

Disrupting labor trafficking in the agricultural sector: Looking at opportunities beyond law enforcement interventions

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Abstract

Law enforcement interventions continue to be the primary mechanism used to identify offenders and illicit businesses involved in human trafficking, yet trafficking continues to be a thriving international operation. We explore alternative mechanisms to disrupt illicit operations and reduce victimization through labor trafficking supply chains using supply chain disruption theory. Using a case study approach to examine one federally prosecuted labor trafficking case in the agricultural sector, we (1) extend criminological concepts of disruption by identifying sources and methods of disruption and (2) inform criminal justice system responses by presenting novel methods of assessing effectiveness of anti-human trafficking policies and programs.

Keywords: labor trafficking; supply chain; criminal networks; disruption; law enforcement intervention

Introduction

Labor trafficking is a criminal business model that continues to thrive in the United States despite the passage of laws specifically aimed at dismantling labor trafficking operations. Along with prevention and protection, prosecution is a cornerstone of the US anti-trafficking framework. Yet, since the passage of the federal Victims of Trafficking and Violence Protection Act (TVPA) in 2000, few labor trafficking operations have been dismantled by law enforcement, and even fewer labor traffickers have been held accountable through federal prosecution (*Attorney General's Trafficking in Persons Report*, 2020). Despite this, as of January 2022, thousands of labor trafficking victims have been granted T-visas, with labor trafficking victims making up over 74% of all T-visas issued to date (U.S. CIS, 2022). These patterns suggest that while labor trafficking victims are being identified for assistance, few labor trafficking perpetrators are held accountable and illicit operations continue largely unfettered by law enforcement interventions.

These illicit operations are, in fact, supply chains. Supply chains are business operations that include the movement of materials, finances, information, and people across entities (Mentzer et al., 2001). Labor trafficking operations are supply chains principally involved in the movement of people and finances through the means of force, fraud or coercion for the purposes of extracting labor. While critical phases of labor trafficking supply chains are facilitated by criminal networks, and networks can be disrupted using processes described in supply chain

theory, there are numerous institutional and cultural explanations for why identification and disruption of such illicit supply chain operations is currently limited. These include pervasive myths about what labor trafficking is and who likely victims and offenders are (Farrell et al., 2010; Farrell, McDevitt, and Fahy, 2010; Farrell, Pfeffer, and Bright, 2015; Barrick, Lattimore, Pitts and Zhang, 2014), unfamiliarity of law enforcement with criminal liability of supply chain partners such as employers and workplaces (Farrell and Pfeffer, 2014), victim fear and distrust of law enforcement, and perceptions about the credibility and worthiness of victims who may not have legal status or who do not fit iconic trafficking victim profiles (Farrell et al., 2020).

Confusion of labor trafficking with other offenses like illegal immigration and smuggling is also common; this phenomenon can both hamper labor trafficking investigations and result in the misidentification of perpetrators or even the arrest of labor trafficking victims (Clawson & Dutch, 2008; Farrell et al., 2008; Laczko & Goździak, 2005). These problems are particularly salient when, as in the context of agricultural labor trafficking, the victims are part of a historically marginalized population, or members of a racial, cultural, or ethnic group that has a fraught history with law enforcement (Farrell et al., 2012).

Misidentification of labor trafficking has strong parallels to the growing study of risk mitigation in the field of supply chain management (SCM). In SCM, risks that are difficult to detect, such as labor exploitation, are often referred to as vulnerabilities, and categorized by their disruptive potential on a scale from minor to catastrophic (Craighead et al., 2007). Studies of supply chains and their disruptive potential have recently shifted attention to labor rights (Fayezi et al., 2021), with a particular focus on disrupting labor trafficking operations in a manner that can supplement the criminology literature on responses to crime. However, criminology theory has yet to incorporate supply chain vulnerability concepts. By doing so, we intersect learning from a business-lens and a criminal network disruptions lens to focus on vulnerability within labor trafficking networks.

Consideration of supply chain theory can help to overcome inherent limitations of law enforcement and criminal justice interventions. We suggest here that stakeholders at multiple levels of government and civil society may be able to coordinate disruption efforts to more effectively reduce the number of people victimized through labor trafficking by interrupting their flow through the trafficking supply chain, an approach that may enhance or compliment more traditional criminal network intervention models. Using an exploratory case study based on one federally prosecuted labor trafficking case, we examine supply chain vulnerability principles and identify a wider array of disruption actors and strategies that may help reduce labor trafficking and seek to understand the sources, actors, and processes involved.

Literature Review

As prosecution is a key part of the US anti-trafficking framework, the federal government has clearly identified law enforcement intervention as a primary method of labor trafficking disruption; however, few studies have attempted to rigorously explicate the disruption concept, with serious implications for the study of criminal networks and the apprehension of labor trafficking offenders. With the passage of federal anti-trafficking laws, enumerated in the TVPA of 2000 and the numerous federal reauthorizations of the TVPA along with parallel state-level anti-trafficking statutes, law enforcement agencies across the U.S. have been tasked with building new routines to “re-categorize and re-prioritize behavior that has long existed as its own crime type” (Farrell et al., 2008, p. 22). For example, while law enforcement may be familiar with previously criminalized behaviors such as illegal entry, alien harboring and smuggling, detection and apprehension of labor trafficking crimes require police to evaluate whether a

particular behavior or set of behaviors observed contains the required elements of force, fraud, or coercion—which would establish the offense of labor trafficking. Understanding police interventions as forms of network disruptions, and evaluating their effects on labor trafficking supply chains, is therefore critical to improving law enforcement response to this crime problem.

Criminal Network Disruption

In the field of criminology and criminal justice, literature directly addressing the concept of criminal network disruption is sparse, even as network methods are increasingly employed to study criminal groups (Kirby & Snow, 2016). While the term “disruption” has been used for at least twenty years by law enforcement practitioners, its definition has remained ambiguous and not clearly defined by most agencies (Kirby & Snow, 2016). Criminologists have similarly skipped over this definitional step to embrace social network methods (Sparrow, 1991), and have increasingly focused on features of network structure that explain the persistence of criminal networks *despite* law enforcement intervention.

Law enforcement traditionally approaches crime reactively (e.g., responding to calls for service) and identifies individual actors or groups of actors who have violated the law at specific times and places (e.g., a criminal incident). Research on gangs, gun and drug trafficking, organized crime, and terrorism (Braga et al., 2008; Keatinge & Keen, 2020; Morselli, 2009) has pushed criminologists to think more broadly about networks that support and facilitate illicit activity across time, but assumptions remain that disruptions typically take the form of traditional law enforcement strategies of arrest, surveillance, and restricting access to resources (Musciotto & Micciché, 2022; Reedy et al., 2013). In contrast, little effort has been made to consciously define the disruption concept or analyze the limitations of these traditional criminal justice assumptions. Inattention to this disruption concept in academic literature has resulted in neglect of sufficient documentation and evaluation of different disruption strategies (Fielding, 2016).

