Estimating the Prevalence of Human Trafficking in Ohio

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Introduction

As defined by the Victims of Trafficking and Violence Protection Act of 2000 (otherwise known as the Trafficking Victims Protection Act [TVPA]), human trafficking involves the use of force, fraud, or coercion to exploit another person through commercialized sex or involuntary labor. In cases involving minors, however, the use of force, fraud or coercion does not have to be present for the offense to be classified as sex trafficking because a minor cannot legally consent to commercial sex. Although legislation has been created to combat trafficking, estimating the prevalence of these crimes is a complex challenge for researchers across public health, criminal justice, and social service contexts. In the current academic and policy literature there are no agreed upon estimates of the number of human trafficking victims. These efforts are further hindered due to the clandestine nature of human trafficking and the failure to recognize exploitation when it occurs. This is especially true when trying to estimate the number of minors or other individuals with sustained or peripheral contact with other social service agencies and institutions such as the juvenile justice and child welfare systems (Anderson, England, & Davidson, 2017; Cole & Sprang, 2014; Epstein & Edelman, 2014; Finklea, Fernandes-Alcantara, & Siskin, 2015; Gibbs, Walters, Lutnick, Miller, & Kluckman, 2015; Hepburn & Simon, 2010; Laczko & Gozdziak, 2005; Schauer & Wheaton, 2006). Individuals who never make contact with social service providers or justice system agencies pose a different type of challenge because they are never identified for intervention. Thus, the extent of unidentified human trafficking victimization is unknown. Nevertheless, researchers have attempted to quantify the prevalence of these events to better inform prevention efforts. Obtaining accurate and reliable prevalence estimates is essential in defining the scope of human trafficking, understanding where trafficking cases are concentrated and who is affected, and allocating resources and intervention efforts appropriately.

Prominent methods used to estimate trafficking can vary and generally can be placed in three broad groups: (1) interviews or surveys; (2) estimates based on record data; and (3) statistical projections. First, interview or survey data involve interviewing agency informants (e.g., law enforcement officials, public human service organizations) and survivors (Baldwin, Eisenman, Sayles, Ryan, & Chuang, 2011; Estes & Weiner, 2001; Williamson & Prior, 2009), surveying key stakeholders (Estes & Weiner, 2001; Farrell, McDevitt, & Fahy, 2008), or using respondent-driven sampling to identify victims (Tyldum & Brunovskis, 2005; Zhang, 2012). Although these types of methods can be limited due to smaller sample sizes, they tend to provide rich insights into trafficking offenses and perceptions of these crimes, which can inform future prevention efforts.

Second, estimates from existing data have relied on records from anti-trafficking task forces (Banks & Kyckelhahn, 2011), capture-recapture approaches (Richard, 1999), multiple systems estimation (Bales, Hesketh, & Silverman, 2015; Cruyff, van Dijk, & van der Heijden, 2017), or content analysis of publicly available sources (Albanese, Donnelly, & Kelegian, 2004; Wilson & Dalton, 2008). These methods are useful in the sense that they rely on data that are already routinely collected (e.g., official data, open source information, public media reports). However, existing data for research purposes can be problematic for several reasons. First, this type of data provides details only on individuals who have been identified as being trafficked—missing the hidden population of individuals who may never be identified by these systems. Additionally, data collectors do not always share the same definitions for similar behaviors or experiences (e.g., trafficking victim recorded as a prostitution offender). Discrepancies in

definitions can make comparisons or the integration across sources difficult. Finally, even if agencies collect detailed and accurate trafficking reports, they may be unwilling or legally unable to share detailed information on these cases for confidentiality reasons (see also Farrell & de Vries, forthcoming). As researchers continue to engage with key stakeholders to determine the best way to collect data and integrate sources, these obstacles could become less pronounced over time.

Third, statistical projection techniques include estimates based on proximal risk factors (e.g., runaways, child abuse, foster care) to identify at-risk populations (Estes & Weiner, 2001), calculations based on data simulation and statistical extrapolation methods (Clawson, Layne, & Small, 2006), or previous trafficking rates as multipliers to identify suspected victims in a specific region (Williamson et al., 2010). These efforts tend to provide larger scale estimates (e.g., state, national, or global level) to inform how many individuals are likely victims of trafficking. As a result, greater resources could be dedicated to areas where projected trafficking is occurring. However, because these are projections, the estimates cannot be confirmed until known victims are actually identified. These estimates are also subject to strong assumptions depending on how much grounding they have in empirical data.

The wide array of methods applied by previous scholars has provided unique insights into these crimes (see also Farrell & de Vries, forthcoming). However, this variety has also resulted in inconsistent estimates on the pervasiveness of trafficking. Estimates can vary depending on differences in definitions used and aspects of measurement including the level of analysis (global, national, local), time frame, target population (e.g., minor, adult, foreign national, domestic citizen), methodology (e.g., official data, simulation model, survey), "stock" or "flow" status (e.g., trafficked in time period, trafficked at any time), and stage of the trafficking event (at-risk, trafficked, former victim) (Kutnick, Belser, & Danailova-Trainor, 2007; Tyldum & Brunovskis, 2005). For example, global estimates of trafficking range from more than 100,000 identified victims in 2017 (U.S. Department of State, 2018) to an estimated 25 million victims of forced labor (including sex and labor trafficking) in 2016 (International Labour Organization, 2017). At the national level, a widely cited estimate based on risk indicators suggests that as many as 325,575 youth (aged 13 to 17) in the United States are at-risk for commercial sexual exploitation (Estes & Weiner, 2001). Alternatively, the National Human Trafficking Hotline reported receiving 26,557 calls with 8,524 alleged human trafficking cases in 2017 (National Human Trafficking Hotline, 2018).

Due to inconsistencies and the sometimes-questionable methods in which estimates are obtained, some scholars have recommended avoiding using any existing prevalence estimates to quantify the problem—at least in reference to sex trafficking of minors (Finkelhor, Vaquerano, & Stranski, 2017). However, as awareness in this area has increased, there has been a movement to gather more empirical data to inform our knowledge base. Thus, the current study seeks to extend prior research to estimate the prevalence of minors and young adults who are known victims and at-risk for trafficking in Ohio.

A Focus on Ohio

The Ohio Governor's Office and numerous local and state child welfare agencies across Ohio have taken an active role in understanding and addressing human trafficking. Governmental and non-governmental agencies have created a state-level task force, funded research studies, provided services for victims, trained first responders and other key stakeholders on how to

identify potential trafficking victims, and passed anti-trafficking legislation (e.g., Ohio Human Trafficking Task Force, 2017). The first human trafficking law in Ohio was passed in December 2010 and took effect in March 2011. Amendments to this initial legislation were passed in 2012, 2014, and 2018. Ohio currently defines human trafficking in the Ohio Revised Code Section 2905.32 (Trafficking in Persons) as:

> (A) No person shall knowingly recruit, lure, entice, isolate, harbor, transport, provide, obtain, or maintain, or knowingly attempt to recruit, lure, entice, isolate, harbor, transport, provide, obtain, or maintain, another person if any of the following applies:
>> (1) The offender knows that the other person will be subjected to involuntary servitude or be compelled to engage in sexual activity for hire, engage in a performance that is obscene, sexually oriented, or nudity oriented, or be a model or participant in the production of material that is obscene, sexually oriented, or nudity oriented.
>
> (B) For a prosecution under division (A)(l) of this section, the element "compelled" does not require that the compulsion be openly displayed or physically exerted. The element "compelled" has been established if the state proves that the victim's will was overcome by force, fear, duress, intimidation, or fraud.

The definition for sex trafficking is further tiered for minors and individuals with developmental disabilities (Ohio Human Trafficking Task Force, 2017). If a minor is under the age of 16 or has a developmental disability, then law enforcement officials do not need to prove that the individual was compelled to engage in commercial sexual activity (ORC 2905.32 [A][2]). For minors between 16- and 17-years-old, law enforcement officials do not need to prove that the minor was compelled to engage in commercial sexual activity if the trafficker was in a "position of authority" over the victim (defined in section 2907.03 of the ORC, which includes parents or persons acting in loco parentis, teachers, coaches, and others) (2905.32 [A][3]).

In response to growing recognition of trafficking offenses, the Ohio Attorney General's Office published results from its first human trafficking prevalence study in the same year the anti-trafficking legislation was passed (Williamson et al., 2010). To accomplish this, Williamson and colleagues integrated information from multiple sources and prominent research studies to inform their methods. The research team analyzed newspaper articles, governmental reports, and non-governmental reports on human trafficking and related issues (e.g., sweatshop, labor trafficking, minors and prostitution, brothel, and massage parlor) in Ohio. They calculated the number of at-risk youth who were runaways, homeless, or had other indicators of vulnerability (e.g., potentially being involved in child protective services, foster care, abusive homes) that could make them susceptible to trafficking. Further, this study identified well-known models used in other state and national prevalence studies in the United States, relying heavily on the Estes & Weiner (2001) report for developing domestic trafficking estimations and Clawson et al. (2006) for foreign-born population estimations. Using these existing frameworks, the authors used estimates of population "pull factors" (e.g., total immigrant population, trafficking in neighboring states) for foreign national victims. For domestic citizens, they created estimates based on the number of youth who were runaways, homeless, or had other indicators of vulnerability (e.g., potentially being involved in child protective services, foster care, abusive homes). The end result of this research was a prevalence estimate tailored to Ohio: there were 1,078 American-born Ohio youth (aged 12 to 17) that were estimated to have been trafficked for sex over a one-year period. Since human trafficking was not criminalized by Ohio until 2010, the same year this report was published, there were no

formal system estimates at that point in time to compare these estimates. However, the National Human Trafficking Resource Center (later renamed the National Human Trafficking Hotline) reported 261 calls for Ohio between December 7, 2007 and December 31, 2009—71 of those calls were providing trafficking tips (Williamson et al., 2010).

