio of the number of reported to unreported victims, we do not venture any guesses about the total number of trafficking victims. However, by narrowing our focus on what is currently the best available information gathered by ILO and IOM and making use of it for our estimation, we offer a starting point for country level estimation. It is possible that this methodology could be consistently applied across countries on the basis of ILO's original capture-recapture methodology for the global estimate.

Estimation of total victims at the country level

All the data collection efforts described above focus on *identified* victims. But identified victims represent an unknown fraction of the total victims. Bridging the gap between reported and total number of victims, both reported and unreported, presents the most difficult methodological challenge for researchers. At the national level, in addition to collecting data on identified cases, it is important to try to come to grips with the challenge of estimating the total magnitude of trafficking so as to design appropriate national policies and to monitor the impact of such policies. But how can one estimate the total number of victims, both reported and unreported?

Victimization Studies

One avenue is to combine data on reported victims with an estimate of the so-called "dark figure" – i.e. the number of unreported victims (or an estimate of the ratio of reported to unreported victims). According to Mason (2005), estimates based on self-report and victimization surveys[15], indicate that criminal dark figures are usually far larger than the official figures – by anything between 6 and 10 times larger. However, no studies exist on the dark figures of human trafficking, and this could be one way forward in the future. One complication with self-report or victimization studies, however,

is that – because of the relative rarity of serious crimes- large samples are needed to obtain reliable results. Another further complication is the fact that the relationship between the official figures and the dark figure can change over time or across countries, depending on a number of factors such as changes in the incentive structure or in law enforcement.

None of the countries or institutions which collect statistics on identified victims has ever tried to estimate rigorously this dark figure. Van Dijk (2003), from the BNRM, estimated nevertheless that in the Netherlands there were about 10 times more actual victims than the number of victims identified. Similarly, the U.S. estimates that 14,500 to 17,500 people are trafficked annually into the United States (U.S. Government, 2004). This represents 10 to 20 times more than the number of identified victims in prosecuted and assisted cases. But neither Van Dijk nor the U.S. has exposed its methodologies for arriving at such estimates (other than in the current paper).

Survey methods

A second approach to estimate trafficking for sexual exploitation is to use survey methods for estimating the total number of people in prostitution together with the proportion of such people that are trafficked. In their analysis on the number of "indentured sex workers" in Cambodia, Steinfatt, Baker and Beesey (2002) have used an original geographic mapping technique to "enumerate major sex work venues in Phnom Penh", with multiple interviews at each venue to establish the number of workers and the proportion of indentured workers. Combined with a sample of smaller venues, the authors estimated that, as of June 2002, there were a total of 5,250 "sex workers in Phnom Penh". In a complementary study, Steinfatt found that 20.2 percent of urban sex workers were trafficked either because they were "indentured" or because they were "underaged". Based on these findings, and on the observation of rural areas, the author extrapolated that there are 18,256 sex workers in Cambodia, of which 2,000 are trafficked women and children mostly in urban areas.

In her study for UNICEF, called "Infancia Robada", Elena Azaola has observed child prostitution in 6 Mexican cities: Acapulco, Cancun, Ciudad Juarez, Guadalajara, Tapachula and Tijuana. Based on a large number of interviews, the number of detected venues and the proportion of minors exploited in them, the author computed an estimate of 4,600 children in prostitution in those six cities. The author considers this figure a first approximation, not a final estimate. Azaola then extrapolated this figure to the rest of the country, taking into consideration the level of development of different regions, the distinction between rural and urban areas, the special role of tourism and a number

---

[15] Self-report surveys ask a sample of people to indicate anonymously whether they have ever committed some crime, while victimization surveys ask respondents to record the crimes that have been committed against them.

of other factors. By doing so, she estimated that 16,000 children could be in prostitution in the whole of Mexico.