Three related findings from the criminal networks literature complicate the traditional approach to disruption. First, traditional methods of disruption have been shown to have a variety of unintended consequences, in part as a result of the network’s resilience. Kingpin strategies (i.e., the practice of targeting individuals at the top of terrorist, drug trafficking, or other criminal hierarchy) have also been shown in some instances to be associated with increased violent crime because removal of leaders tends to incite instability among targeted criminal groups and their competitors (Jones, 2013). Duijn et al. (2014), examining the social network of an organized cannabis cultivation operation, observe that criminal networks might actually become “stronger” after targeted law enforcement attacks because removal of less specialized actors increased the efficiency of the work. Although criminal networks may be unlikely to collaborate under normal circumstances (for reasons of distrust, competition, and hostility), law enforcement activity may increase the likelihood of inter-network collaboration among criminals by virtue of the “common enemy” effect (Coutinho et al., 2020). Given the persistence of criminal networks despite disruption and the unintended consequences of law enforcement intervention, the study of criminal network features that allow them to persist despite disruption is indeed critical to the development of effective network disruptions. This is especially so in the labor trafficking context where it appears that interventions are occurring while criminal activity likely persists.

The second finding with implications for disruption research is that criminal networks are remarkably flexible (D. A. Bright & Delaney, 2013; Cavallaro et al., 2020). In their haste to explain network persistence despite intervention, researchers focused on describing or explaining a network’s robustness and resilience. Robustness generally refers to the ability of the network

to “retain one or more specific properties under perturbation of its structure,” or to continue to function despite disruption (Fronzetti Colladon & Vagaggini, 2017; Albert et al., 2000; Barrat, 2008). Resilience was originally defined in supply chain management as “the ability to bounce back from a disruption” (Sheffi & Rice, 2005) and appeared as a concept in the field of ecology to describe the differential capacity of ecosystems to sustain over time (Bouchard, 2007). The study of robustness and resilience is undoubtedly critical but also brings substantial methodological challenges, including the need to conduct longitudinal data analysis, and the difficulty of establishing some minimal level of confidence in the completeness of the data collected—two tasks made extremely difficult by the nature of criminal networks themselves. Given the persistence of labor trafficking networks despite intervention, it is likely that labor trafficking networks exhibit properties that enhance their robustness and resilience, potentially requiring multiple disruptions to halt illicit activity.

Finally, the nature of networks and their capacity to be resilient is connected to the broader environment in which criminal networks are embedded (Enders & Su, 2007; Raab & Milward, 2003). The idea that network structure and operation are dependent on environment can be observed most clearly in areas where, because of conditions like war or civil unrest, criminal networks can operate more openly (Stys et al., 2020). But even less significant social conditions can impact network structure: for example, in more competitive environments, drug trafficking networks have been observed to adopt a more hierarchical structure, potentially making them more vulnerable to node deletion (Morselli et al., 2007). Because of the nature of labor trafficking as a crime and its apparent pervasiveness in the US, the context in which criminal networks operate often straddles both legitimate and illegitimate environments, with exploitative practices to some degree accepted in both contexts. Rendering the legal environment hostile (e.g. by strengthening labor laws) and making legitimate workplaces hostile to labor trafficking may be essential to halting labor trafficking.

Recognizing that criminal network structure is associated with broader legal, economic, and social conditions allows us to view disruption as a “flexible, transitory, and dynamic tactic, which can be used more generally to make the environment hostile” for the criminal network (Kirby & Penna, 2010, p. 205). Despite the disruption concept’s potential to encompass a variety of strategies designed to render the environment inhospitable to criminal activities and networks, within criminology the disruption concept has remained largely a shorthand for arrest. Moreover, existing methods of disruption are poorly documented and little research has been conducted comparing alternative strategies (Everton, 2012). As a result, the criminological concept of disruption is underdeveloped. Here, we demonstrate how supply chain disruption theory can provide a new perspective capable of expanding the concept of disruption within criminology. By doing so, we can identify additional sources of disruption with the potential to aid in the detection of labor trafficking.

Labor Trafficking Through the Lens of Supply Chain Management

Supply chain management is a field of study that began during the World Wars with the need to study military movements from one location to another. The phrase “supply chain” was summarized by Mentzer et al., (2001) as a network consisting of four flows: people, information, materials, and money. A flow is an action for movement from one point to another point in the network (Cambridge, 2021). The underpinning notion in supply chain management is that each of the four flows in a supply chain can be studied and thereby improved. Though the traditional exposition of a supply chain has been through the perspective of global corporations or militaries

that seek to be optimized, intersecting it with the lens of criminal justice introduces the opportunity that nefarious supply chains can be studied to limit or prevent their flows, as is the context with labor trafficking supply chains (Bhimani, 2019). In this context, a flow is the illicit movement of people, information, materials, and money for the purposes of conducting trafficking operations. For example, a person-flow in a labor trafficking network would be the movement of persons from one location to another for exploitation that meets the definition of labor trafficking. Information and material flows further support this exploitation of persons, and the network is fueled by monetary flows that are received by recruiters, contractors, or others who continue the supply chain operation for economic gain.

The similarities between traditional supply chains and labor trafficking supply chains are numerous, including the movement of people through the multiple phases over time. Aronowitz (2009) described the four phases involved in the trafficking of human beings as: recruitment, transportation and entry, exploitation, and criminal proceeds. This was followed by the work of Di Nicola (2013) who distilled the stages of trafficking as recruitment, transfer, and exploitation (at a destination). To build a more complete timeline of information before and after trafficking, it is possible to add information from pre and post circumstances from the victims' perspective, thereby creating a total of 5 phases: Pre-recruitment, Recruitment, Movement, Exploitation, and Post-exploitation. Pre-recruitment can include the vulnerabilities that make persons susceptible to trafficking. Recruitment can involve solicitation and deceit. Movement can involve false imprisonment and transportation. Exploitation can involve coercion and extortion. Finally, post-exploitation captures outcomes and events after victims have left the labor trafficking situation.

The novel use of supply chain disruption theory toward these five labor trafficking phases combines the learnings from the fields of criminology, network analysis, and supply chain management to stop trafficking flows at various pressure points throughout the trafficking supply chain. The idea of a supply chain "disruption" was distilled by Blackhurst (2005) as "unplanned delays or stoppages of planned product flow" in a supply network. While prior research describes what a disruption to a supply chain is, there have been persistent gaps in our understanding of how they can be caused. While previous research has outlined different disruption types (Christopher and Peck, 2004; Mason-Jones and Towill, 1998; Wagner and Bode, 2008), disruption causes are less understood.

Focusing on the most extreme types of disruption, Wagner and Bode (2008) used a "catastrophic" disruption as a catch-all phrase for the most damaging types of disruption to supply networks. Such catastrophic disruptions were minimally researched until recently. Building on the work of Mentzer (2001) outlining a supply chain being a network of flows and the Wagner and Bode (2008) categorization of catastrophic risk, Bhimani (2019) defined a catastrophic disruption as a "cut [in] the supply chain that causes an inability to continue planned operations," also referred to as a supply chain failure. The work of Bhimani (2019) provided the causes of catastrophic disruption that disrupts flow in labor trafficking operations. These causes identify the specific pressure points that prevent a supply chain from continuing operations. Within the supply chain literature, taking an action to cause a purposeful disruption is known as network interdiction.