The study conducted by Williamson and colleagues was one of the first steps in shifting Ohio's response towards human trafficking. The estimate provided by the authors gave support that trafficking was likely a pervasive problem in the state—and demonstrated that it was going to require a concerted response. Prior to this report, there were only limited details on trafficking cases in Ohio and it focused on two cities—Columbus and Toledo (see Wilson & Dalton, 2008). Williamson and colleagues, however, were able to provide a state-level prevalence estimate based on the resources available at the time. Since this research was initially conducted, the state of Ohio has prioritized funding and created strategic policy efforts to combat human trafficking, including updating knowledge about the prevalence of human trafficking in Ohio. Both local and state agencies have improved data systems to identify and record human trafficking events. For example, the Governor's Ohio Human Trafficking Task Force (OHTTF) summarizes data available from state agencies and grant-funded service providers to provide information on individuals who are identified within these systems. Between 2014 and 2015, victims were identified by the Ohio Network of Children's Advocacy Centers (n = 165), child welfare (n = 112), the Ohio Department of Job and Family Services—Refugee services (n = 8), the Ohio Attorney General (n = 384), and the Health and Human Services Grant Partnership (n = 104) (OHTTF, 2017). Because these agencies do not share identifying information to determine if the same victim is receiving services from multiple agencies, there is no way to distinguish the number of duplicate victims across the frequency counts in the report. With more specific details from separate agencies, however, it is possible to establish a more precise prevalence estimate of known and at-risk victims based on existing agency records.

As the support for this study indicates, the agenda to continue to study human trafficking within the state has persisted. Prior research, more generally and specifically within Ohio, has provided a foundation for the current initiative. Thus, the purpose of the current study is to fill gaps in knowledge about the prevalence of human trafficking in Ohio, with a focus on the number of youth victims. This study seeks to calculate more precise estimates of known victims and at-risk individuals who are minors or young adults. To extend prior literature, the current study focused on integrating existing agency records and reports of human trafficking events. The use and integration of state and local data is a first step in calculating more precise estimates of known victims and at-risk individuals who are vulnerable to trafficking in Ohio. To that end, we consider the typology of different data sources to contextualize these prevalence estimates. This report outlines our study findings including (1) the type of information available to measure human trafficking in Ohio, (2) estimates of known human trafficking victims and at-risk individuals in Ohio, (3) lessons learned regarding current capabilities and capacities to estimate human trafficking victimization, and (4) recommendations for future prevalence research, intervention efforts, and policy considerations.

Methods

Data for this study were collected from agencies, providers, and newspaper sources between October 2017 and November 2018. Human trafficking was defined by the federal Victims of Trafficking and Violence Protection Act of 2000, as amended (22 U.S.C. §§ 7101-7110):

Sex trafficking is the recruitment, harboring, transportation, provision, obtaining, patronizing, or soliciting of a person for the purpose of a commercial sex act, in which a commercial sex act is induced by force, fraud, or coercion, or in which the person induced to perform such an act has not attained 18 years of age.

Labor trafficking is the recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.

The federal definition was used in the current study because it was more comprehensive in its coverage of what behaviors encompass trafficking than Ohio's current legal definition. For example, minors induced to engage in commercial sex are considered victims under the federal law, but not always under the Ohio law. Although certain sources within the current sample classified trafficking victims using the Ohio definition, other agencies used definitions that aligned more with the federal TVPA definition. This inconsistency created some variation within agencies that could result in conservative estimates due to the treatment of minors who are engaging in commercial sex (e.g., classified as offender versus a victim). In instances where trafficking status was not specified by the agency, we used the federal definition to categorize minors who were arrested for engaging in prostitution as victims.

To determine the scope of human trafficking victimization, the research team gathered details on human trafficking victims who had been identified across various sources of information or who were determined to be at high risk of victimization. The research team identified possible sources of state and local data including official government reports, data collected from various state-level agencies, justice system records, and aggregate reports of vulnerable populations. In total 14 distinct data sources were collected and analyzed. This included eight (8) existing data sources from state and local agencies with individual-level information, four (4) aggregate reports of human trafficking victimization without individual-level information, and two (2) databases of newspaper accounts of human trafficking events in Ohio.

We included both known victims and at-risk individuals in our study for three reasons. First, multiple sources included indicators for trafficking status as a known victim (e.g., substantiated by a child welfare agency) and also known individuals who were at heightened risk for trafficking victimization (e.g., multiple vulnerability indicators such as running away, foster care placement, and truancy). Second, the first prevalence study, and other studies around the country have included estimates of at-risk individuals, largely based on statistical extrapolation methods. We sought to build on these efforts by identifying at-risk individuals who have interfaced with systems in Ohio. Finally, we viewed stratifying these cases as important given the variation in definitions used across agencies. Additional details on how known victims and at-risk individuals were defined across data sources are discussed more fully below in the "Data Sources" section.

For the purpose of this report, specific sources are not identified, except for the publicly accessible sources and newspaper data. Data are described in a limited way to provide detail on the characteristics of the agency and individuals served in order to contextualize the results and limitations. Due to the sensitive nature of the data being analyzed, the University of Cincinnati Institutional Review Board required confidentiality and the agencies requested anonymity as much

as possible to protect the identity of individuals reflected in the estimates. The data were collected from existing 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). These years were selected early in the study development phase in 2017 after conversations with agencies suggested that detailed data would be available for this timeframe. When possible, additional data were collected for years outside of this range and are noted throughout the report.

Data Sources

As previously noted, data from the current study came from 14 separate sources that can be divided into three categories: (1) existing agency record data (n = 8); (2) aggregate reports (n = 4); and (3) newspaper reports (n = 2). Each of these sources is described more fully below.

Existing Agency Data. Eight distinct data sources in the study included individual-level information on human trafficking victims.

1. **State & Local Human Trafficking Response Data (n = 128; "State HT Response").** The State HT Response data were collected through a partnership between the state and three regional anti-trafficking coalitions. The objective of the agencies is to identify and provide referrals to community-based programs for minor and adult foreign national human trafficking victims. Data collection started in 2014. In considering definitions of human trafficking used to identify victims, this source indicated there was likely variation in the definitions used and ambiguity with respect to performance measures especially in the earlier years of program implementation. In this way, how each separate agency classified trafficking victims or at-risk individuals is unclear.
2. **State & Local Child Welfare A Data (n = 210; "Child Welfare A").** The second set of data were provided by state and local agencies responding to child abuse, including investigations of exploitation and human trafficking. Child Welfare A began reporting identified cases of human trafficking in July 2013. Data were reported quarterly and include a mixture of individual-level (as of July 2015) and aggregate-level data. Cases were classified as a known victim or indicated at-risk for trafficking. Known victims were primarily identified by local or federal law enforcement and referred to the agency for services. At-risk for trafficking was indicated if trafficking was suspected with serious (or multiple) risk factors such as sexual abuse, chronically running away, communicating with older men on the internet, or if the youth had a previous history of trafficking as indicated in the agency reports.
3. **State & Local Child Welfare B Data (n = 947; "Child Welfare B").** Child Welfare B provided data extraction from the case management system for all 88 counties in Ohio. The information stored in the case management system is primarily used by the agency to manage workloads and provide the most up-to-date information for child welfare caseworkers. The state and local child welfare data included all cases flagged for human trafficking during 2014 to 2016. An indicator for determining human trafficking was integrated into the agency's intake assessment in November 2013. Child Welfare Source B uses the Ohio Revised Code (ORC) and additional definitional details to define human trafficking events. Variables in Child Welfare B provided an extensive amount of data.
4. **Ohio Incident-Based Reporting System Data–Law Enforcement (n = 50; "Law Enforcement").** The Law Enforcement data includes details on known crimes committed in the state of Ohio. Law enforcement officials use the Ohio Revised Codes (ORC) to indicate the offenses committed and enter details into the database on a voluntary basis. In

the current study, trafficking victims were identified if they were linked to the ORC code for human trafficking (2905.32). However, not all cases specified the type of trafficking, which limits the ability to distinguish between sex and labor offenses. Additionally, law enforcement agencies reporting to the Ohio Incident-Based Reporting System do so on a voluntary basis. While a large portion of the Ohio population is covered by reporting agencies, it does not represent every agency throughout the state. Data were gathered for offenses between 2014 and 2016 from participating agencies. These data are also different from the data reported in aggregate through the Ohio Attorney General's Office—however, it is possible that there are duplicate cases across these sources.

    a. The details reported into the Law Enforcement Data can also be submitted to the public, federal crime reporting system (National Incident-Based Reporting System). When comparing details from both databases during the 2014 to 2016 timeframe, there were fewer cases available in the publicly available federal database than the state-level database. The discrepancy between cases is due to a data validation error in the way information gets reported to the federal system (personal communication with the Ohio Office of Criminal Justice Services, October 30, 2018). In this way, the state Law Enforcement data provides a better estimate of the number of cases identified by law enforcement agencies that agree to participate in the program.

5. **Legal and Court Services for Victims A Data (n = 116; "Legal System A").** Legal System A was from a county-level specialty court for justice-involved women identified by the court as a victim of human trafficking. The purpose of the court is to offer holistic support through comprehensive treatment plans and other therapy as needed to reduce vulnerability. Victims identified through Legal System A were primarily identified by the court originally through prostitution charges and diverted from the justice system. Information was provided on cases from 2014 to 2016.

6. **Legal and Court Services for Victims B Data (n = 26; "Legal System B").** Legal System B was from a clinic that represents trafficking victims who are involved in the justice system. The clinic assists victims with their legal needs so that they can receive support while navigating the legal system. The data that were provided range from 2015 to 2018, but specific details on when victims were actually identified during this timeframe were not included at the individual level. All minors were classified as victims because they were subjected to commercial sex involvement, which aligns with the federal TVPA definition.

