

Estimating the Prevalence of Human Trafficking in Ohio, 2014–2016


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Objectives. To develop statewide estimates of known victims and individuals at risk of human trafficking in Ohio.

Methods. We collected information from 12 state and local sources including child welfare, legal services, and law enforcement data. We collected the data from agency records dating 2013 to 2018. However, the majority of data were from calendar years 2014, 2015, and 2016 (roughly 95% across individual and aggregate sources). We used probabilistic matching to estimate victim and at-risk cases—accounting for duplicates.

Results. According to available data, there were 1032 known victims during the study time frame. We identified approximately 4209 at-risk individuals based on youths presenting with common risk factors for trafficking victimization.

Conclusions. Estimating the prevalence of human trafficking is an important public health research priority. As the first “cataloging” of existing record systems in Ohio to our knowledge, this study provided a comprehensive overview of the number of victims and the type of information that is available in the state. This study highlights the importance of moving toward the use of epidemiological approaches to measure the prevalence of human trafficking. (*Am J Public Health.* 2019;109:1396–1399. doi:10.2105/AJPH.2019.305203)

 See also Nemeth and Rizo, p. 1318, and Galea and Vaughan, p. 1327.

Measuring human trafficking is a complex challenge. As such, it is a priority to estimate the prevalence of human trafficking more precisely while also identifying the relevant data limitations.^{1–3} To extend previous research in line with this objective,^{4,5} in this study, we estimated the prevalence of minors and young adults who are known victims and at risk for trafficking in Ohio by using existing agency record data. This article describes these estimates, discusses data challenges identified, and makes recommendations for future research.

METHODS

We identified and analyzed 12 state and local data sources, including 8 from agencies with individual-level information and 4 aggregate reports of victimization without individual-level information. The data represent cases identified between 2013 and 2018—with a majority of cases from 2014, 2015, and 2016 (95.3%). Table 1 summarizes

the characteristics of each individual-level data source including definitions used to define known victims and at-risk individuals.

Descriptive statistics for variables that are consistent across these sources are listed in Table 2. Across the 8 individual-level sources, there were 486 known victims (32.9%); more than half of the individuals were labeled as at risk (67.1%). Systems primarily identified sex-trafficking victims (86.8%) with only 10% of the sample classified as labor-trafficking victims. Only 2.8% of the sample was classified as being trafficked for sex and labor. The majority of identified victims were minors (85.5%) and female (82.6%).

The aggregate data included 4 additional sources of information on known victims and

at-risk individuals. This included counts of (1) refugee youths identified through child welfare data (n = 13 known victims; years: 2014–2016), (2) youths identified through child abuse service providers (n = 141 known victims; years: 2013–2015), (3) trafficking victims identified by law enforcement officials (n = 535 known victims; years: 2014–2016), and (4) at-risk youths identified by child welfare B who were not flagged as trafficking cases, but shared similar risk factors (n = 3222 at-risk individuals; years: 2014–2016).

We conducted the analysis in multiple stages in which we first integrated data sources. We then engaged in a process of manual and automated data checking to develop individual and pooled estimates across all data sets. This process (1) sorted individuals known as victims or designated as at risk for victimization and (2) identified and adjusted estimated counts for potential duplicate cases.

We used the missions of the individual agencies and their record-keeping processes to help identify pools of cases likely to be unique or duplicates. The objective was to identify information in each data source that might help refine that initial estimate based on duplicates while also accounting for potential estimation error. A more stringent check for duplicate cases used DTALINK, a data-linking software package in Stata version 15.1 (StataCorp LP, College Station, TX).^{6,7} We used an initial cutoff of 15 for the probabilistic matching score to attach each case to a potential best possible match. This choice of cutoff corresponded to a matching scheme that balanced the aggregation of lower weights for several relatively common information elements (e.g., age, race) with greater weights, and aggregate scores for

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TABLE 1—Individual-Level Data Source Descriptions and Human Trafficking Definitions: Ohio, 2014–2018