While supply chain disruption theory has the potential to identify opportunities to more effectively disrupt a network, a study of the supply chain-specific context, data, and flows is needed to ascertain vulnerable points and to generate useful insights. Therefore, prior to applying supply chain theory to labor trafficking networks, we must first understand the structure of the networks. Although multiple prior studies have focused on sex trafficking network structures

(e.g., (Campana, 2016; Cockbain, 2018; Cockbain et al., 2011; Mancuso, 2014), few studies explore labor trafficking network structures. Exemplifying the differences that exist between sex and labor network operations, Bhimani et al. (2021) established in initial findings that a selection of labor networks in the US agricultural sector operated in a semi-centralized manner with connections to legitimate business and governmental organizations. This relates to the work of LeBaron (2021), who found connections between exploitative operations and legitimate supply chains that can occur when a company outsources parts of its operations. Similarly, De Vries (2019) documented illicit network connections to corporations in legitimate markets.

By seeing labor trafficking as a supply chain, we can study how such supply chains operate in order to understand their flows at each phase and, critically, events that could possibly disrupt the supply chain (Craighead et al., 2007). The latter is important because by understanding a network's vulnerability, we can apply known theories of supply chain disruption to labor trafficking supply chains. In this context, we can study those mechanisms, thereby analyzing the crimes committed across the phases of trafficking and the potential disruption points that could have prevented them from occurring.

Current Study

The application of supply chain disruption theory to labor trafficking networks provides critical information to inform intervention and prevention efforts that reduce victimization. Previous research has shown that supply chains may continue to operate after disruptions by virtue of their ability to engage with larger socio-economic systems through access to mechanisms such as trade (De Vries, 2019). Disruption theory is particularly salient in this context because it can identify the pressure points in such a system that are most vulnerable to break. When the network is mapped as a supply chain from beginning to end, opportunities for earlier intervention can be identified. Thus, targeted approaches to combat labor trafficking can be pursued, as opposed to attempting to combat all parts of a network (Tezcan & Maass, 2020). By reducing the network's ability to operate, recruitment and exploitation are hindered. As the network can no longer recruit victims, it further limits functionality and leads to degradation.

The current study applies supply chain disruption principles to one federally prosecuted labor trafficking case to illustrate the potential of this methodology for expanding intervention opportunities. This study answers three main research questions: (1) What types of interventions occur with the intent to disrupt the labor trafficking supply chain? (2) What actors are responsible for these interventions? (3) How effective are these interventions at meaningfully disrupting the labor trafficking supply chain?

To understand the interventions that can take place to disrupt labor trafficking networks we deeply analyzed 12 federally prosecuted labor trafficking cases where the exploitation took place within the US agricultural sector. These 12 cases were intentionally chosen from all identified federally prosecuted agricultural labor trafficking between 2000-2021 to provide variety with regard to the agriculture type, number of victims, size of the agricultural organization, and victim legal status. Thus, we choose a sample that provides a variety of agricultural labor trafficking case features, rather than assuming that this selection of cases is perfectly representative of all agricultural labor trafficking cases within the U.S. Due to the complexity of this task, we used a single case study approach to illustrate the nature of labor trafficking disruptions across multiple phases of the labor trafficking process. Specifically, we outline and analyze disruptions for the *US v. Castillo-Serrano* (2015) case. Sometimes referred to here as "Trillium Farms," this case involved multiple defendants who were prosecuted in 2015

for trafficking adult and minor migrants to work on an egg farm in Ohio. This particular case was chosen as the vehicle to illustrate labor trafficking supply chain disruption points because it was illustrative of the networks identified across the 12 studied cases and there was sufficiently robust data on the trafficking operation and its intervention points across multiple phases of the trafficking operation for detailed disruption mapping. Additionally, because of the documented history of labor abuses at the worksite of the studied case, we are able to track disruption points both during and prior to the contemporary case. Because our aim is exploratory, building an initial understanding of the situation of labor trafficking disruptions, a single case study methodology allows us to deeply explore the various ways disruptions manifest and impact an illicit operation in one context.

Data Collection & Sources of Information

To understand the disruptions in the case selected for analysis, we gathered all related publicly available court documents and associated media publications. Specifically, we obtained court documents through Thomson Reuters Westlaw Edge, LexisNexis, and PACER. This case data includes dockets, indictments, sentencing documentation, hearing information, and other associated documents that outline the elements of the labor trafficking crimes. We also collected media publications about the case, including news articles, documentaries, scholarly articles, and any other publicly available information that contains information pertaining to the labor trafficking network and/or disruptions. These additional media publications were identified by performing multiple searches on Google's search engine using keywords associated with the case (including case name, as well as the names of businesses, worksites, and individuals identified as victims, offenders, or other prominent actors in the supply chain network). This process was repeated at several points throughout the study period to ensure that the most recent reporting on the case was reflected in the collected data. This resulted in 45 total documents, consisting of 23 court documents and 22 media publications associated with the case being studied.

Measures and Coding

We developed a structured coding spreadsheet to ensure disruption data was recorded systematically during the aforementioned five traditional phases of the labor trafficking supply chain (i.e., pre-recruitment, recruitment, movement, exploitation, and post-exploitation) as well as a sixth phase that we refer to as "pre-recruitment network conditions". We define pre-recruitment network conditions as the time period preceding the events of the exploitative behavior included in *U.S.A. v. Castillo-Serrano* (2015) (spanning roughly from the 1970s to 2010) during which multiple people and organizations connected to Trillium Farms committed worker rights, animal rights, and environmental violations. This allows us to analyze the historical context that facilitated an environment in which the exploitation detailed in *U.S.A. v. Castillo-Serrano* (2015) occurred. In comparison, we refer to the events beginning in or around January 2011 that relate to the behavior that is described in the charge for which the defendant is being held liable in *U.S.A. v. Castillo-Serrano* (2015) as the "contemporary case."

To apply supply chain disruption theory to a network, we must first have a comprehensive understanding of the network structure and actors involved. For the purposes of this study, we used the Blackhurst (2005) definition of a disruption described earlier as "any event that resulted in unplanned delays or stoppages of planned network flow." Using the aforementioned data sources, we coded for six causes of disruption (Bhimani, 2019), as summarized in Table 1.

Table 1. Classification of catastrophic disruptions by cause (Bhimani, 2019)

Cause of Disruption	Definition of Cause
Trade	Disruption caused by an inability to buy and sell goods and/or services. This may include an inability to procure due to combat, disasters, embargoes, or blockades.
Information Security	Disruption caused by miscommunication, lack of coordination, or loss of information. This may include lapses in security that expose operations, data, transfers, or hacking.
Delivery	Disruption caused by an inability to deliver to demand. This may include poor forecasting, loss of delivery routes, demand surges, and lack of disaster readiness.
Logistics	Disruption caused when resources cannot be transported through an organization's supply chain. This may be induced by transport network events.
Assets	Disruption caused by an inability to use internal assets previously under the control of the supply chain. This may include equipment, land, and facilities.
Workforce	Disruption caused from a loss of usable labor to continue operations. This may include worker strikes, a permanent loss of workers, or an inability to recruit.