Survey methods can also be used to quantify trafficking for labour exploitation or debt bondage. The best known attempt to estimate the magnitude of bonded labour in India remains the study carried out by the *Gandhi Peace Foundation* and the *National Labour Institute* in 1978-79, shortly after the enactment of the Bonded Labour System (Abolition) Act in 1976. The study randomly sampled 1,000 villages in the 10 Indian states thought to be affected by bonded labour - a system of forced labour where agricultural workers are attached to landowners. In these villages, a total of 5,585 bonded labourers were identified. This number was then extrapolated to the 450,000 existing villages in the 10 States under considerations, leading to an estimated 2.6 million bonded labourers in India. Although the Government of India has always rejected these findings and the methodology used to produce them it never found it useful to carry out its own survey.

There are some important difficulties with survey methods when trying to estimate trafficking victims. In Brazil, for example, it is known that people are trafficked into the Amazon region for illegal logging to prepare the land for cattle breeding or agriculture. Male workers are hired in urban areas by intermediaries who deceive them into "slave labour" – a term which refers to the combination of degrading working condition and the impossibility for the workers to leave due to fraudulent debts or the presence of armed guards. Because such victims are both hidden and clustered in remote and dangerous areas, survey methods are unlikely to work in places of destination.

Indirect Survey Based Estimation--The Nominative Technique

In addition to traditional survey methods, techniques applied to estimating other hidden populations such as unauthorized immigration or estimation of the prevalence of a particular disease or addiction, might also be useful. These methods use the benefits of survey research but avoid the problems of self-reporting of undesirable behaviors.

One such technique is the nominative technique, which is an indirect survey-based estimation developed for the purpose of estimating heroin prevalence in the general population (Droitcour, 1985). The technique is based on the idea that each member of the population could report the number of close friends who have been trafficked. Then, after correcting for duplication, it may be possible to derive an accurate count of the number of trafficked victims in the population. The technique could use two key questions that the trafficked victim is asked: (a) as far as you know, how many of your close friends have ever been trafficked. Then, after a procedure for picking only one of them, ask (b) how many of this person's other close friends (besides yourself) know that he or she has been trafficked. Question

(b) allows for an appropriate correction for duplication to be attached to each interview of a trafficked friend. A modified version of the nominative question series was developed for use in the 1977, 1979, and 1982 National Surveys on Drug Abuse in the U.S. As NGOs and IOM have direct contact with assisted victims, a variation of this method might prove to be beneficial.

The technique offers some promise in human trafficking estimation at the country level. However, some challenges remain. For instance, trafficking victims may constitute sets of closed networks, which may not socialize and know of each other's existence. Moreover, the network may be transnational in its scope and thus determining the number of victims at a county level might be too difficult. Some insight in this regard could be gained from an analysis of the narratives from the victim assistance interviews conducted by IOM.

The Residual Method

Methods used to develop estimates of the stock and flow of irregular migrants in a particular country such as the U.S. might also prove promising. A review of the large body of literature devoted to these methods is beyond the scope of this paper. Suffice to say that many of those estimates, including those used by the INS, are based on the residual method. In this method, the unauthorized immigrant population is determined by subtracting an estimate of foreign born legal residents in the U.S. from an estimate of all foreign born persons in the U.S. Adjustments are made for undercounts, misreporting of the place of birth and for persons with unclear legal status (Reyes, Johnson and Swearingen, 2002). However, getting the number of trafficked victims from that of irregular migrants presents at least a couple of challenges: first, some trafficked victims may have lawful status in the country; second, some irregular migrants may have been smuggled or have willingly remained in the country of destination for economic or other reasons. Since the ratio of smuggled to trafficked people is unknown, it might be the case that the vast majority of the residuals are in fact smuggled individuals. Thus, the residual method may not be fruitful given the residuals capturing trafficking victims may fall within the uncertainty in measurement.