7. **Legal and Court Services for Victims C Data (n = 126; "Legal System C").** Legal System C was from a county-level specialty court for justice-involved youth including identified victims receiving Safe Harbor protections, and at-risk court-involved youth. Known victims were defined by the court as any youth engaging in any commercial sex exchange (i.e., aligns with federal TVPA definition). At-risk individuals were flagged by court based on risk factors (e.g., running away, safety issues)

8. **State-Wide Juvenile Justice Data (n = 1,291; "Juvenile Justice").** The Ohio Youth Assessment System (OYAS) is a statewide data system that identifies youths' risk factors across multiple stages of the juvenile justice system (e.g., diversion, detention, disposition, residential, and community reentry). The database provides statewide case characteristics, demographic variables, and risk variables on minors with juvenile justice system involvement and includes specific identifiers for individuals. OYAS data were extracted for all cases reported into the statewide-automated system between 2014 and 2016 for the

seventy-one Ohio counties that agreed to participate (80.7%) and are identified as the Juvenile Justice data in the current report.

    a. In accordance with TVPA standards, known trafficking victims were identified based on all prostitution-related ORC codes in the data (2907.21, 2907.22, 2907.24, 2907.25).

    b. We operationalized at-risk individuals in two possible ways. First, at-risk youth were identified using a number of additional ORC codes (2907.321j, 2907.322, 2907.323) indicating potential sex trafficking (e.g., pandering obscenity involving a minor, pandering sexually-oriented material involving a minor). Second, at-risk youth were identified by examining the presence of a combination of risk factors measured by the OYAS that are correlated with trafficking victimization including (1) abuse/neglect, (2) runaway behavior, (3) truancy, (4) substance use, (5) family dysfunction, (6) mental health issues, and (7) risk taking behavior. Justice-involved youth with four or more of these OYAS indicators were classified as at-risk.

    c. These risk factors were selected for a number of reasons. First, OYAS demographic indicators provide some context as to who is involved in the justice system and where they are located in the state of Ohio. These variables alone are useful because some studies suggest that females are more likely to be victims of sex trafficking and that risk for trafficking starts at a relatively young age (Banks & Kyckelhahn, 2011; Polaris Project, 2017). Second, research suggests that certain victim risk factors such as a history of abuse or neglect can increase a minor's likelihood of being trafficked (Albanese, 2007; Moore, Houck, Hirway, Barron, & Goldberg, 2017; Roe-Sepowitz, 2012). Third, victims of trafficking might be identified as an offender, rather than a victim, by the justice system. Therefore, victims are frequently exposed to the juvenile justice system—even if the justice system does not recognize them as trafficking victims (Finkelhor & Ormrod, 2004; Varma, Gillespie, McCracken, & Greenbaum, 2015; Williams, 2015). Fourth, victims of trafficking often come from families that are ill-equipped to protect them from traffickers. Youths with poor family attachments or with parents/caregivers who are uninterested in their lives could be more vulnerable to a trafficker's manipulative tactics (Brannigan & Van Brunschot, 1997; Clarke, Clarke, Roe-Sepowitz, & Fey, 2012; Dodsworth, 2014). Fifth, an early risk factor for trafficking is truancy (Cole, Sprang, Lee, & Cohen, 2016; National Center on Safe Supportive Learning Environments, 2015). Finally, there is a positive correlation between trafficking risk and youth who use substances, have high rates of mental health needs, and have had extensive experiences of abuse and/or neglect (Cole & Sprang, 2014; Reid & Piquero, 2014; Reid et al., 2017; Varma et al., 2015).

Definitions and descriptive statistics. Table 1 provides a summary of the general characteristics of each data source including (1) a brief agency description, (2) year range for data collected for this study, and (3) definitions used to define known victims and at-risk individuals. Variables that were most consistent across these sources are listed in Table 2. The descriptive statistics for these eight sources provided insights into the type of information collected across sources and the characteristics of individuals identified as known victims or at-risk individuals. The descriptive statistics include all available, recorded information from state and local agencies. Any lack of additional details about the case or victim characteristics does not necessarily mean that the agency is not collecting that information or that it does not apply to the individuals in the databases. Additionally, and as noted earlier, the Juvenile Justice data recorded at-risk individuals

using indicators that are known to be related to trafficking but where trafficking status did not meet the threshold of trafficking as defined in the current study. Due to the large sample size identified by these methods, Juvenile Justice data count is not included in any of the total summed frequencies to provide conservative descriptive statistics.

The descriptive statistics provided in Table 2 are separated by agency. These statistics do not account for potential duplicate individuals across agencies but have been cleaned to remove duplicate individuals within agencies when that information was known (e.g., agency informed research team about individuals who were duplicates). Across agencies, there were 486 known victims (32.9%) identified, with more than half of the individuals being labeled as at risk (67.1%). A majority of individuals were trafficked for sex (86.8%), but approximately 10% of trafficking victims were exploited for labor. On average, victims were between 12- and 30-years-old when they were identified. However, a majority of victims that were identified were recorded as minors (85.5%). Given the current study's focus on minors, data were requested from agencies that interacted heavily with youth. Some agencies also provided details on adults, but this information is limited and cannot be generalized to understand the trafficking of adults more broadly in Ohio. Most of the identified individuals were listed as female (82.6%). As can be seen in Table 2, the Juvenile Justice Data included 1,009 potential male victims—this is because the majority of at-risk individuals that were identified using the criteria described above were male. If these individuals had been included in the total summed frequency, the breakdown of male and female victims would have been approximately equal. Although this is not impossible, prior literature suggests that many trafficking victims—especially sex trafficking victims that dominate this sample—tend to be female (e.g., Clawson, Dutch, Salomon, & Grace, 2008). Because of these factors, and variation in defining an at-risk individual, we viewed it best to stratify results and report the at-risk individuals from the Juvenile Justice data separately.

Many individuals were identified in records as White (57.6%) followed by Black (35.4%), and Multiracial (6.4%). Additionally, 92.4% of the sample was classified as non-Hispanic/Latino. Details on nationality and citizenship were missing for many data sources, which resulted in somewhat conflicting findings. As indicated in the descriptive statistics, of the sources that included this indicator, approximately 90% of individuals for whom data were available were identified as foreign nationals (n = 125, 91.9%) and approximately 90% were identified as U.S. Citizens (n = 417, 91.2%). However, these estimates are driven by two separate data sources with different agendas: State HT Response (n = 116 foreign nationals) and Child Welfare B (n = 413 U.S. Citizens). The State HT Response data was developed to identify foreign national victims, whereas Child Welfare B identified a majority of individuals as U.S. Citizens. In this context, the agencies appear to be addressing the needs of very different populations.

Table 1. Existing Agency Data Source Descriptions and Human Trafficking Definitions

		State HT Response	Child Welfare A	Child Welfare B	Law Enforcement	Legal System A	Legal System B	Legal System C	Juvenile Justice
Agency Description		Grant-funded program that emphasized identification and referral of foreign national survivors to community-based programs	State and local agencies responding to child abuse	State and local child abuse and neglect investigations, services, and foster care	Victims identified as part of law enforcement and arrest record data	Specialty court for victims	Legal services for victims	Specialty court for victims	County and state-level juvenile offense and risk assessment data
Year Range		2014-2017	2015-2017	2014-2016	2014-2016	2014-2016	2015-2018	2014-2018	2014-2016
Definition(s) of Human Trafficking[a]	**Known**	Not specified by database	ORC 2905.32; Mainly identified by police when referred for services	ORC 2905.32 and additional definition details[b]; Substantiated cases after further investigation	ORC 2905.32 (victims associated with offense code)	ORC 2905.32 (individuals commonly charged with prostitution and diverted from justice system as victims of HT)	Children subjected to sexual violence and exploitation and other forms of violence because of commercial sex involvement	Any commercial sex exchange with anyone would indicate the youth as a trafficking victim	TVPA (researcher classified based on prostitution-related offenses for minors—ORC 2907.21-.22 and 2907.24-.25)[d]
	At-Risk	Not specified by database	Flagged by agency as suspected based on case-level details	Flagged by case worker as suspected HT based on initial allegations	Individuals arrested for ORC 2907.21-.24 (researcher classified)[c]	Not applicable	Not applicable	Flagged by court as suspected HT based on risk factors (e.g., running away, safety issues)	Researcher classified based on a number of additional ORC indicators and HT risk factors[e]

Notes: HT = Human trafficking; ORC = Ohio Revised Code; TVPA = Trafficking Victims Protection Act. [a]Agency defined and/or research team defined—any definitions classified by research team are specified. [b]Child Welfare Source 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)" (personal communication, May 15, 2018). [c]ORC 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). [d] ORC 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). [e]At-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/neglect, running away, truancy, substance use).

Table 2. Victim-Level Details Across Existing Agency Data Sources

	State HT Response (2014-2017)	Child Welfare A (2015-2017)	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)	N[a]
	Frequency (Percent)[b]								
Victim Status									
At Risk	--	57 (27.4)	857 (90.5)	6 (12.0)	--	--	69 (54.8)	1,284 (99.5)	989 (67.1)
Known Victim	--	151 (72.6)	90 (9.5)	44 (88.0)	111 (100)	26 (100)	57 (45.2)	7 (0.5)	486 (32.9)
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)
Mean Age (SD)	--	--	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)	1,203 (93.6)	1,287 (85.5)
Gender									
Male	51 (39.8)	13 (6.2)	193 (20.4)	9 (18.4)	--	--	7 (5.6)	1,009 (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)	1,304 (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)	--	--	1,185 (95.5)	906 (92.4)
Hispanic/Latino	--	6 (100)	65 (7.4)	--	--	2 (100)	--	56 (4.5)	74 (7.6)

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Table 2. Victim-Level Details Across Existing Agency Data Sources

	State HT Response (2014-2017)	Child Welfare A (2015-2017)	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)	N[a]
				Frequency (Percent)[b]					
Nationality									
Domestic Citizen	11 (8.7)	--	--	--	--	--	--	--	11 (8.1)
Foreign National	116 (91.3)	6 (100)	3 (100)	--	--	--	--	--	125 (91.9)
Citizenship Status									
U.S. Citizen	4 (10.3)	--	413 (98.8)	--	--	--	--	--	417 (91.2)
Non-U.S. Citizen	35 (89.7)	--	5 (1.2)	--	--	--	--	--	40 (8.8)
Year[c]									
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)	1,291 (100)	301 (100)
History of Running Away									
Yes	--	3 (100)	85 (100)	--	--	--	--	155 (12.1)	89 (93.7)
No	--	--	--	--	--	--	--	1,123 (87.9)	6 (6.3)
History of Foster Care/ 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)

Notes: HT = Human Trafficking; SD = Standard Deviation.
[a]Juvenile Justice at-risk individuals have been excluded from total N estimates. [b]All findings are presented as frequencies with percentages in parentheses except for Mean Age (SD), which is presented as the mean and standard deviation when applicable. [c]Year victim was identified by source.