In recognition of the variable effects of disruption on the cessation or continuation of criminal activity, we further categorized disruptions as “minor,” “moderate,” or “severe,” based on the disruption’s impact on the criminal activity. Disruptions were classified as “minor” if network functionality largely continued following the disruption; as “moderate” if the disruption meaningfully degraded or reduced network performance, or prevented flow in the network; and as “severe” if the disruption produced a cut in the network, or restricted network flow. Lastly, in addition to actual disruptions, we coded disruptions that could have occurred but did not as “potential disruptions.” A potential disruption was defined as a missed opportunity for disruption that could have degraded or reduced network performance, produced a cut in the network, or otherwise prevented flow in the network. Because potential disruptions did not actually occur in the case, there was no systematic way to evaluate their impact; thus, potential disruptions were not defined in terms of their severity.

For each actual and potential disruption, we collected information on 35 features related to the disruption, including the cause of the disruption; the phase of the supply chain network where the disruption occurred; actors involved in the disruption; the magnitude of the disruption on the criminal enterprise; magnitude of the disruption on the victims; and network adaptation after the disruption. A detailed description of these features can be found in the Appendix.

Using the aforementioned coding framework, two trained members of the research team independently coded the material from the available case documents into the spreadsheet. A third research team member then performed a deconfliction by comparing the coding from the two independently coded spreadsheets to ensure interrater reliability. All coding conflicts were resolved through an additional team deconfliction process. This coding yielded 193 total disruptions (166 actual, 27 potential) across the pre-recruitment, recruitment, movement, exploitation and post-exploitation phases.

Supply Chain Network Description

To elucidate the structure of the labor trafficking supply chain, the coded data was transformed into a supply chain mapping that highlights the process of how victims came to be in the exploitative situation, actors attempting to disrupt the network, and the effect on the network after the victims left the exploitative situation. The mapping specifically highlights illustrative events that occurred during the pre-recruitment, recruitment, movement, exploitation, and post-

exploitation phases. Separate analyses and mapping of disruptions were also conducted for the pre-recruitment network conditions phase (prior to the contemporary case in 2011) and the contemporary case phase (2011-2014).

Case Study Summary: U.S.A. v. Castillo-Serrano (2015)

Though the labor trafficking indictment in *U.S.A. v. Castillo-Serrano* was filed in 2015, the history of the Ohio worksite reveals labor exploitation and related offenses dating back several decades. A timeline of the operation prior to and during the contemporary case is illustrated in Figure 1. The earliest available public records indicate that the worksite at the center of the contemporary case was controlled by Anton Pohlmann during the 1980s (Lyttle, 2020). A German immigrant, Pohlmann had been permanently banned from owning livestock in Germany as a result of the culmination of nearly twenty years of citations for tax, environmental, food safety, and child labor violations (Lyttle, 2020). Pohlmann grew his agricultural business, Buckeye Egg Farm, in the United States, where it quickly became the target of a number of environmental complaints (Lyttle, 2020). Following these complaints and repeated sanctions by the FDA, USDA and OSHA, the Ohio Department of Agriculture forced Buckeye Egg Farm to close and sell its assets (Ohio, 2008). The operation was purchased by the notorious “egg baron,” Austin “Jack” DeCoster, whose reputation for environmental and labor violations in other states was so bad that the director of the Ohio Department of Agriculture singled him out as being unallowed to purchase the farm (Ohio, 2008). Nonetheless, DeCoster became the de facto owner of the worksite using a complex financial transaction that allowed a business he financially supported (Ohio Fresh Eggs) to acquire the property, while he remained anonymous (Lambert, 2010; Ohio, 2008). In 2011, when a massive salmonella outbreak at one of DeCoster’s out-of-state facilities prompted DeCoster to dispose of several of his egg businesses, the Ohio Fresh Eggs worksite was leased to Trillium Farms.

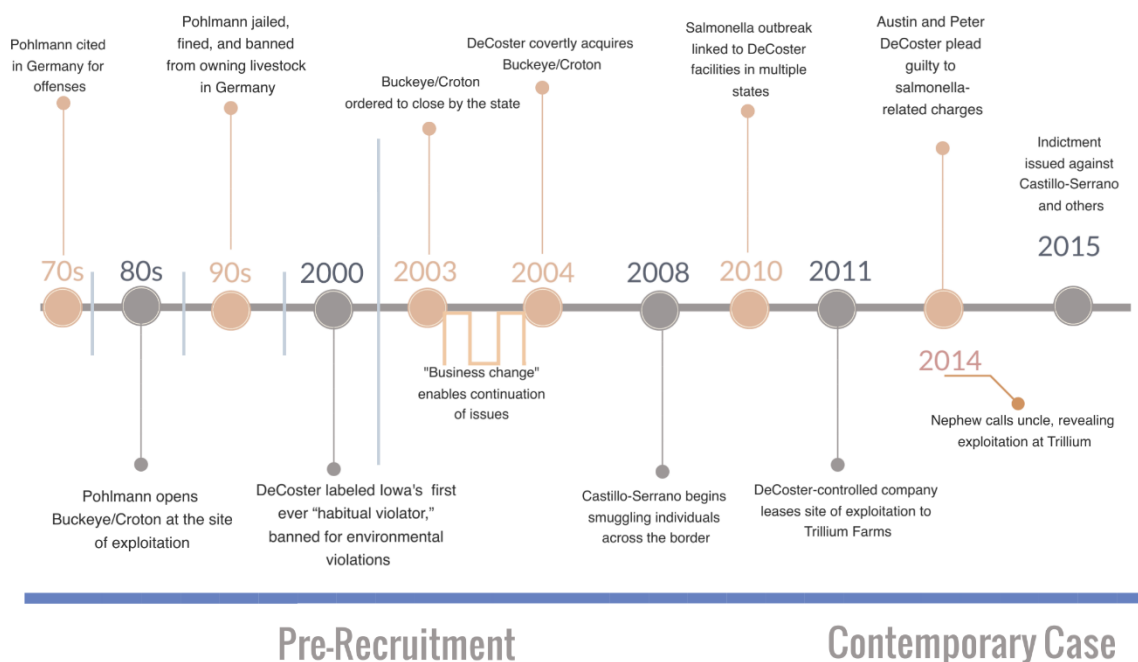


Figure 1. Trillium Farms Timeline

During this leasing period, Aroldo Rigoberto Castillo-Serrano and other traffickers supplied victims, many of whom were teenagers, to farm labor contractors and Trillium Farms. The traffickers explicitly targeted minors because minors at the time were having an easier time getting across the border. Federal policy at the time allowed the border officials to hold unaccompanied minors intercepted at the border in custody until a sponsor such as a friend or family member could have them released. Ordinarily, sponsors were also required to submit paperwork and fingerprints for vetting purposes, but border officials had been struggling to keep up with a surge of unaccompanied minors at the U.S.-Mexico border and the procedure was not always followed. This allowed Castillo-Serrano, co-defendants, and associates of the trafficking network to pose as relatives or caretakers of minors and to remove the teenagers from federal custody without detection. Once under control of the traffickers, both minor and adult victims were trapped in a fraudulent cycle of “debt” and forced to work long hours for reduced wages. The case became known to authorities when a minor victim reported the exploitation to a family member, who then called the police. In December 2014, local and federal officials raided the trailer park in which minors were forced to live, followed by a federal indictment for human trafficking offenses soon after (Hickey, 2015). Importantly, although victims were employed at Trillium Farms, came into regular contact with unexploited workers and community bystanders, and lived in a trailer park frequently visited by police, the exploitation charged in the indictment continued for four years. Due to the expansive timeline of disruptions in the case and the availability of a variety of public sources documenting information about the case, the labor trafficking network at Trillium Farms provides useful material for expanding the concept of disruption beyond law enforcement interventions.