The 2-card Method

Finally, other survey methods more appropriately geared toward estimating hidden populations, could also be employed. One such possibility is the 2-card method.[16] The revelation of the incidence of the sensitive case (irregular migrants or trafficked victims) is achieved by including it in other

---

[16] The 2-card method is a simplified version of the 3-card method, developed by GAO in the late 1990s. The Census Bureau contracted with the National Opinion Research Center (NORC) of the University of Chicago to pretest the 3CM in their 2004 General Social Survey (GSS).

categories within the same card. All categories in each card are mutually exclusive and exhaustive. The procedure starts with a "split-half" survey: random subsamples 1 and 2, which should be statistically equivalent--each one representing the foreign born population as a whole. The method focuses only on the foreign-born respondents in those subsamples. Suppose there are three boxes in each card—A, B and C. In the first card, box A contains U.S. citizen, box B contains legal foreign born residents, trafficked persons, and refugees/asylees, and box C contains other. In the second card, box A contains legal foreign born residents and refugees/asylees, box B contains U.S. citizen and trafficked persons, and box C contains other. The first card is given to subsample 1 and the second one to subsample 2. For the foreign-born respondents in subsample 1, suppose that 62% of them pick box B; and for the foreign-born respondents in subsample 2, suppose that 30% of them pick box A. Subtracting 62% - 30% = 32% gives the indirect estimate of trafficked persons. The method also produces an estimate of the variance of the estimate using standard definitions and adjusting it by using the "technique effect". It accounts for (1) the fact that there are two subsamples so we only have ½ the N answering each question--plus (2) the fact that each of the subsample estimates (i.e., the 62% and the 30%) has a variance associated with it, and both of these variances feed into/increase the final estimate's variance--i.e., the variance associated with the 32% estimate.

The 2-card method could have some potential in capturing cross-country trafficking of foreign born individuals into a particular country. As mentioned earlier, however, trafficking victims are not only a hidden, but also coerced population which might be very hard to reach and make it willing to respond to the questions in the cards.

Other sampling techniques, developed to study rare, clustered populations, such as adaptive cluster sampling techniques, as well as sampling techniques for studying mobile and elusive populations like nomads and the homeless, might also offer some potential (UN, 1993, and Thompson and Seber, 1996). Methods from epidemiology used to study the prevalence of some diseases such as AIDS, might also be applicable.

IV. Conclusion

This paper focuses on global and national estimates of human trafficking victims. It elaborates on the existing methodologies and offers suggested avenues for future work. At the global level, we analyze and interpret the results obtained by the U.S. government and the ILO. Using ILO and IOM data, we calculate that the global minimum estimate of reported trafficking at a point in time, both internal and international is about 275,000-510,000. This is lower than the ILO estimate of 2.45 million victims, which includes both reported and unreported victims. For the same reason, it is also lower than the U.S. Government's estimate of a range between 600,000 – 800,000 annual international trafficking

victims, which we show is equivalent to the number of victims at a point in time (and which focuses only on transnational trafficking).

National statistics on observed trafficking victims are collected by law enforcement institutions, victim assistance agencies and NGOs in a limited number of destination countries like the Netherlands, Germany, the U.S. and a few other countries. The IOM also collects data in the context of its victims assistance projects. The Dutch National Rapporteur (BNRM) serves as a focal point for statistics on trafficking and produces one of the most comprehensive annual reports on human trafficking. In 2005, its report found that an average of about 300 to 400 victims of sex trafficking were identified in the Netherlands every year. The German Police also issues an annual report on human trafficking, in which it mentions between 1,000 and 2,000 registered victims in the last several years. The U.S. government certified between March 2001 and September 2005 about 200 victims per year.

In addition to the registered or certified victims, it is also critical to arrive at estimates of the total number of reported victims. We suggest a procedure that produces such an estimate based on a capture-recapture sampling technique employed by ILO for its global estimate. We use U.S. data on transnational trafficking collected for the ILO database and estimate the total number of reported victims in the U.S. We find that the mean number of victims at a point in time is 3747.8 with standard error of the mean 628.82. Also, we find that the median number of victims at a point in time is 214.36. This is surprisingly close to the actual annual number of HHS certified victims of 200. The methodology we used here focuses on what we currently know and estimates the number of total reported victims by accounting for three sources of uncertainty.