Agencies provided existing data on identified individuals from 2014 to 2018, with a majority of the information collected in 2014 (29.2%), 2015 (29.4%), and 2016 (34.4%). Less than 10% of the data were from 2017 (6.7%) and 2018 (0.3%). Thus, when considering aggregate victim counts across sources, approximately 93% of the data were from 2014 to 2016. We included all data provided by agencies for the analysis, even if it formally fell outside of the 2014-2016 timeframe. For example, a few data sources sent their full individual-level records that included some cases from 2017 and 2018. Other sources did not begin collecting data until 2015 or provided a year range when the data were collected but did not provide specific details on when individual victims were actually identified during the timeframe. The inclusion of the all available data offset missing information from early in the three-year range for the study and made it possible to analyze the combined data where years could not be separated. Furthermore, we wanted to capture as much detail as possible from sources willing to share their reports while also capturing a roughly three-year period of time for each data source. We are also mindful of the fact that these agency reports are generally conservative in capturing human trafficking victimization or risk for it. For example, a recent report indicated that when measuring human trafficking, likely only a fraction of victims are identified. For example, in one study site, the researchers found that only 14% to 18% of the total human trafficking victim population was captured by social service agencies and/or law enforcement (Farrell et al., 2019). In another site they found that 29% to 45% of trafficking victims were identified in agency records (Farrell et al., 2019). For these reasons, the information reflected in the analyses captured all information provided to the research team by the partnering agencies.

Finally, there were several vulnerability factors that were recorded by multiple data sources including having a history of justice system involvement (n = 301), running away (n = 89), being placed with foster care or child protective services (n = 211), and homelessness (n = 54). A more detailed breakdown of these variables by trafficking type and source is presented in the Appendix.

A breakdown of the at-risk individuals and known victims by county type is presented in Table 3. Urban areas comprise the 10 most populous counties in Ohio based on the U.S. Census data for 2014, 2015, and 2016 (Franklin, Cuyahoga, Hamilton, Summit, Montgomery, Lucas, Butler, Stark, Lorain, and Mahoning; U.S. Census Bureau, 2017). Rural, or less densely populated areas, made up findings for all other counties. These broad distinctions were created to reduce concerns about compromising the confidentiality of data sources and to protect anonymity of individuals identified. As indicated in Table 3, a majority of known victims (81.2%) and at-risk individuals (all at-risk: 70.3%; at-risk individuals excluding OYAS data: 81.1%) resided or were trafficked in urban areas.

Table 3. County Type Where Victim Lived and/or Where Victim was Trafficked

	Known Victims		At-Risk Individuals		At-Risk Individuals (excluding OYAS)	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Type						
Urban[a]	289	81.2	890	70.3	107	81.1
Rural[b]	67	18.8	376	29.7	25	18.9
Total	**356**		**1,266**		**132**	

[a]Urban status combines the top 10 most populous counties indicated by the U.S. Census between 2014 and 2016. [b]Rural status combines all other counties not listed as the top 10 most populous.

Aggregate Data. In addition to the individual-level data, where available, we included aggregate counts from agencies unable to share individual-level details. This included four additional sources of data from 2013 to 2016 on flagged, known victims and at-risk individuals by each agency. These data included counts of (1) refugee youth identified through state and local child welfare data (n = 13 known victims; years: 2014 to 2016), (2) youth identified through child abuse service providers prior to the availability of individual-level data (n = 141 known victims; years: 2013 to 2015), (3) human trafficking victims identified by law enforcement (n = 535 known victims; years: 2014 to 2016), and (4) at-risk youth identified by examining patterns of risk factors within state and local child welfare data from Child Welfare B for youth who did were not flagged as human trafficking cases, but shared similar risk factors (n = 3,222 at-risk individuals; years: 2014 to 2016).

Child Welfare B defined at-risk cases as individuals, aged 0-17, who had four or more of the following risk factors associated with their case: (1) history of child sexual abuse; (2) history of running away (four or more times in the past year); (3) history of homelessness; (4) history of truancy; (5) history of juvenile court involvement; (6) history of CPS involvement, including foster care; (7) history of drug use; (8) history of psychiatric admissions; (9) history of multiple sexual partners; and (10) history of sexually transmitted infections and/or pregnancy. Similar to the Juvenile Justice data, these risk factors were selected due to their well-documented correlation with human trafficking victimization. Individual-level information was not available for these cases to estimate with the stacked data, but they were included in some of the estimates. The logic behind developing these agency profiles and characterizing these sources is critical in considering the type of information included, as well as coverage of information, in each data source to help refine the estimates.

Newspaper Reports. Finally, two newspaper databases were used in the report to contextualize human trafficking events that occurred in Ohio:

1. **University of Cincinnati (UC) Newspaper Database.** In an additional effort to cover incidents of trafficking, the research team content analyzed 85 Ohio newspapers dated between January 1, 2014 to December 31, 2016. The newspapers were identified through the Access World News database produced by NewsBank.[1] To be as inclusive as possible, any cases where an offender was arrested, charged, or sentenced with a trafficking-related offense or where a minor was induced to engage in commercial sex in Ohio were included in the current sample. As previously noted, minors who are induced to engage in commercial sex are considered trafficking victims under the federal TVPA definition. Once a case was identified, supplemental searches were conducted in Google and LexisNexis to identify any other relevant information regarding the incident.
2. **Ohio Office of Criminal Justice Services (OCJS) Database.** The OCJS newspaper database is an ongoing effort by the agency to document trafficking cases that are reported

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[1] NewsBank is a comprehensive database available through UC Library services with access to more than 1,000 newspapers. The 85 newspapers included in the study are all the available Ohio newspapers in the search range that identified at least one potentially relevant news stories based on the search terms (human, sex*, labor, organ*, immigra*, rape, porn*, pimp*, massage*, brothel*, prostitut*, sweatshop, slave*, indentured, person, debt*, traffick*, smugg*, bondage, servitude, minor*, foster*, arrest, prosecut*, court*, federal, conspiracy, trial, legal cases, convict*, guilty*, criminal sanctions, criminal investigation, indictment, sting*, warrant, undercover, incarcerat*, jail, prison*)—asterisks indicate any permutation of the word.

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in the media. The newspaper articles were coded between 2009 and 2017 and were compared with the cases that were identified in the UC database.

The estimates identified from these sources were not integrated with the overall prevalence estimate that included the existing agency data and the aggregate data. Instead, the purpose of the newspaper data was two-fold. First, the data provided details on cases from publicly available sources including some information on victim vulnerabilities. In this way, the newspaper stories contextualize events surrounding trafficking victimization in a way that agency data records cannot (e.g., receive only yes/no trafficking indicator without context) (see also Examples of Human Trafficking Cases Identified in Newspaper Stories).

Second, newspaper reports on trafficking are publicly available and can create an image of what trafficking "looks like" (e.g., Roe-Sepowitz, Gallagher, Hogan, Ward, Denecour, & Bracy, 2017). By coding newspaper stories in the current study, the types of cases in Ohio that are reported in the media are uncovered. These victim demographics can then be compared to information gathered through existing agency records.

Definitions and descriptive statistics. Due to limitations in available information for each incident, known victims and at-risk individuals were not separated into different categories. Instead, any "identified" individuals that were noted as being exploited in the reviewed sources were coded as victims. Table 4 presents an overview of the number of victims by the database and year range. Within the 2014-2016 timeframe, there were 50 and 18 cases of trafficking identified in the UC and OCJS databases, respectively.[2] Because any given case of trafficking can include multiple victims, the total number of identified victims exceeds the number of cases (UC: n = 168 victims; OCJS: n = 58

> **Examples of Human Trafficking Cases Identified in Newspaper Stories**
>
> **Case Example #1:** An Ashland couple was found guilty of enslaving a 30-year-old mentally disabled woman and her 5-year-old daughter in their home for almost two years. Witnesses accused the couple of kicking, punching, and beating the woman. The male and female were sentenced to 30 and 32 years in prison, respectively. There were two other co-defendants involved in this case whom received four and five years in prison for their roles in the conspiracy.
>
> **Case Example #2:** A 41-year-old male was arrested for sex trafficking women. He told at least one victim that he was a pimp who could provide food, clothing, and narcotics for her addiction if she engaged in commercial sex. After she agreed to the arrangement, he pointed a gun at her, assaulted her, and threatened to kill her on multiple occasions. He was eventually sentenced to 15 years in prison for transporting women to engage in prostitution.
>
> **Case Example #3:** For more than a year, a 45-year-old male forced multiple young women to sell sex for profit. After recruiting his victims, he would take them to his home where he beat them and kept them under lock and key. One woman jumped out of a window to escape, but was quickly recaptured. The women were only allowed to leave when he transported them to appointments where they engaged in commercial sex. He was sentenced to 15 years in prison after pleading guilty to multiple charges, including sex trafficking.

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[2] There were a total of 55 and 64 cases identified in the UC and OCJS databases, respectively. However, only the cases with detailed information on victims were included in Table 4.

victims). On average, there were approximately three victims per case in both databases. When the full OCJS timeframe (2009-2017) is examined, the cases (n = 55), victims (n = 269), and average number of victims per case increases ($\bar{x}$ = 4.89, SD = 8.04). This illustrates that offenders often exploit multiple individuals in Ohio.

Although the newspaper databases provided details on victims, there were instances where the same cases were identified in both sources. These cases were linked based on the offender name. To account for this, the total number of duplicate cases and identified victims were recorded across both databases. This process resulted in 107 potential duplicate victims that were removed from the overall newspaper victim count.[3] Accounting for these individuals, there were 119 total unique victims identified in publicly available newspaper sources between 2014 and 2016 (see Table 4).

Table 4. Victim and Case Details in Newspaper Databases Between 2014 and 2016		
	UC Database	**OCJS Database**
Total Number of Cases	50	18
Total Number of Identified Victims	168	58
Mean Number of Victims by Case (SD)	3.36 (3.35)	3.22 (3.00)
Total Victims Across Both Databases	226	
Potential Duplicate Victims	107	
Total Unique Victims (duplicates removed)	119	

Notes: UC = University of Cincinnati; OCJS = Ohio Office of Criminal Justice Services; SD = standard deviation.