Findings

We utilize the disruptions framework from Bhimani (2019) to understand causes of actual and potential disruptions in the *U.S.A. v. Castillo-Serrano* (2015) labor trafficking case. Data across the entire history of the case yielded 166 actual and 27 potential disruptions. Of those, 40 actual disruptions and 12 potential disruptions related to the contemporary case (2011-2014). By contrast, 126 actual and 15 potential disruptions were related to the period before the contemporary case. For convenience, we examine disruptions across the two main periods in the case. We use the term “pre-recruitment network conditions” to refer to the period from the 1970s to roughly 2010 (the phase of trafficking in which Anton Pohlmann and Jack DeCoster feature prominently in the foreground) and the term “contemporary case” to refer to the period spanning 2011 to 2014 (roughly the time period charged in the indictment and the phase in which Jack DeCoster operated primarily in the background and trafficking operations were carried out by Castillo-Serrano and other defendants).

Disruptions by Category

The pre-recruitment network conditions phase contained the most actual disruptions (126 of 166 actual disruptions, or 75.9%), largely due to the period of time assigned to this phase. In the contemporary case, most disruptions (25 of 40, or 62.5% of actual disruptions in the contemporary case) occurred post-exploitation, which is somewhat expected due to the nature of our sources; publicly available files such as news media and court documents are more likely to provide details in the later stages of exploitation. However, these findings also indicate that actual disruptions over the entire history of the case are skewed “to the tails” of the labor

trafficking phases, while actual disruptions are underrepresented in the other four phases of labor trafficking in the middle—pre-recruitment, recruitment, movement, and exploitation.

The majority of actual disruptions across all phases (pre-recruitment network conditions to post-exploitation) were categorized as Information Security (55.4%), and included some type of unintended exposure of the illicit operation (see Figure 2). A majority of these information security disruptions occurred in the later stages of the trafficking case (exploitation and post-exploitation phases). Workforce and Assets were the second and third largest categories of actual disruption at 18.7% and 18.1% respectively. Of the disruptions that actually occurred, the fewest were categorized as Trade (7.2%) and Delivery (0.6%). No Logistics disruptions occurred.

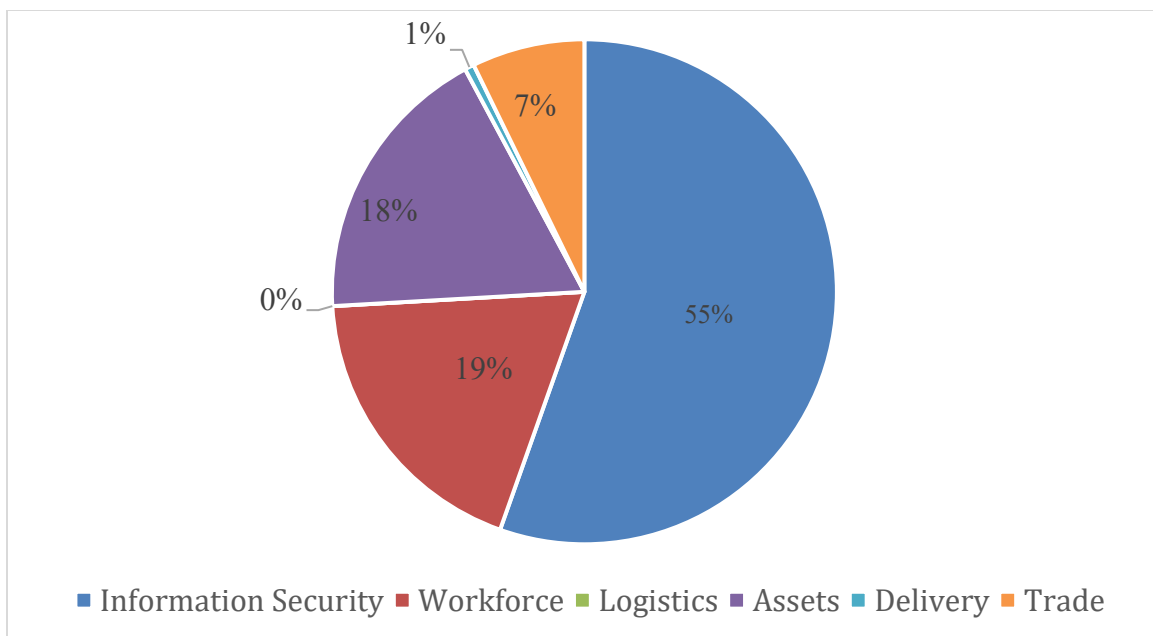


Figure 2. Actual Disruptions by Disruption Category (Pre-Recruitment and Contemporary Case Phases)

Twenty-seven potential disruptions were also identified. Just over half (15, or 55%) of potential disruptions occurred in the pre-recruitment network conditions phase of the labor trafficking supply chain; one potential disruption was identified in each of the pre-recruitment and recruitment phases (7.4%); four (14.8%) potential disruptions were identified in the movement phase; and just over one fifth (6, or 22.2%) of potential disruptions were identified in the exploitation phase. None were identified in the post-exploitation phases. Although compared to the number of actual disruptions, the identified potential disruptions are relatively few, 21 (77.8%) of the potential disruptions identified occurred prior to the exploitation phase of the case, or the actual time period in which the criminal acts charged in the indictment occurred. This finding suggests not only that Bhimani (2019)'s framework is helpful in identifying untapped sources of disruption but also that potential disruption analysis can locate disruptions that could prevent (rather than merely react to) labor trafficking.

Because this analysis both relies on publicly available data and divides the case in a temporally uneven manner (network conditions pre-recruitment spanning nearly fifty years and

pre-recruitment through recruitment spanning only three years), our data is affected by the amount and type of information available related to the trafficking network. Caution is therefore warranted in interpreting these results. In the next section, we discuss the processes of actual and potential disruptions in both the pre-recruitment network conditions phase and the contemporary case. Finally, we zoom out to look at the entire history of the network to discuss actors involved in disruptions before proceeding to the Discussion and Implications section.