We do not know the ratio of the number of reported to unreported victims, so we do not venture any guesses about the total number of trafficking victims. However, other authors have attempted to conjecture this ratio and estimate the total number of trafficked victims using victimization studies, survey methods and correspondence analysis. Typically, the total number of victims is assumed to be about 10 times larger than the actual number of identified victims. We suggest that in addition to traditional survey methods, techniques applied to estimating other hidden populations such as unauthorized immigration or estimation of the prevalence of a particular disease or addiction, also be used when applied to trafficking victims. Such methods include the nominative technique, the residual method, the 2-card method and adaptive cluster sampling. When modified to trafficking, each method offers some potential but is limited by the fact that trafficking victims are not only a hidden, but also coerced population which might be very hard to reach and unwilling and/or unable to respond to any questions posed by researchers.

Bibliography

Azaola , Elena, "Infancia robada, niñas y niños víctimas de explotación sexual en México", DIF, UNICEF, CIESAS, 2000

Belser, Patrick, de Cock, Michaelle and Farhad Mehran, "ILO Minimum Estimate of Forced Labour in the World", International Labour Office, Geneva, April, 2005

Bundeskriminalamt Lagebild Menschenhandel, 2003

Droitcour, Judy Miller, The Nominative Technique: A New Method of Estimating Heroin Prevalence, National Institute on Drug Abuse Research Monograph, 1985, 57:104-24.

Dutch National Rapporteur (BNRM), 2005 report

Dutch National Rapporteur (BNRM), "Prevention and Fight against Trafficking: Institutional Developments in Europe", Netherlands Report, 2003

Child Domesticity in Haiti, Publication prepared by Fafo (Tone Sommerfelt, ed), Les fondements de la pratique de la domesticité des enfants en Haïti. Republique d'Haiti/Ministère des Affaires Sociales et du Travail; PNUD; UNICEF; OIT/IPEC; Save the Children Canada; Save the Children UK; Fafo (2002)

GAO 06-825, Human Trafficking: Better Data, Strategy, and Reporting Needed to Enhance U.S. Antitrafficking Efforts Abroad, July, 2006.

Gandhi Peace Foundation and the National Labour Institute, 1978-79

International Labour Organisation (ILO), A Global Alliance against Forced Labour, Global Report under the Follow-up to the ILO Declaration on Fundamental Principles and Rights at Work, Geneva, 2005

Mason, Timothy, "Reading the Crime Rates: Shifts in Perceptions of Deviance since 1965, Université de Paris 8, 2005. Available at:

http://www.timothyjpmason.com/WebPages/Publications/CrimeStats.htm

Reyes, B., H.P. Johnson and R. Van Sweargen, "Holding the Line: The Effect of the Recent Border Build-up on Unauthorized Immigration", Public Policy Institute of California, 2002.

Steinfatt, Thomas, "Measuring the Number of Trafficked Women and Children in Cambodia: A Direct Observation Field Study", part III of a series, working paper sponsored by USAID, October 6, 2003. Available at: http://slate.msn.com/Features/pdf/Trfciiif.pdf

Steinfatt, Thomas, Baker, Simon and Allen Beesey, "Measuring the Number of Trafficked Women in Cambodia: 2002", presentation at the Human Rights Challenge of Globalization in Asia-Pacific U.S.: the Trafficking in Persons, Especially Women and Children, sponsored by The Office to Combat and Monitor Trafficking, U.S. State Department, Globalization Research Center – University of Hawaii-Manoa Honolulu, Hawaii, USA, November 13-15, 2002. Available at

http://slate.msn.com/Features/pdf/Trfcamf3.pdf

Van Dijk,E. M.H. D.A.C. Koster, M. Smit, "Trafficking in human beings. Additional Quantitative Data", Second report of the Dutch National Rapporteur)*. A.G. Korvinus (*Nationaal Rapporteur Mensenhandel*), bureau nrm, den haag, 2003. Available at:

http://www.justitie.nl/Images/11_19884.pdf

United Nations Department for Economic and Social Information and Policy Analysis, National Household Survey Capability Programme: Sampling Rare and Elusive Populations, New York, 1993

Thompson, Steven and George Seber, Adaptive Sampling, Wiley Series in Probability and Statistics, 1996.