	Agency Description	Year Range	Definition(s) of Human Trafficking ^a	
			Known	At Risk
State HT response	Grant-funded program to collect details on foreign national victims across multiple agencies	2014–2017	Not specified by database	Not specified by database
Child welfare A	State and local agencies responding to child abuse	2015–2017	ORC 2905.32; mainly identified by police when referred for services	Flagged by agency as suspected based on case-level details
Child welfare B	State and local child abuse and neglect investigations, services, and foster care	2014–2016	ORC 2905.32 and additional definition details ^b ; substantiated cases after further investigation	Flagged by case worker as suspected HT based on initial allegations
Law enforcement	Victims identified as part of law enforcement and arrest record data	2014–2016	ORC 2905.32 (victims associated with offense code)	Victims of ORC 2907.21–0.24 (researcher-classified) ^c
Legal system A	Specialty court for victims	2014–2016	ORC 2905.32 (individuals commonly charged with prostitution and diverted from justice system as victims of HT)	Not applicable
Legal system B	Legal services for victims	2015–2018	Children subjected to sexual violence and exploitation and other forms of violence because of commercial sex involvement	Not applicable
Legal system C	Specialty court for victims	2014–2018	Any commercial sex exchange would indicate the youth as a trafficking victim	Flagged by court as suspected HT based on risk factors (e.g., running away, safety issues)
Juvenile justice	County- and state-level juvenile offense and risk-assessment data	2014–2016	TVPA (researcher classified based on prostitution-related offenses for minors—ORC 2907.21–0.22 and 2907.24–0.25) ^d	Researcher-classified based on a number of additional ORC indicators and HT risk factors ^e

Note. HT = human trafficking; ORC = Ohio Revised Code; TVPA = Trafficking Victims Protection Act.

^aAgency-defined or research team-defined—any definitions classified by research team are specified.

^bChild welfare B defines trafficking as follows: “Human trafficking of a child refers to the act of recruiting, harboring, transporting, providing or obtaining a minor child for involuntary servitude or commercial sex acts. Sex trafficking also includes patronizing or soliciting a minor child (any person under eighteen years of age) for the purpose of a commercial sex act. A commercial sex act means any sex act for which anything of value is given to or received by any person” (see ORC 2905.32 for more info; Jeremy Harrigan, e-mail communication, May 15, 2018).

^cORC in data included 2907.21 (compelling prostitution), 2907.22 (promoting prostitution), 2907.23 (enticement or solicitation to patronize a prostitute; procurement of a prostitute), and 2907.24 (soliciting—after positive HIV test).

^dORC in data included 2907.21 (compelling prostitution), 2907.22 (promoting prostitution), 2907.24 (soliciting—after positive HIV test), and 2907.25 (prostitution—after positive HIV test).

^eAt-risk cases classified based on ORC offenses (2907.321j [pandering obscenity involving a minor]; 2907.322 [pandering sexually oriented material involving a minor]; 2907.323 [illegal use of a minor in nudity-oriented material or performance]); and the presence of multiple risk factors (e.g., abuse or neglect, running away, truancy, substance use).

less-common combinations in the data sets (e.g., birth month and year, last name). We then refined our duplicate search after inspecting individual cases.⁸

After adjusting the data based on possible duplicate individuals, we calculated an approximate confidence interval (CI) for each estimated count ($\hat{\lambda}$). The following calculation was used for the CI⁹:

$$(1) \quad \hat{\lambda} \pm 1.96\sqrt{\hat{\lambda}}$$

This formula assumes that the population mean count (λ) and its standard deviation are equal.

RESULTS

The overall estimate was 484 known victims with adjustments for possible duplicate cases. The accompanying CI suggests that if we were to repeat this process, the vast majority (95%) of our resulting counts are expected to fall between 442 and 529 known victims during this time period. We then added data from 4 aggregate record sources to this count. After accounting for possible duplicates that could overlap with 2 possible individual-level sources, we estimated a conservative count of 1032 known victims (95% CI = 970, 1097) between 2014 and

2016 (with few cases from 2013, 2017, and 2018).