In addition to the overall victim count, the newspaper stories provided details on the victims and vulnerability factors. Table 5 provides basic descriptive statistics for all victims with available information. On average, the victims were in their late teens when they were trafficked, with over half of the victims being minors. A majority of victims were noted as females and victims of sex trafficking. Additionally, a number of victims were identified as foreign nationals. When assessing vulnerability factors, relatively few newspaper stories specified whether the victims had any history of justice system involvement (UC: n = 9; OCJS: n = 11), running away (n = 3), homelessness (n = 1), or foster care placement (n = 3) (see Table 5). However, the narratives included in the text box above illustrate vulnerability factors that can elevate risk for trafficking in Ohio (e.g., developmental disability, need for shelter, substance abuse).

Compared to the descriptive statistics provided by existing agency sources (n = 1,603 victims excluding Juvenile Justice data), the newspaper data (n = 119 victims) seems to underrepresent the frequency of human trafficking victims in Ohio. Although some of the victims in the newspaper data are likely present in the existing agency data, it is improbable that the number

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[3] The victims are noted as "potential" duplicates because there is limited information on victims in newspaper sources. In this way, we cannot be positive that all identified duplicate victims were actually duplicates. The total number of victims identified across the same cases were matched and removed. For example, if both databases indicated three victims for a particular case, then the total number of duplicate victims was recorded as three. If one database identified five victims and the other database identified four victims for a particular case, then the total number of duplicate victims was recorded as four. It should be noted that the UC database tended to be more conservative in estimating victims by case compared to the OCJS database.

of duplicates would reduce the overall number of victims identified in agency settings. The finding informs discrepancies between what the public learns about trafficking in the media compared to the caseloads of Ohio agencies. In this context, many trafficking cases that occur in Ohio are likely never featured in publicly available sources even if they are identified as such by various systems.

Table 5. Descriptive Statistics for Victims Identified in Newspaper Databases				
	UC Database (2014-2016)		OCJS Database (2009-2017)	
	n	Frequency/ Mean (SD)	n	Frequency/ Mean (SD)
Age	53	16.75 (4.89)	67	18.33 (6.58)
Age Status	107		145	
Minor		56		88
Adult		51		57
Gender	142		159	
Female		128		145
Male		14		14
Trafficking Type	168		269	
Sex		147		182
Labor		21		87
Nationality	47		222	
Domestic Citizen		10		122
Foreign National		37		100
Vulnerability Factors	--		--	
Justice Involvement		9		11
Runaway		3		--
Homeless		1		--
Foster Care		3		--

Notes: Sample sizes vary by variable due to missing data and all available victim information is included. UC = University of Cincinnati; OCJS = Ohio Office of Criminal Justice Services; SD = standard deviation.

Developing Human Trafficking Estimates and Identifying Duplicate Individuals

Prior to data analysis we undertook an extensive processing protocol to ensure that data were as clean as possible. This was aimed at removing clear duplicate cases within each data set and maximizing the range of fields available for the analysis. We first developed a checklist of available data fields identified in the study proposal and refined that as we obtained data from sources. We then integrated information for each data file so that we had a common set of measures that could be used to identify redundant cases and describe pools of known victims and at-risk individuals. For example, some sources provided individuals' date of birth and others simply an indicator of minor/adult status. In the former case, the date of birth was used to further populate the age status indicator. This process led to a single, "stacked" database comprising eight sets of individual case records from the sources described in the table above. That file balanced potentially useful identification fields available in only some files with a core set of measures that was present in multiple data files.

Using the processed data, we moved on to the main analytic task of estimating unique known victims and at-risk individuals identified by agencies. Data analysis was conducted in multiple stages where we first integrated data sources in order to eventually produce contextualized

prevalence estimates. We then engaged in a process of manual and automated data checking to develop individual and pooled estimates across all data sets. This process had two aims: (1) sorting observed individuals that are **known as victims** or **agency-identified individuals who were designated as at-risk** for victimization and (2) identifying and adjusting estimated counts for potential duplicate cases.

The data provided by agencies fits into three different categories. First, three of the file sources are simply aggregate counts based on publicly available reports. They contain no individual-level case information or identifiers. Second, there were several sources that contained individual-level data with no identifiers. We eventually compared across common fields in these databases to assess possible duplication (see below). For example, some databases were predominantly youth and therefore would have a greater degree of potential overlap with other child serving agencies as opposed to law enforcement sources that primarily encountered adult victims. Third, some sources provided names and dates of birth of victims or individuals at-risk, which allowed for a stronger check on duplicate cases.

We used the objectives of the individual agencies and their record keeping processes to help identify pools of cases that were likely to be independent (or not) for the purposes of the counting known victims and at-risk individuals. For example, one aggregated source had an "investigation" data field that suggested that some of its reported cases might also have been counted by another agency in our record sample. That was subsequently accounted for in estimates including aggregate report sources to ensure that we minimized the potential duplicates as much as possible. The logic behind this process was to consider information in each data source that might help us in refining that initial estimate based on duplicates while also accounting for potential estimation error in final conclusions. The basic statistics and discussion of reporting and data collection procedures presented earlier suggest that these pools of cases are likely to be fairly distinct. We went through the various datasets thoroughly to check for duplicates within each based on similar agency unique IDs and other identifying information such as date of report and name. This generally eliminated possible duplicates in each data set. Strong identifiers were rare in the agency data obtained for this study in that only two of the main data sources have full information on county of report, names, and date of birth. However, the data sources that included this information accounted for a large proportion of the overall cases. For example, 77.4% of identified individual victims have information on person first and last name and 84.5% have full information on date of birth.[4] County of report or residence was available in only 56.3% of cases, however. Our first duplicate check shown below searched for exact matches on those sets of variables. That led to a reduction of seven cases in the data set.

A more stringent check for duplicate cases used a data linking software package in Stata 15.1, *dtalink* (Jaro, 1995; Kranker, 2018). The de-duplication process comprised multiple steps which were informed by decision rules about which cases might qualify as duplicates, how much weight should be given depending on whether or not cases match on a particular data field, and an overall cutoff score for cases to be considered matches (Kranker, 2018). In each case we used the insight on the various data sets described above—and particular information within those data sets—to identify how likely it is that different cases in the full case file are in fact the same individuals. This facilitated a process whereby the different fields were ranked on their likelihood of producing matches and weighted accordingly. For example, data coverage was high for gender

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[4] The additional date of birth information came from the Legal System sources.

(>99%) and it has clean distinctions in coding across two groups in the sources. Therefore, it was used as a "blocking" variable so that cases had to match on that to move to the next step of the process of consideration of whether they were duplicates by evaluating each of the measures identified as "matching variables" (Augustine et al., 2018). Other measures may have been less likely to totally discern cases because of degrees of missingness (e.g., last name) and therefore those were weighted accordingly. The criteria are summarized in Table 6.

Table 6. Overview of Duplicate Check Criteria			
	Measure	*Match Weight*	*Non-Match Weight*
Blocking Variable	Gender of Individual in Case	--	--
Matching Variables	First Name	3	-5
	Last Name	5	-3
	County of Residence/Report	2	-3
	Age Grouping	2	-5
	Birth Year	3	-4
	Birth Month	5	-2
	Birth Day of Month	5	-1
	Race	2	-5
	Gender of Individual in Case	2	-5
	Year of Report	2	-5

With those weights, we utilized an initial cutoff of 15 for the probabilistic matching score to attach each case to a potential best possible match. We then refined our duplicate search based on inspection of individual cases (Kranker, 2018). The first step identified 98 additional potential matched pairs.[5] We then looked more closely at those cases to check the key variables. This helped to further refine the matching confirmation as similar or identical birthdays (for twins) or last names (for siblings) sometimes triggered higher scores. This process yielded two additional duplicate individuals in the known victim group, 19 at-risk individuals group (mostly crossing juvenile justice and child welfare cases). Lastly, the process identified five instances where one individual was a known victim and the other of the pair an at-risk individual. Those were left in their respective counts. Duplicate individuals were identified at all places in the distribution of the probabilistic matching score (16 to 31), suggesting that coupling the algorithmic process in *dtalink* with further confirmation based on individual inspection was necessary.

After adjusting the data based on the identification of possible duplicate individuals, we then calculated the confidence interval for each count based on the individuals observed in this data file. Since the mean count (λ) and its standard deviation are assumed to be the same in a count distribution, we use the following calculation to develop a confidence interval based on our various counts (Daly, 1992):

$$\hat{\lambda} \pm 1.96\sqrt{\hat{\lambda}}$$

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[5] This technique did identify the seven cases found in the less extensive matching process above, lending some support to the multifaceted approach to this process of identifying duplicates.

This allows us, with some assumptions, to account for uncertainty in the estimated count of victims and at-risk individuals across these data sources by providing a plausible range of values around the count identified based on the data.

Findings

Table 7 summarizes the estimates for known victims and at-risk individuals across several conditions based on the data used and the specific level of duplication check utilized in each case. Each of those descriptions helps to set the context for the estimated counts reported in the table. They rely on a combination of the duplication checks just described and the use (or not) of data sources depending on our review of their characteristics. In general, the *known victim* count is smaller in each condition due to the relative stringency of the different definitions used (e.g., minors engaged in commercial sex, agency flagged cases as known trafficking victims). We first describe the *known victim* cases before moving on to the *at-risk individuals*. After presenting the different categories of estimates we then identify those that seem to fit best based on the evaluation of the data and existing research on human trafficking prevalence.

Table 7. Summary of Human Trafficking Estimates from Different Data Sources and Conditions

Estimate Type	*Nature and Number of Data Sources*	*Estimated Count 95% Confidence Interval*
Known Victims	All Case Data Sources (n = 8)	489 446.6—534.3
	Remove Duplicates Based on Name, DOB (n = 8)	486 443.7—531.2
	More Extensive Duplicate Check with *dtalink* (n = 8)	484 441.8—529.1
	Add Aggregate Data Sources (n = 12)	1173 1106.8—1242.1
	Add Aggregate Data Sources, Remove Possible Duplicates (n = 11)	1032 970.0—1096.9
At-Risk Individuals	All Case Data Sources (n = 8)	2273 2180.5—2368.4
	Remove Duplicates Based on Name, DOB (n = 8)	2269 2176.6—2364.3
	More Extensive Duplicate Check with *dtalink* (n = 8)	2250 2158.0—2344.9
	Data Sources without OYAS (n = 7)[6]	987 926.4—1050.5
	Add Aggregate Data Source (n = 8)	4209 4082.8—4338.1

Notes: Estimates are based on data from 2013-2018, with a majority of data points collected between 2014-2016 (95.3%).