US Department of State, Trafficking in Persons Report, 2004, 2005 and 2006.

List of Working Papers of the InFocus Programme on Promoting the Declaration

No. 1   Bonded Labour in Pakistan, by Aly Ercelawn and Muhammad Nauman, June 2001.

No. 2   A Perspective Plan to Eliminate Forced Labour in India, by L. Mishra, July 2001.

No. 3   Défis et opportunités pour la Déclaration au Bénin, by Bertin C. Amoussou, August 2001.

No. 4   Défis et opportunités pour la Déclaration au Niger : Identification des obstacles à la mise en œuvre des principes et droits fondamentaux au travail et propositions et solutions au Niger, by Moussa Oumanou, August 2001.

No. 5   Égalité de rémunération au Mali, by Dominique Meurs, August 2001.

No. 6   Défis et opportunités pour la Déclaration au Burkina Faso, by Seydou Konate, September 2001.

No. 7   Child Labour in the Russian Federation, by Svetlana Stephenson, June 2002.

No. 8   Intersecting risks: HIV/AIDS and Child Labour, by Bill Rau, June 2002.

No. 9   Los principios y derechos fundamentales en el trabajo: su valor, su viabilidad, su incidencia y su importancia como elementos de progreso económico y de justicia social, de María Luz Vega Ruiz y Daniel Martínez, Julio 2002.

No. 10   The Links between Collective Bargaining and Equality, by Adelle Blackett and Colleen Sheppard, September 2002.

No. 11   Annotated bibliography on forced/bonded labour in India, by Dr. L. Mishra, December 2002.

No 12   Minimum wages and pay equity in Latin America, by Damian Grimshaw and Marcela Miozzo, March 2003

No. 13   Gaps in basic workers' rights: Measuring international adherence to and implementation of the Organization's values with public ILO data, by W. R. Böhning, May 2003.

No. 14   Equal Opportunities Practices and Enterprises Performance: An investigation on Australian and British Data, by Prof. V. Pérotin, Dr. A. Robinson and Dr. J. Loundes, July 2003

No. 15   Freedom of Association and Collective Bargaining, a study of Indonesian experience 1998-2003, by Patrick Quinn, September 2003

No. 16   Gender-based occupational segregation in the 1990s, by Richard Anker, Helinä Melkas and Ailsa Korten, September 2003.

No. 17   Normalised and Disaggregated Gaps in Basic Workers' Rights, by W.R. Böhning, November 2003

No. 18   Forced Labour: Definition, Indicators and Measurement, by Kanchana Ruwanpura & Pallavi Rai, March 2004.

No. 19   Pay equity, minimum wage and equality at work: theoretical framework and empirical evidence, by Jill Rubery, November 2003

No. 20   A rapid assessment of bonded labour in Pakistan's mining sector, by Ahmad Salim, March 2004.

No. 21   A rapid assessment of bonded labour in hazardous industries in Pakistan: glass bangles, tanneries and construction, by the Collective for Social Science Research in Karachi, March 2004.

No. 22   A rapid assessment of bonded labour in domestic work and begging in Pakistan, by the Collective for Social Science Research in Karachi, March 2004.

No. 23   A rapid assessment of bonded labour in the carpet industry of Pakistan, by Zafar Mueen Nasir, March 2004.

No. 24   Unfree labour in Pakistan – work, debt and bondage in brick kilns in Pakistan, by the Pakistan Institute of Labour Education & Research, March 2004.

No. 25   Bonded labour in agriculture: a rapid assessment in Punjab and North West Frontier Province, Pakistan, by G.M. Arif, March 2004.

No. 26   Bonded labour in agriculture: a rapid assessment in Sindh and Balochistan, Pakistan, by Maliha H. Hussein, Abdul Razzaq Saleemi, Saira Malik and Shazreh Hussain, March 2004.