We calculated all at-risk estimates with 8 data sources spanning 2014 to 2018. For those individuals who were classified as at-risk for human trafficking, the expected counts were 2250 (95% CI = 2158, 2345) and 987 (95% CI = 926, 1050) for the samples including and excluding the juvenile justice-identified risk, respectively. We also report an estimate that added aggregate counts from the child welfare system. That source identified more than 3000 additional at-risk cases during the time frame under

TABLE 2—Victim-Level Details Across Individual-Level Data Sources: Ohio, 2014–2018

	No. (%) or Mean ±SD								Total ^a
	State HT Response (2014–2017)	Child Welfare A (2013–2017)	Child Welfare B (2014–2016)	Law Enforcement (2014–2016)	Legal System A (2014–2016)	Legal System B (2015–2018)	Legal System C (2014–2018)	Juvenile Justice (2014–2016)	
Victim status									
Known victim	...	151 (72.6)	90 (9.5)	44 (88.0)	111 (100)	26 (100)	57 (45.2)	7 (0.5)	486 (32.9)
At risk	...	57 (27.4)	857 (90.5)	6 (12.0)	...	...	69 (54.8)	1284 (99.5)	989 (67.1)
Trafficking type									
Labor	66 (52.4)	3 (1.9)	8 (3.4)	7 (36.8)	...	...	...	...	84 (10.4)
Sex	47 (37.3)	159 (98.1)	214 (92.2)	12 (63.2)	111 (100)	26 (100)	126 (100)	88 (100)	702 (86.8)
Both	13 (10.3)	...	10 (4.3)	...	...	...	...	...	23 (2.8)
Age	...	...	12.44 ±4.85	17.98 ±5.23	30.97 ±7.82	...	15.37 ±1.52	15.70 ±1.47	...
Age status									
Adult	75 (86.2)	18 (8.6)	2 (0.2)	16 (32.7)	106 (100)	...	1 (1.3)	82 (6.4)	218 (14.5)
Minor	12 (13.8)	192 (91.4)	940 (99.8)	33 (67.3)	...	26 (100)	77 (98.7)	1203 (93.6)	1287 (85.5)
Gender									
Male	51 (39.8)	13 (6.2)	193 (20.4)	9 (18.4)	...	...	7 (5.6)	1009 (78.2)	275 (17.4)
Female	77 (60.2)	197 (93.8)	752 (79.6)	40 (91.6)	88 (100)	26 (100)	119 (94.4)	282 (21.8)	1304 (82.6)
Race									
White	...	125 (62.2)	31 (40.3)	28 (58.3)	89 (89.9)	3 (12.5)	56 (44.4)	559 (44.1)	335 (57.6)
Black	...	58 (28.9)	40 (51.9)	20 (41.7)	7 (7.1)	21 (87.5)	57 (45.2)	637 (50.2)	206 (35.4)
American Indian or Alaska Native	...	1 (0.5)	...	...	...	...	...	4 (0.3)	1 (0.2)
Asian	...	1 (0.5)	...	...	...	...	1 (0.8)	3 (0.2)	2 (0.3)
Native Hawaiian or other Pacific Islander	...	...	...	...	...	...	...	3 (0.2)	1 (0.2)
Multiracial	...	16 (8.0)	6 (7.8)	...	3 (3.0)	...	12 (9.5)	63 (5.0)	37 (6.4)
Ethnicity									
Not Hispanic/Latino	...	...	808 (92.6)	...	92 (100)	...	...	1185 (95.5)	906 (92.4)
Hispanic/Latino	...	6 (100)	65 (7.4)	...	...	2 (100)	...	56 (4.5)	74 (7.6)
Nationality									
Domestic citizen	11 (8.7)	...	...	...	...	...	...	...	11 (8.1)
Foreign national	116 (91.3)	6 (100)	3 (100)	...	...	...	...	...	125 (91.9)
Citizenship status									
US citizen	4 (10.3)	...	413 (98.8)	...	...	...	...	...	417 (91.2)
Non-US citizen	35 (89.7)	...	5 (1.2)	...	...	...	...	...	40 (8.8)
Year^b									
2014	50 (39.7)	...	352 (37.2)	18 (36.0)	19 (17.1)	...	3 (3.8)	695 (54.4)	447 (29.2)
2015	51 (40.5)	37 (17.6)	295 (31.2)	11 (22.0)	33 (29.7)	...	22 (28.2)	386 (30.2)	450 (29.4)
2016	17 (13.5)	101 (48.1)	300 (31.7)	21 (42.0)	59 (53.2)	...	27 (34.6)	197 (15.4)	526 (34.4)
2017	8 (6.3)	72 (34.3)	...	...	...	...	22 (28.2)	...	102 (6.7)
2018	...	...	...	...	...	...	4 (5.1)	...	4 (0.3)
History of justice system involvement: yes	...	19 (100)	19 (100)	...	111 (100)	19 (100)	126 (100)	1291 (100)	301 (100)
History of running away									
Yes	...	3 (100)	85 (100)	...	...	...	...	155 (12.1)	89 (93.7)
No	...	...	...	...	...	...	...	1123 (87.9)	6 (6.3)
History of foster care or CPS involvement									
Yes	...	22 (100)	139 (100)	...	41 (47.7)	...	9 (100)	...	211 (82.4)
No	...	...	...	...	45 (52.3)	...	...	...	45 (17.6)
History of homelessness: yes	...	19 (100)	...	...	35 (100)	...	...	...	54 (100)