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[6] As described above, identification of "at-risk" cases in the OYAS data file relied on different criteria than in other sources and therefore the estimates are best viewed as stratified by OYAS/Not OYAS data sources. Also, the removal of those cases eliminated all of the duplicate cases in that count, so that estimation proceeded with just the initial duplicate check.

Known Victims. The overall estimate compiled based on these data sources for the years covered by the study (primarily 2014 to 2016, but a small percentage of cases fall outside that range) was *486* known victims after basic adjustment for duplicates (a total of 3 were identified) and ***484 known victims*** with the additional *dtalink* check, which found two more duplicates. The accompanying confidence interval (CI) suggests that if we were to repeat this process a number of times, the vast majority (95%) of our resulting counts would be expected to fall between ***442 and 529 known victims during this time period***. These estimates include only "captured" individuals— or individuals who have interacted with various systems in Ohio. These are not estimating the size of the total population of human trafficking victims (which would include both individuals "captured" in agency records and individuals "not captured").

We then add data from four aggregate record sources to this count. One is a law enforcement source and the others are child welfare organizations or agencies that investigate allegations of abuse and neglect. For known victim cases we present two separate estimates because of the potential for overlap in those reports and the just-described individual case data. The estimates are higher when using these additional reports, ***with a count of 1,173 known victims within a 95% Confidence Interval of 1,107 to 1,242***. After accounting for some possible duplicates in those data by removing counts from one report that could overlap with two possible individual level sources (Child Welfare A, B), we estimate a more conservative count of ***1,032 known victims with the expectation that the vast majority of counts (95%) would fall somewhere between 970 and 1,097 during this time period.***

At-Risk Individuals. All at-risk estimates were calculated using information from data between 2014 and 2018 (with relatively few cases from 2017 or 2018). For those individuals who were classified as at-risk for human trafficking, the expected counts are ***2,250 (95% CI = 2,158 to 2,345) and 987 (95% CI = 926 to 1,050)*** for the samples including and excluding the Juvenile Justice-identified risk, respectively. These are treated separately due to the very different definitions of risk based on the justice assessment items relative to the other reporting systems used in the study. As in counting cases involving known victims, we also report an estimate that added aggregate counts from Child Welfare B that offered additional at-risk individuals not reflected in their individual case record system. That source identified more than 3,000 additional at-risk cases during the time frame under study. This led to an estimated count ***of 4,209 identified at-risk individuals within an interval of 4,083 to 4,338 cases***.

Figure 1 summarizes our "best" estimates from the known victim and at-risk individual categories. Those estimates were identified because they reflect our best judgment based on an attempt to be as comprehensive as possible in synthesizing the different data sources (e.g., we include both individual and aggregate reports) while also being mindful of the information provided by our review of the relative strengths and weaknesses those data sets and agency reports in the estimation process. Ultimately, we settled on the two-stage duplicate case check estimate that combines both aggregate and individual data sources for known victims. For unique at-risk individuals, we again use the combined case record and aggregate agency report—with the duplicate case checks—to arrive at a "best" estimated count. We omit the Juvenile Justice risk assessment cases due to the variability in criteria for identifying risk, however.

Figure 1. Summary of Known Victims or At-Risk Individuals for Human Trafficking in Ohio, 2014-2016^

^A small portion of individuals were identified in 2013, 2017, or 2018.

Summary of Key Findings

Over the last five years, several state and local agencies have collected systematic information on victims of human trafficking in Ohio. Through the data collection process, we found that the extent of the information collected—and ability to share data—can vary widely by agency. As described previously, data availability, data type, and the extent of coverage within and across datasets is variable. The current study provided the first comprehensive examination and analysis of the types of human trafficking data currently available in Ohio. The key findings are summarized below.

What information is available to measure human trafficking in Ohio—and what is missing?

There were two clear issues in collecting data for this project. First, a number of existing agency records on human trafficking victims were unavailable to the research team. This was primarily due to limited capacity to translate record-keeping systems into sharable data and/or ability to share the data due to agency restrictions. Second, many human trafficking victims are not reached by social service or legal systems and remain unaccounted for in prevalence estimates. In this context, the current data samples allow some assessment of what details are being collected and what details are overlooked. Given the extensive use of the existing agency data from eight sources in the current report, the discourse on the availability of data focuses on these agencies.

Seven out of the eight data sources contained details on at least half of the 14 items presented in Table 2. The coverage on key indicators varied depending on the source, however. Trafficking type (sex trafficking, labor trafficking, or both), age status (minor or adult), and gender were consistently reported across all sources. Other variables that were common included victim status, age, race, and year the victims were identified. Variables that were missing information across many agencies included nationality, citizenship status, and the vulnerability factors (e.g.,

justice system involvement, history of running way, foster care or child protective services involvement, homelessness). No assumptions were made regarding the absence of any indicators to reduce the likelihood of over or underestimating the presence of any given variable.

Within agencies, certain data collection efforts provided more details than others (see Table 2). For example, both of the child welfare data sources provided more details about the context and characteristics of cases than many of the other sources. The HT State Response data, which included data reported by multiple agencies, had the least amount of individual-level detail. Because agencies varied in details reported to the State data systems, it was not necessarily a uniform data collection process across agencies. Child Welfare A and Child Welfare B provided a relatively comprehensive overview of individuals who received services, but some variables were missing or captured for few individuals (e.g., ethnicity, nationality, vulnerability factors). The Law Enforcement data were able to provide basic demographics but limited to no details on race, ethnicity, nationality, and vulnerability factors. Legal System A and Legal System C were missing details for nationality and citizenship. However, these sources provided some details on vulnerability factors related to justice involvement and history of foster care and child protective services. Legal System A also provided details on any indication of homelessness. Conversely, Legal System B data offered a demographic overview of the population served but little additional details on the nationality, citizenship, or vulnerability of victims. Finally, the Justice System data provided the largest sample size relative to the other agencies. As previously noted, however, a majority of the individuals within this data were classified as at-risk (99.5%). There were only seven juveniles identified as known trafficking victims based on prostitution-related offense codes (i.e., a trafficking victim under the federal definition). There is quite a bit of information gathered on this segment of the population as indicated in Table 2, with the exception of nationality, citizenship status, and homelessness. Thus, it is difficult to determine exactly how its at-risk pool of cases corresponds with those in the rest of the study. This reflects the different screening and assessment occurring within different types of agencies that may encounter victims or at-risk individuals.

What is the prevalence of human trafficking in Ohio?

We identified various counts of known human trafficking victims and individuals at risk for human trafficking victimization based on different data exclusion/inclusion criteria and duplication checks. Based on existing data sources and our "best estimate," there were **1,032 known victims** (95% CI = 970—1,097) during the study timeframe. This removed all identified duplicates and included aggregate reports, but also made some adjustment for some potential overlap in those counts and individual records from the child welfare agencies. We identified approximately **4,209 at-risk individuals** (95% CI = 4,083—4,338) based on an extensive duplicate case check, including aggregate reports but without juvenile justice-identified risk. Approximately 1,200 at risk individuals were identified in the juvenile justice database, but we reported them separately because of differences in definitional criteria used to set "at-risk" status for those cases versus those from other sources (e.g., involvement in specific ORC defined offense types, presence of some risk factors found to be correlated with human trafficking previously).

Based on our assessment of the available information on human trafficking in Ohio that can be used for research purposes, these estimates are likely very conservative relative to the true number of victims. This was mainly due to the knowledge of omitted data sources and the knowledge of those included developed in the data gathering, cleaning, and analysis process.

Although this study integrated data from multiple agencies, there are some regions and other agencies (e.g., non-profits, healthcare providers) where data were not acquired. The inclusion of additional data sources could potentially inform an updated prevalence estimate. Finally, it is important to note that the sample of known victims and at-risk individuals does not include everyone at-risk in the population.

What are the characteristics of human trafficking victims in Ohio?

The findings presented in this study are based on available, recorded information by state and local agencies. Any lack of additional details about the case or victim characteristics does not necessarily mean that the agency is not collecting that information or that it does not apply to the individuals in the data. It is possible that additional details on these trafficking events were not provided to the researchers. Still, the information that was provided illuminated a picture of identified trafficking cases and victims in the state of Ohio.

As outlined in Table 2, known victims accounted for 32.9% of the sample. The majority of individuals were identified as sex trafficking victims (86.8%). The average age of victims when they were identified ranged from 12- to 30-years-old, with a majority of victims identified as minors (85.5%). Most of the victims were female (82.6%) and many victims were classified as White (57.6%) followed by Black (35.4%), and Multiracial (6.4%). Approximately 92% of the sample was classified as being non-Hispanic/Latino. Victim nationality and citizenship were dependent on the data source. For example, one data source identified that approximately 91% of the victims they encountered were foreign nationals (State HT Response). However, a different data source classified approximately 99% of the victims they identified as U.S. Citizens (Child Welfare B). This discrepancy highlights the different populations that are likely served by each agency—and emphasizes the need to gather data from a variety of sources to identify subpopulations of trafficking victims. Finally, there were several vulnerability factors that were recorded by multiple data sources including having a history of justice system involvement (n = 301), running away (n = 89), being placed with foster care or child protective services (n = 211), and homelessness (n = 54).

Lessons Learned

The study was the first comprehensive cataloging of known and at-risk victims of human trafficking based on existing systems that collect data on human trafficking in Ohio. However, similar to human trafficking research challenges in other parts of the country and around the world, measuring the human trafficking problem in Ohio is challenging for several reasons. In particular, identifying the nature of these events and patterns is limited due to high rates of non-reporting among victims, differing definitions in thresholds for victim and at-risk status, and variation in record-keeping practices among agencies that may encounter new or repeat cases. Thus, the integration of various data sources helped the research team identify potential avenues for further development of the data infrastructure for understanding this problem.