Illustrating Disruptions Through Supply Chain Mapping

One hundred and twenty-six actual and 15 potential disruptions occurred during the network conditions pre-recruitment phase (1970s – 2010). Detailed examples of these disruptions across disruption categories are provided in the Appendix. As mappings of all disruptions in the case would have been impractical, Figure 3 visually represents the major events and associated disruptions in the pre-recruitment network conditions phase of the case. These mappings highlight the variety of actors and types of disruptions that occur throughout all of the labor trafficking phases. The box entitled “Pre-recruitment Network Conditions” shows the “steps” of the labor trafficking supply chain during this phase from left to right, beginning with Pohlmann’s purchase of Croton Egg Farm at the site of the exploitation charged in the indictment in *U.S.A. v. Castillo-Serrano* (2015) and ending roughly with Ohio Fresh Eggs’s lease of the same property to Trillium Farms. This map assists in visualizing the sources and processes of actual and potential disruptions by enumerating the major disruptors in the bottom left box (“Disruptors”) and drawing arrows pointing to events on the timeline at which the disruption occurred. These arrows are drawn and color-coded to represent the type and magnitude of disruption, and the categories of disruption are represented by icons at the origin of the disruption arrows. Thus, the first disruption mapped (marked as 1) is a logistics disruption that could have potentially occurred as a result of Immigration and Naturalization Services action. A fuller description of this disruption can be found in the Appendix, labeled as Fig. 3-1.

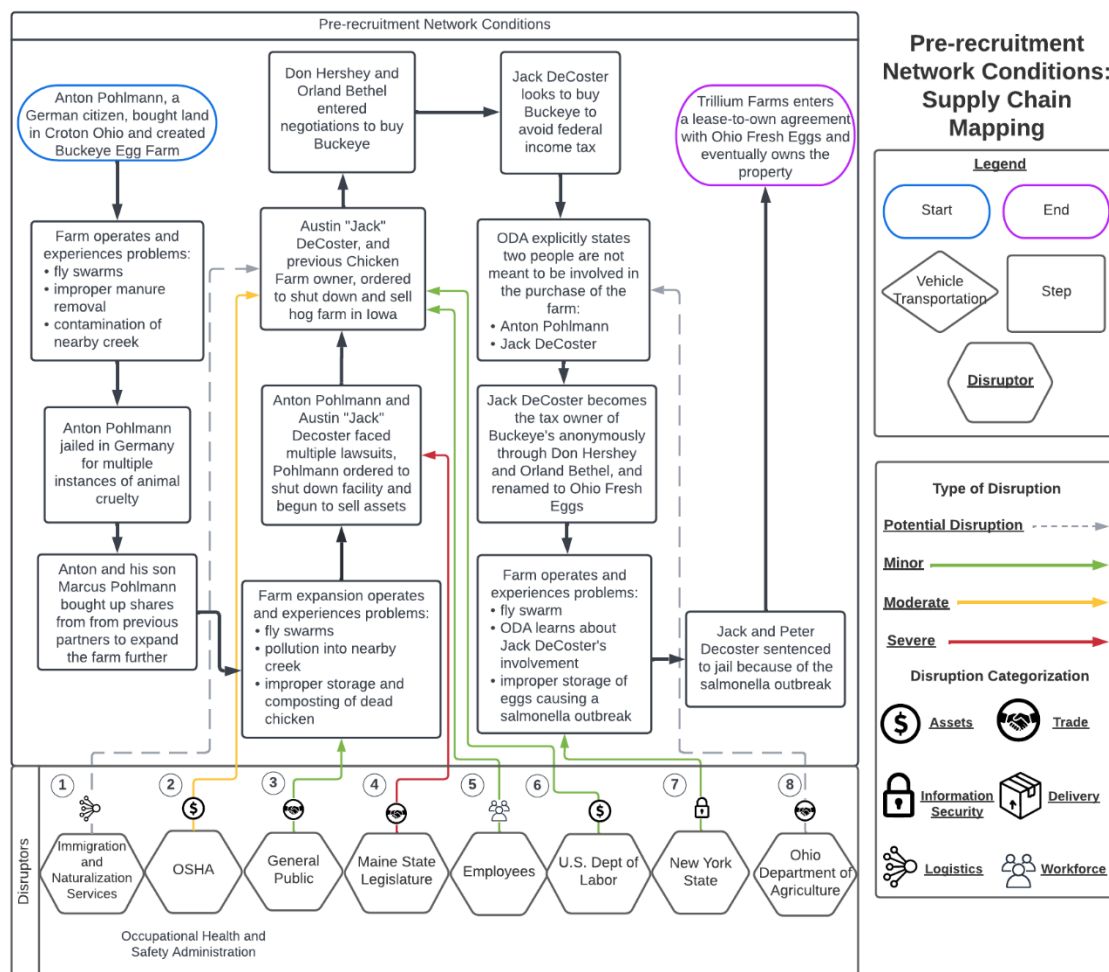


Figure 3. Pre-recruitment Network Conditions Supply Chain Mapping

Figure 4 visually represents the major events and associated disruptions through the contemporary case. Similar to the Pre-recruitment Network Conditions Supply Chain Mapping, the top box shows the “steps” of the labor trafficking supply chain; but rather than show a single phase, this mapping shows the remainder of the trafficking phases from pre-recruitment to post-exploitation. The supply chain on this map begins in the pre-recruitment phase with Trillium Farms’s contract with farm labor contracting businesses owned by traffickers and ends in the post-exploitation phase with some minors receiving T visas and financial compensation. Thus, the last disruption mapped (marked as 15) is an actual disruption of moderate magnitude resulting from legal action that brought traffickers into federal court.