No. 27   Las desigualdades étnicas y de género en el mercado de trabajo de Guatemala, de Pablo Sauma, Marzo 2004.

No. 28   Libertad de asociación, libertad sindical y el reconocimiento efectivo del derecho de negociación colectiva en América Latina : el desarollo práctico de un principio fundamental, de Maria Luz Vega-Ruiz, Abril 2004.

No. 29   Methodologies for global and national estimation of human trafficking victims: current and future approaches, by Bruce Kutnick, Patrick Belser & Gergana Danailova-Trainor, February 2007.

No. 30   Directions for national data collection on forced labour, by Michaëlle De Cock, February 2007.

No. 31   Human trafficking in Europe: an Economic Perspective, by Gijsbert Van Liemt, June 2004.

No. 32   Chinese migrants and forced labour in Europe, by Gao Yun, August 2004 (English, French & Chinese version).

No. 33   Trafficking of migrant workers from Romania: issues of labour and sexual exploitation, by Catalin Ghinararu & Mariska N.J. van der Linden, September 2004.

No. 35   Methodología para estimar el costo laboral por sex, de Laís Abramo, Silvia Berger, Héctor Szretter y Rosalba Todaro, Setiembre 2004.

No. 36   The social status of workers from Tajikistan in the construction industry in Russia, *not published yet.*

No. 37   Trafficking of migrant workers from Albania: issues of labour & sexual exploitation, by Sarah Stephens & Mariska van der Linden, in cooperation with the International Catholic Migration Commission & the Centre for Refugee and Migration Studies, November 2005.

No. 38   Forced labour outcomes of migration from Moldova: rapid assessment, by Eduard Mihailov, Mariska N.J. van der Linden & Shivaun Scanlan, in cooperation with International Centre for Women's Rights Protection and Promotion, November 2005.

No. 39   Trafficking of migrant workers from Ukraine: Issues of labour and sexual exploitation, by Tetyana Kiryan & Mariska N.J. van der Linden, September 2005.

No. 40   El Trabajo Forzoso en la Extracción de la Madera en la Amazonía Peruana, de Eduardo Bedoya Garland y Alvaro Bedoya Silva-Santisteban, Marzo 2005.

No. 41   Enganche y Servidumbre por Deudas en Bolivia, de Eduardo Bedoya Garland y Alvaro Bedoya Silva-Santisteban, Marzo 2005.

No. 42   Forced Labour and Human Trafficking: estimating the profits, by Patrick Belser, March 2005

No. 43   Bonded Labour in India: its incidence and pattern, by Ravi S. Srivastava, June 2005.

No. 44   Affirmative Action for Racial Equality: features, impact and challenges, by Manuela Tomei, May 2005.

No. 45   Servidumbre por deudas y marginación en el chaco de Paraguay, de Alvaro Bedoya Silva-Santisteban y Eduardo Bedoya Garland, Julio 2005.

No. 46   La discriminación en los procesos de selección de personal de Patricia Vera Rojas, Septiembre 2005.

No. 47   Collective bargaining and gender equality in Latin America: a comparative analysis, by Laís Abramo and Marta Rangel, May 2006.

No. 48   Legal aspects of trafficking for forced labour purposes in Europe, by Rohit Malpani, April 2006

No. 49   Analyse comparative de la mise en œuvre du droit à l'égalité de rémunération: modèles et impacts, par Marie-Thérèse Chicha, septembre 2006.

No. 50   Impact des principes et normes de l'OIT sur les performances des entreprises au Bénin, par Albert Honlonkou, octobre 2006.

No. 51   Impact des normes fondamentales du travail sur la productivité des entreprises sénégalaises, par Alfred Inis Ndiaye et Abdoulaye Fall, octobre 2006.

No. 52   Impact des principes et normes de l'Organisation Internationale du Travail (OIT) sur la performance des entreprises au Burkina Faso, par Lassané Ouedraogo, octobre 2006.

No. 53   Globalization and the illicit market for human trafficking: an empirical analysis of supply and demand, by Gergana Danailova-Trainor & Patrick Belser, December 2006.