Integrating different sources of data is a critical first step for developing accurate human trafficking victim counts. Still, this strategy poses many challenges from both the standpoint of agency missions and effective measurement. For example, agencies that collect information pertinent to understanding human trafficking often do so for different reasons. Law enforcement agencies may encounter victims or at-risk persons in the course of their investigations or, in the

case of some minors, as runaways. Likewise, service providers encounter similar (or the same) cases, but for entirely different purposes. Overall, this report offers an expansive information base for developing estimates, but also highlights the challenges in reconciling data originally collected for varied purposes.

We identified two key issues that we present as "lessons learned" from conducting this study. First, there were some inconsistencies in defining human trafficking within and across agencies—or even a lack of an explicit definition that was used to classify individuals. Both agencies and the research team relied heavily on proxy variables for victimization (e.g., child sexual abuse, running away), especially when attempting to classify at-risk individuals.

Issue 1: **Systems are not set up to collect information on trafficking victims in ways that are optimized for comprehensively understanding the problem and, when they are, the data infrastructure often precludes sharing, integration, or comparison with other systems.**

For example, data collection initiatives were ongoing from August 2017 through November 2018. The approximately 15 months of data collection efforts highlights the time-consuming nature of gathering and integrating various sources of information. Throughout this process, agencies were oftentimes limited in how much information they were able to share, if any. For example, a number of non-profit agencies did not have the data management infrastructure to extract and compile information to be included in the study. This process illuminated common challenges researchers face when trying to obtain data from agencies with limited capacity and resources (e.g., funding, staff training, time) for data extraction and sharing. In this way, this report transformed from a pure prevalence estimate study into a comprehensive look at the human trafficking data infrastructure in Ohio. Now that this first step has been taken, these findings should be used to support agencies who want to improve system infrastructures to facilitate data collection and promote data sharing initiatives.

There were other potential sources across the state that the research team had some level of access to, but did not incorporate in this report. For example, state law enforcement provides aggregate estimates of the number of missing or runaway youth annually. Between 2014 and 2016, the Ohio Attorney General's Office reported that there were approximately 10,000-12,000 missing or runaway incidents across the state. The at-risk estimates presented in this study do not include these numbers since this is by incident rather than individual (e.g., one youth with a pattern of chronically running away could be represented in this number multiple times). Given that running away, especially chronically running away, is a strong risk factor for human trafficking, the at-risk estimates are likely conservative since we were unable to integrate these numbers into our estimates in a meaningful way.

Issue 2: **A separate complicating issue is that a lot of systems are likely missing victims.**

It is likely that many victims do not come forward and/or do not self-identify as a trafficking victim. As is the case with some of the at-risk sample, youth may interact with law enforcement officials or social service agencies without ever being labeled as a trafficking victim. Thus, this population of trafficking victims is likely not captured by agencies if there is no reporting system to indicate at-risk or suspected victims that could be monitored over time at either the case or agency level. These types of estimates may vary in their usefulness across different groups of stake holders. For example, are service providers and researchers better at estimating for

minor victims because there are more data sources? Or, are there groups that we believe these estimates are less helpful for because of under identification or potentially more fear among providers about sharing individual-level data? These questions cannot be answered by this study alone but provide a springboard for future research to consider when trying to determine the prevalence of human trafficking and who might be missing from these estimates. In short, it is important to assess these estimates in the context in which they were developed as well as the ways in which they will be used.

Despite these challenges, we integrated all available data sources and reports on known victims and at-risk individuals across the state. By virtue of the data that were collected and the methods we used to analyze the data, we are fairly confident that these findings represent a conservative estimate of the number of victims in Ohio. At a minimum, this study identified hundreds of known victims and thousands of at-risk individuals in Ohio during the study timeframe. It is likely that there are more known victims and at-risk individuals in Ohio than were identified from these sources alone.

Overall, there were relatively few, clear duplicates in the individual record data that we obtained for the study (<120 if assessed within and across data sets). Seemingly, there were more duplicates when merging the counts from aggregate reports with those cases and we adjusted accordingly. This is likely attributable to the fact that the various agencies that submitted data are encountering different pools of known victims and at-risk individuals. If this is the case, then there is some opportunity to capitalize on modern data matching techniques to pool these different sources of information to get a more holistic view of the human trafficking problem. Still, the patterns of missing information in the descriptive summary table suggest that some of this lack of identified duplicates may be attributable to the lack of information for identifying those cases as well. We attempted to address this inherent uncertainty by using bounds in the estimates provided in the report (Manski, 2013), but this does identify a need for agencies to develop common indicators and definitions for reporting to best identify comprehensive estimates and minimize potential duplication error.

Obtaining data from existing systems on numbers of human trafficking victims is important for future prevalence research. For example, chain referral studies to estimate number of victims in the population might produce a more reliable number of victims, but this method is not sustainable as it is expensive and nearly impossible to conduct for a large area such as a state. Our findings highlight the importance of systems recording information on human trafficking victimizations once identified to begin developing reliable prevalence estimates.

In sum, researchers have attributed difficulties in calculating reliable prevalence estimates to a variety of issues including a lack of uniform definitions, missing or poorly gathered data, lack of reporting, reporting bias, missing identifiers to combine data sources, absence of data sharing and interagency cooperation, and lack of financial/technical assistance that might facilitate standardized data collection (see Banks & Kyckelhahn, 2011; Clawson et al., 2006; Farrell et al., 2008; Goździak & Bump, 2008; Kelly, 2005; Logan, Walker, & Hunt, 2009). This study was able to handle some of these concerns while others still hold. Information was obtained from 12 agencies across the state of Ohio in total, spanning various child welfare agencies, service providers, legal agencies, and law enforcement sources. In that sense, the overall coverage of potential known victims and at-risk individuals was strong. However, the information coverage or details shared varied considerably across sources which likely affected the estimated counts of

human trafficking presented here. This informs some recommendations for state and local agencies in Ohio that are concerned with the human trafficking problem.

Key Lessons Learned

Lesson 1: Ohio has continued to expand knowledge on the scope of human trafficking in the state; this study identified 1,032 known victims and 4,209 at-risk individuals based on a number of data sources.

Lesson 2: Existing systems are not currently set up for comprehensive data sharing across agencies or with researchers.

Lesson 3: Even when data are collected from existing agencies, it can be difficult to compare and integrate findings when different types and levels of detail are gathered (e.g., individual-level details with identifiers compared to aggregate reports).

Lesson 4: Based on our assessment of the available information on human trafficking in Ohio that can be used for research purposes, these estimates are likely very conservative relative to the true number of victims.

Lesson 5: As the first "cataloging" of existing record systems in Ohio coupled with publicly available media accounts, this study provided a comprehensive overview of the number of potential victims in Ohio and the type of information that is—and is not—available.

Recommendations

Moving forward, several potential strategies may mitigate the measurement and estimation challenges outlined in this report and, in turn, provide relevant insight for effective policy and practice around this important problem. This is not an assessment based on information quality within and across reporting sources, but rather a comment on considerations for interpreting these findings relative to the mission and purpose of collecting data for each of the agencies and organizations included in this report. It is unlikely that a perfectly seamless data system will be implemented across the varied agencies who provided data for this study. Data sharing will always be challenging due to concerns ranging from privacy of victims and service providers to technological aspects of data management systems.

Still, the main objective should be to develop systems that—while responsive to their respective purposes in providing services or investigating human trafficking—are also sharable to researchers and key stakeholders. If there is successful integration between agencies and stakeholders, then improvements could be made to further streamline this data sharing process over time. For example, collaborations could motivate agencies to collect more consistent information across sources (e.g., common definitions, types of information collected). Despite the challenges outlined above, we propose five concrete steps that might be taken to further the understanding of human trafficking in the state of Ohio:

First, we recommend the development of a uniform reporting system for agencies serving vulnerable populations to track trafficking cases and risk factors. Prior to implementing a universal system funding would need to be prioritized to (1) develop a comprehensive understanding of how agencies are already funding and identifying gaps in their own systems, (2) form a committee to create a common trafficking definition for the purpose of this reporting system, (3) create a concatenation system that stakeholders agree on to protect client confidentiality (see additional details below), and (4) use incentives that would be beneficial to agencies for their participation in collecting this level of information. It is important that this initiative is created as an ongoing system to better identify and support victims. Without sustained efforts to maintain a reporting system, a true prevalence estimate of trafficking victims identified by agencies in Ohio will not be possible.

Summary of Recommendations

Embedded within each of the following recommendations is the inherent need to prioritize funding for building human trafficking research capacity within agencies across the state:

Recommendation 1: Create a uniform reporting system for Ohio including "core items" to measure related to human trafficking victimization.

Recommendation 2: Use concatenation methods in reporting system to protect individual identities, link across agencies, and share data for research purposes.

Recommendation 3: Collect sociodemographic characteristics of victims and traffickers in a systematic manner in all agency reporting.

Recommendation 4: Learn from other research on hard-to-reach populations and integrate these research strategies in future human trafficking research.

Recommendation 5: Move towards using epidemiological approaches to measure the prevalence of human trafficking.

There have been attempts by some federal agencies such as the Office for Victims of Crime (OVC) and the Department of Health and Human Services (HHS) to do this. Moving forward we can learn from their attempts to have state and local grantees collect a common set of information. We can also learn from other statewide, coordinated systems in Ohio, such as the OYAS for juvenile justice-involved youth, to develop a uniform reporting system. This system would have to be developed and managed by a central agency that organizes and responds to queries about data entry for these cases. In other words, each of these separate agencies would have to submit reports to the central agency so that all details and definitions were consistent across sources. This recommendation is built upon the notion that a true prevalence estimate based on existing data is not possible until individual-level details across agencies are shared.