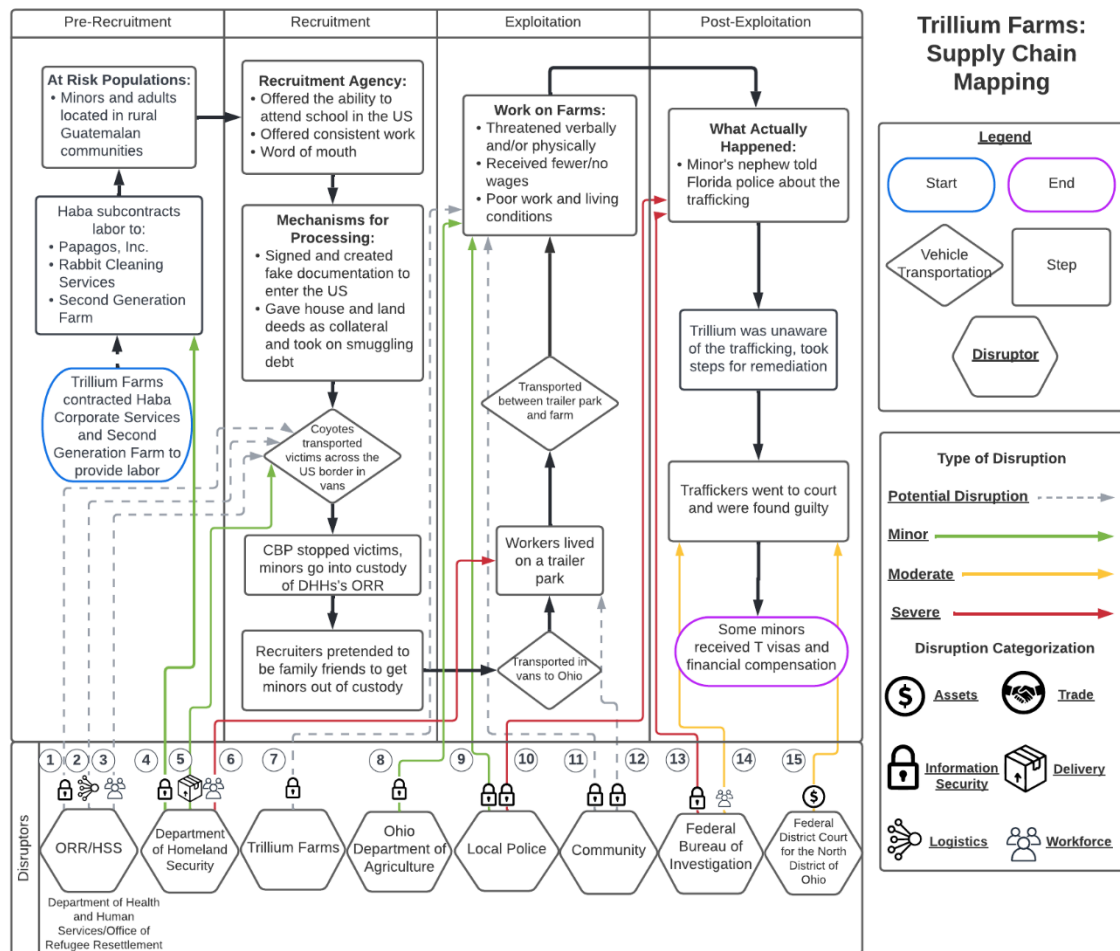


Figure 4. Contemporary Case Supply Chain Mapping

In the next section, we describe in more depth the disruptions as illustrated in the previous mappings, first in the pre-recruitment network conditions phase and then in the contemporary case phase for each disruption type. We also discuss key actors involved in each disruption type throughout the lifecycle of the studied case. While we provide some illustrative examples for each disruption below, a list of more detailed examples of disruptions by category is described in the Appendix.

Disruptions by Type

Among the six different disruption types, we identified seven groups of actors involved in implementing the disruptions: law enforcement, government actors, corporate actors, media, laborer services, actors internal to the trafficking operation, and community bystanders. We found the frequency of actor involvement in disruption efforts varied by both the type of disruption and actor (see Table 2).

Table 2. Disruptor Type Participation by Disruption Category (Actual; Potential)

Disruptor	Information Security	Workforce	Assets	Trade	Logistics	Delivery
Law Enforcement	7; 2	11; 1	0; 0	0; 0	1; 0	1; 0
Government Actors	36; 2	11; 0	17; 0	5; 5	2; 0	0; 0
Corporate Actors	0; 1	0; 0	0; 0	4; 5	0; 0	0; 0
Media	9; 0	0; 0	0; 0	0; 0	0; 0	0; 0
Laborer Services	5; 0	0; 0	0; 0	0; 0	0; 0	0; 0
Actors Internal to Trafficking	5; 3	2; 0	0; 0	0; 0	0; 0	0; 0
Community Bystanders	8; 2	0; 0	0; 0	1; 0	0; 0	0; 0

Information Security

Information Security disruptions represent places where the illicit network fails to keep information secure. In the context of human trafficking, we see this primarily represented as instances where anyone learns about the conditions of exploitation or the security of the network's illicit operation is breached. In the pre-recruitment network conditions phase (prior to 2011), Information Security disruptions made up the majority of actual disruptions, comprising 74 (58.7%) of the total actual disruptions in this phase of labor trafficking. Notably, of the 74 Information Security disruptions occurring in this phase, 67 (90.5%) were classified as "minor" disruptions, indicating that despite numerous actual points at which various actors became aware of environmental, immigration, and workplace problems related to the worksite or its occupants, these instances did not halt the exploitation occurring at that time or prevent the exploitation that would later happen in the contemporary case. In many disruptions, conditions extremely similar to those that would later be described in the 2015 indictment were discovered, indicating that a variety of opportunities for disruption were discovered prior to the contemporary victims' recruitment. Partially because the minor disruptions did not build on one another (that is, disruptions were mostly isolated), no single disruption was severe enough to leave a lasting impact on the network.

The minor impact of Information Security disruptions are potentially explained by the fact that these disruptions were not followed by effective additional reactive disruptions (such as Asset disruptions), or effective additional preventive disruptions. For example, in 1988, the state of New York issued an embargo on eggs from Maryland and Maine after three Salmonella outbreaks in the state were traced to DeCoster-owned facilities (a Trade disruption), forcing the egg companies to agree to greater oversight under direction of Maine's state veterinarian and more vigorous testing (Information Security disruption). Despite this agreement, when DeCoster was later found guilty of violating an embargo, the guilty finding resulted only in a token fine. Thus, although both an Information Security disruption (guilty finding) and an Asset disruption (fine) occurred, neither was severe enough to halt network adaptation: by the time the fine was leveled against DeCoster in Maine, he was already shifting his operations to Iowa, which did not require salmonella testing. A more effective Asset disruption (e.g. a larger fine) might have precluded DeCoster from expanding elsewhere; alternatively, a pre-existing Information Security

disruption in the form of universally required and rigorous salmonella testing might have made it more difficult for the supply chain network to adapt.

Eighteen (45.0%) actual disruptions in the contemporary case (2011-2014) were classified as Information Security disruptions. Of these, five (27.7%) were categorized as minor disruptions. The remaining Information Security disruption were more impactful and connected in some way to the severe Information Security disruption in the exploitation phase where a minor victim reported the exploitation to a relative. Review of these actual disruptions reveals that several law enforcement and other state agencies came into frequent contact with individuals affected by and involved in the labor trafficking supply chain prior to the more severe disruption that exposed the labor trafficking operation to law enforcement and prompted the federal prosecution. For example, the Ohio Department of Agriculture regularly conducted inspections at Trillium Farms, the main worksite at which victims worked. However, their inspections tended to focus on the chickens—not the people (Balmert, 2015). Similarly, although police were frequently called to the location of the trailer park where the minor victims were held, the trafficking situation was only exposed when one victim was able to make a phone call to his uncle in Collier County, Florida, who in turn called the local Florida police. As Collier County was involved in a human trafficking task force, officers quickly contacted the Ohio human trafficking task force, the FBI, and the Department of Health and Human Services about the trafficking situation. Therefore, while most Information Security disruptions were either only potential disruptions or when actual, had only minor impact on the trafficking operation, the success of the severe Information Security disruption that activated law enforcement in Florida and Ohio emphasizes the importance of collaboration among multiple actors in exposing labor trafficking

Analysis of Information Security disruptions also reveal that traffickers intentionally isolated victims and weaponized arms-length relationships common to farm labor contracts to enhance traffickers' ability to exploit victims. Under Trillium Farms's contracts with Haba Corporate Services and other labor contracting businesses controlled by the traffickers, Trillium paid the crew leaders, who in turn paid the workers; crew leaders were also responsible for providing protective gear under the arrangement. Were it not for the particular contractual arrangement Trillium Farms had with the crew leaders' companies, Trillium Farms itself might have become aware that crew leaders such as Pablo Duran, Jr. and Conrado Salgado Soto were not distributing workers' paychecks or proper personal protective equipment. Information Security disruptions may be achieved, then, by incentivizing farms using farm labor contractors to more closely monitor whether workers are being treated according to contractual terms.