Note: CPS = Child Protective Services; HT = human trafficking.

^aJuvenile justice at-risk individuals have been excluded from total number estimates; totals include known juvenile justice victims (n = 7) across years 2014–2016.

^bYear victim was identified by source.

study. This led to an estimated count of 4209 identified at-risk individuals (95% CI = 4083, 4338).

DISCUSSION

In this study, we cataloged and examined known victims and individuals at risk for human trafficking in Ohio. Similar to other human trafficking research, measuring this problem in Ohio is complex for several reasons: (1) victim nonreporting, (2) differing definitions and the reliability issues they pose in measuring trafficking victimization, and (3) variation in record-keeping practices among agencies encountering new or repeat cases. Thus, the integration of various sources helped identify potential avenues for further development of the data infrastructure.

On the basis of these findings, we identified 2 key issues. First, systems often are not set up to collect information on trafficking victims for a comprehensive understanding of the problem from a public health perspective. When they are, the data infrastructure often precludes sharing, integration, or comparison with other systems. For example, some agencies had limited capacity and resources for data extraction and sharing. Furthermore, there were some inconsistencies in defining human trafficking within and across agencies. Second, a separate complicating issue is that systems are likely missing victims—especially labor-trafficking victims. Many victims do not come forward or do not self-identify as trafficking victims. It is likely that there are more known victims and at-risk individuals in Ohio than were identified from these sources.

PUBLIC HEALTH IMPLICATIONS

To maximize measurement and explanatory efforts, agencies that monitor and respond to human trafficking should move toward epidemiological approaches in 2 ways.² First, create a more uniform reporting system within providers, agencies, and states by including “core items” that can be compared across sources (e.g., demographics, chronic runaways, history of abuse or neglect). Integrating different sources of data is a critical first step for developing accurate human trafficking victim counts. Such reporting

systems require practical considerations in implementation as potential participant agencies have different missions with respect to human trafficking (e.g., police officers vs service providers), which will affect the scope and nature of available data.

Methods from research on other hard-to-reach populations should be integrated into future human trafficking research to increase the likelihood that sex- and labor-trafficking victims and at-risk individuals are captured.¹⁰ For example, behaviorally specific screening questions have advanced sexual assault prevalence research.¹¹ These approaches should be adapted for agencies to improve their reliability in identifying victims.

Counting potential victims and at-risk individuals is a crucial first step to documenting more accurate prevalence estimates. Measuring at-risk populations is critical for screening of cases to inform prevention efforts. However, trafficking offenses must be prioritized, databases must be developed for integration, and agencies require resources to support these initiatives.¹² Furthermore, the data within those systems must be consistent and use validated assessment tools with common risk factors. This study highlights the type of information that is—and is not—available to estimate human trafficking prevalence in a statewide study. *AJPH*

CONTRIBUTORS

All authors collaborated in conceptualizing the study, collecting and analyzing data, writing the article, and editing and approving the final version of the article.

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CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

HUMAN PARTICIPANT PROTECTION

The study was approved by the University of Cincinnati institutional review board.

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