Second, as part of this process, agencies would need to feel secure about providing data to such a repository. To address this concern, we recommend the use of a concatenation system where agencies submit encoded identifiers. For example, details from a victim's identifiers (Name: Jane Doe; Date of Birth: 01/01/1990; Social Security Number: 123-45-6789) could be scrambled and recoded (e.g., 19J01D01678990) to protect anonymity. This process would also allow multiple

systems estimation to determine more systematically whether cases are present in multiple data systems using capture-recapture methods (Bales, Hesketh, & Silverman, 2015). However, we could also capitalize on emerging data processing and analysis methods, such as data mining and matching procedures, provided that common fields are available and reasonably complete across data sources (Augustine et al., 2018). In addition to being beneficial for the state, this system would also have to be seen as beneficial for each separate agency. In this way, there could be some level of incentives for agencies to participate rather than threatened consequences. This does not need to be a completely centralized system. That is, we do not expect all sources to have information to match on, but with some relatively minor changes we can improve our current systems. For example, as described in this study, agencies can begin measuring "core items" such as a history of child sexual abuse, chronic runaway behavior, homelessness, foster care, and juvenile court involvement. Recent human trafficking research has helped us identify these potential core items based on shared risk factors of youth human trafficking victims (Gibbs et al., 2015; Reid et al., 2017). However, these core items will likely vary based on a number of characteristics (e.g., age of victim, sex trafficking compared to labor trafficking, and combinations of vulnerability factors). Differential coverage is to be expected across data sources and should be identified depending on the population served, but agencies within the state can take steps to improve this.

Third, agencies and researchers should prioritize the collection of sociodemographic information including race, ethnicity, and foreign national status. The results of the study highlight who we are currently doing a better job at identifying (e.g., domestic minor sex trafficking victims). The characteristics and vulnerabilities of victims are only known to the extent of our current identification systems and also victim help-seeking behavior. Comprehensive coverage of these variables could illuminate how trafficking risk and experiences vary by sociodemographic characteristics. Human trafficking victims are particularly hard to identify because they rarely self-identify as a victim while being trafficked. This can be especially true for vulnerable populations such as undocumented immigrants who often avoid reporting or engaging with any social service agencies due to fears of reprisal or deportation (e.g., Barrick, Lattimore, Pitts, & Zhang, 2014). Relatedly, the findings in this study highlight the importance of working towards identifying individuals *not* reached by systems—individuals who could have different experiences than those eventually identified by systems. Thus, it is important to identify systems that are currently interacting with victims, but do not have the capacity for data collection, data extraction, and/or data sharing.

Fourth, we recommend the integration of strategies that researchers have used to measure other hard-to-reach or hidden populations. For example, using behavioral questions in screening methods has advanced research on the prevalence of sexual assault and could be used in screening tools. There are a small amount of screening tools already developed and available for agency use. We strongly recommend agencies begin to use screening tools developed by reputable sources and work with researchers to further test and validate these initiatives within the agency (e.g., Vera Institute, Department of Health and Human Services [HHS], West Coast Clinic). This includes funding to promote agencies' capacity to collect data and ability share to share data with researchers and key stakeholders. Using these tools—and learning from other research with hidden populations—could strengthen many aspects of current human trafficking research, policy, and practice.

Fifth, when developing a system for uniform reporting, future criminal justice and social service research could benefit from drawing on epidemiological methods to estimate prevalence.

Human trafficking is a criminal justice, human rights, and public health problem and our understanding of trafficking would advance tremendously through using public health research frameworks and methodologies to estimate prevalence. This can be accomplished, in part, through developing information sharing systems discussed above to account for similar information and duplicate cases. Scholars have suggested specific approaches recently including the use of capture-mark-recapture techniques and respondent-driven sampling to estimate the prevalence of human trafficking prevalence (Rothman et al., 2017).

Counting potential victims and at-risk individuals in an effective manner is a crucial step in this process and can help to build awareness of the problem—and perhaps garner more resources for responding to it. It is nevertheless important to look at how research might inform future policy and practice. The information needs are even greater for responding appropriately to individual trafficking cases and at-risk persons. That will likely require other information-gathering such as mixed methods approaches and qualitative interviewing to fashion responses that are well-founded in an understanding of the processes that lead to human trafficking. Runaway status, for example, is an indicator of vulnerability for trafficking victimization, but additional individual and contextual factors that lead a youth to runaway must be identified and integrated to understand mechanisms that contribute to that at-risk status and respond to those cases effectively. Without precise prevalence estimates, we cannot fully understand the economic impact of human trafficking on individuals and communities as well as the extent of resources needed in agencies conducting anti-trafficking work (Rothman et al., 2017).

In sum, there are a number of practical applications to consider when interpreting and using the findings from this study. Given these estimates are likely conservative due to the unknown and unidentified population of trafficking victims, what do these numbers mean for agencies in terms of costs for providing services? A recent study identified that law enforcement and service agencies are likely only identifying 14% to 45% (depending on location) of human trafficking victims (Farrell et al., 2019). Therefore, these numbers should be used as a conservative baseline for estimating human trafficking victimization of youth. These findings indicate an increased need for training for law enforcement and other service providers, especially those at the frontline who are likely to interact with potential trafficking victims. However, the more we train key stakeholders and agencies to identify trafficking victims, the greater the likelihood that we will find more individuals in need of services. For example, in the current study, a majority of victims were identified in higher population density, urban counties. That is, 80% of the identified cases came from the most populated counties in the state. Still, training should also be prioritized in less densely populated areas to assist victims. Overall, the economic impact of these efforts needs to be considered so that agencies and first responders have the funding and resources to facilitate victims' needs. Additionally, the costs (e.g., money, resources, staff) of creating better systems to identify and respond to victims needs to be further explored for sex and labor trafficking cases so agency efforts can be maximized.

These examples underscore the importance of considering agency objectives in utilizing results such as those presented here. The number of cases identified in the study—particularly when viewed conservatively—suggests that further development in state and local record systems would likely identify a nontrivial number of additional cases and offer a better sense their etiology and implications. Thus, taking the further steps at the local and state level recommended here will promote more effective responses for victims and those at-risk of human trafficking by establishing the necessary resources at the agency level and appropriate responses at the case level.

Agencies across the state of Ohio have made tremendous progress toward measuring the prevalence of human trafficking by collecting and assessing available record information on victims. Despite challenges and limitations in gathering and integrating multiple data sources, the purpose of this study was to move beyond projections alone and root prevalence estimates of known victims and at-risk individuals in existing records. The hope is that the results from this study can be used to provide even more precise estimates in the future by strengthening reporting systems across agencies in Ohio. We further recommend that the state continues to prioritize funding for intervention, policy, and research efforts to position Ohio as a national leader in its response to human trafficking.

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Appendix. Victim-Level Details Across Existing Agency Data Sources by Trafficking Type[a]

	State HT Response (2014-2017)		Child Welfare A (2015-2017)		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)		N	
	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
Victim Status																		
At Risk	--	--	11	--	130	4	--	--	--	--	--	--	69	--	81	--	291	4
Known Victim	--	--	148	2	84	4	12	7	111	--	26	--	57	--	7	--	445	13
Mean Age (SD)	--	--	--	--	14.2 (3.5)	14.6 (3.5)	16.5 (2.9)	25.1 (7.0)	30.9 (7.8)	--	--	--	15.4 (1.5)	--	15.3 (1.5)	--	--	--
Age Status																		
Adult	40	21	16	--	--	1	4	7	106	--	--	--	1	--	3	--	170	29
Minor	7	4	143	3	213	7	8	--	--	--	26	--	77	--	84	--	558	14
Gender																		
Male	--	50	11	--	20	2	--	7	--	--	--	--	7	--	57	--	95	59
Female	47	16	148	3	194	6	12	--	88	--	26	--	119	--	31	--	665	25
Race																		
White	--	--	99	--	5	--	6	7	89	--	3	--	56	--	56	--	314	7
Black	--	--	40	1	1	--	6	--	7	--	21	--	57	--	24	--	156	1
American Indian or Alaska Native	--	--	1	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--
Asian	--	--	1	--	--	--	--	--	--	--	--	--	1	--	1	--	3	--
Native Hawaiian or Other Pacific Islander	--	--	--	--	--	--	--	--	--	--	--	--	--	--	1	--	1	--
Multiracial	--	--	12	2	1	--	--	--	3	--	--	--	12	--	3	--	31	2
Ethnicity																		
Not Hispanic/Latino	--	--	--	--	189	8	--	--	92	--	--	--	--	--	81	--	362	8
Hispanic/Latino	--	--	4	--	11	--	--	--	--	--	2	--	--	--	5	--	22	--
Nationality																		
Domestic Citizen	9	1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9	1
Foreign National	37	65	3	--	--	--	--	--	--	--	--	--	--	--	--	--	40	65

Appendix. Victim-Level Details Across Existing Agency Data Sources by Trafficking Type[a]

	State HT Response (2014-2017)		Child Welfare A (2015-2017)		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)		N	
	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT	ST	LT
Citizenship Status																		
U.S. Citizen	1	3	--	--	124	3	--	--	--	--	--	--	--	--	--	--	125	6
Non-U.S. Citizen	22	9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	22	9
Year[b]																		
2014	6	43	--	--	67	3	6	--	19	--	--	--	3	--	27	--	128	46
2015	32	15	35	--	77	2	1	--	33	--	--	--	22	--	19	--	219	17
2016	3	5	75	3	70	3	5	7	59	--	--	--	27	--	29	--	268	18
2017	6	1	49	--	--	--	--	--	--	--	--	--	22	--	--	--	77	1
2018	--	--	--	--	--	--	--	--	--	--	--	--	4	--	--	--	4	--
History of Justice System Involvement																		
Yes	--	--	16	--	9	--	--	--	111	--	19	--	126	--	88	--	369	--
History of Running Away																		
Yes	--	--	1	--	33	--	--	--	--	--	--	--	--	--	1	--	35	--
No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	74	--	74	--
History of Foster Care/ CPS Involvement																		
Yes	--	--	18	--	48	1	--	--	41	--	--	--	9	--	--	--	116	1
No	--	--	--	--	--	--	--	--	45	--	--	--	--	--	--	--	45	--
History of Homelessness																		
Yes	--	--	14	--	--	--	--	--	35	--	--	--	--	--	--	--	49	--

Notes: Due to the limited number of individuals who were trafficked for both sex and labor trafficking, the descriptives here focus on sex and labor trafficking separately. Sample sizes differ from Table 2 frequencies due to missing values when comparing crosstabulations between trafficking type and the variables of interest. HT = Human Trafficking; ST = Sex Trafficking; LT = Labor Trafficking; SD = Standard Deviation.
[a]All findings are presented as frequencies except for Mean Age (SD), which is presented as the mean and standard deviation when applicable. [b]Year victim was identified by source.