A wide variety of actors were involved in Information Security disruptions. Government actors participated in the largest count of Information Security disruptors. Government actors included domestic, international, criminal, and administrative entities (e.g., federal agency officials) who actually discovered or could have discovered the exploitative conditions or related offenses over the course of the case. Law enforcement, specifically, were only involved in seven actual disruptions, almost all of which occurred in the exploitation and post-exploitation phases, indicating that law enforcement may not be well-positioned to deliver Information Security disruptions in earlier phases of the labor trafficking supply chain.

After government actors, the media participated in the second largest count of Information Security disruptors, consisting primarily of local newspapers covering exploitative conditions and sanctions, as well as a popular documentary covering the later stages of the case. Importantly, this count of media disruptions may understate the true impact of media action on

labor trafficking supply chains because media actors also often covered other disruptions (e.g. large administrative citations or criminal convictions), alerting various members of the public to the labor trafficking; however, these additional instances of media coverage were excluded from the count. The third largest participator was community bystanders. This category of disruptors is comprised of individuals without formal ties to or enforcement authority over the labor trafficking supply chain but who nonetheless came into contact with the labor trafficking network and took (or could have taken) some action against it. In the Pre-Recruitment Network Conditions phase, community bystanders were primarily residents living nearby farms owned Jack DeCoster who sued when they were harmed by negative environmental or food safety events. In the contemporary case, community bystanders included unexploited employees of Trillium Farms who came into contact with labor trafficking victims and residents of the trailer park in which the victims were forced to live.

Assets

Disruptions classified as Assets were dominated by relatively small government-imposed fines, though they also included prosecutorial efforts to restrict access to resources. Asset disruptions made up nearly a quarter (23.0%) of the actual disruptions in the pre-recruitment network conditions phase, reflecting the numerous fees and fines levied against DeCoster over several decades as various federal, state, and local authorities attempted to sanction his activities. Encompassing law enforcement strategies designed to restrict access to resources, Asset disruptions result from the inability to use internal assets previously under the control of the supply chain. In the human trafficking context, Asset disruptions are frequently administrative or civil efforts to sanction isolated legal violations or criminal justice actions to confiscate property or assets used during the commission of the crime.

Of the 29 Asset disruptions in the pre-recruitment network conditions phase, a majority (75%) were minor and ineffective. Asset disruptions in this early phase were primarily fines indicating that administrative, criminal, and civil efforts were made to financially sanction abusive labor practices throughout the history of the case; however, these penalties were insufficient to curb exploitation. Instead, these Asset disruptions led to critical network adaptations that set the stage for the labor exploitation in the contemporary case. The fallout from the salmonella outbreak caused DeCoster to distance himself—at least officially—from the egg business in 2011, selling his Maine operations to a subsidiary of Land O'Lakes and leasing his Ohio operations to Trillium Farms. Despite the history of exploitation at the worksite, scrutiny related to transfer of the business largely focused on food safety, and publicly available documents do not indicate that efforts were made to follow up on DeCoster's problematic labor practices. Thus, as has been documented in other studies of criminal networks, the transfer in ownership of the farm in Ohio can be understood as a network adaptation to the law enforcement strategy of disruption aimed at "kingpins" like DeCoster.

The sole Asset disruption in the contemporary case occurred after the catastrophic disruption on January 14, 2015 during the post-exploitation phase, when a grand jury in the Northern District of Ohio, Western Division issued a three-count indictment including a forfeiture allegation for a 2010 Ford Econoline E350, Extended Club Wagon because it was a vehicle suspected to have been used in the commission of the trafficking crime alleged. No potential Asset disruptions were identified.

Asset disruptions were dominated by government actors, reflecting the numerous fines and other financial sanctions issued by federal and state administrative agencies and courts.

Much of this dominance reflects government actors' jurisdiction to deliver Asset disruptions (e.g. prosecutors) where other actors (e.g. community bystanders) do not. For example, prosecutors are empowered to, and did in the case, include a forfeiture allegation that allowed for the seizure of a vehicle involved in the trafficking operation. However, it again should be noted that many disruptors would not have become involved without the earlier participation of other such disruptors. For example, a massive fine levied by OSHA against Buckeye's facilities in 1998 would not have been possible without action taken by exploited workers (victims internal to the network) to deliver Information Security disruptions (reporting unsafe and unsanitary conditions and to file worker's compensation claims).

Trade

Trade disruptions are caused by the inability to buy and sell goods or services produced by labor exploitation. In the human trafficking context, these disruptions can include public actors, such as government officials, blocking access to legitimate markets or consumers and distributors and other members of the public refusing to financially support or otherwise conduct business with individuals or entities suspected of involvement in exploitation. Trade disruptions in the pre-recruitment network conditions phase were more numerous than in later phases of the case, with 12 actual disruptions (9.8% of all disruptions in this phase) classified as Trade disruptions. Similar to Asset disruptions, Trade disruptions in the network conditions pre-recruitment phase frequently relied on earlier Information Security disruptions. As with other categories of disruption, the majority of the Trade disruptions in this phase (83%) were categorized as having a minor impact on the labor trafficking network.

At multiple points during the network conditions pre-recruitment phase, consumers and distributors voluntarily boycotted or otherwise stopped conducting business with the entities involved, limiting the ability of those entities to financially benefit from the exploitative conditions. For example, following yet another citation by the U.S. Department of Agriculture for eggs and storage conditions violations, public backlash against Buckeye Egg Farms in Ohio became so bad that stores began to inform customers that store-brand eggs were Buckeye eggs and offer an alternative product; despite the additional cost, customers preferred to avoid Buckeye (Lyttle, 2020). However, because the eggs were marketed under several different brand names, these disruptions were only minor. The public also had to be informed of negative conditions at the farm, prior to being able to act on that knowledge. Thus, although Trade disruptions demonstrate how various non-traditional actors can become disruptors, resulting disruptions were mostly minor as a result of systemic market conditions, intentional corporate decisions, and insufficiently severe Information Security disruptions.

One Trade disruption did have a more severe impact on the network in the pre-recruitment network conditions phase. This disruption was the result of changes in state legislation, indicating the importance of state—and federal—policy on minimum wage. In 1975, having received numerous complaints about working conditions at DeCoster farms in the state, Maine's Legislature passed legislation meant to force DeCoster to adhere to minimum wage laws; although some agricultural companies in Maine are exempt from minimum wage, the new law required farms similar to DeCoster's to pay all workers minimum wage (Woodard, 2015). But after the legislation passed, DeCoster began to look for property in other states. Although the disruption had the effect of limiting labor exploitation by DeCoster in one state, it ultimately resulted in a network adaptation because DeCoster simply set up somewhere else where such laws would not apply.

Analysis of potential Trade disruptions revealed that increased regulation of large financial transactions, such as business expansions, transfers, and complete inventory sales may assist in preventing exploitative conditions and augmenting the impact of previous disruptions. For example, after Buckeye was forced to close, Pohlmann began looking for buyers (Lambert, 2010; Ohio, 2008). Though the Ohio Department of Agriculture knew of DeCoster's reputation and history in Iowa and explicitly informed DeCoster's legal representation that it was unlikely that the agency would issue DeCoster permits to operate (Ohio, 2008), Decoster enlisted the help of two business partners to create a shell business named Ohio Fresh Eggs and covertly purchase the property (Ohio, 2008). Closer scrutiny of the shadow lending arrangement would have prevented DeCoster, a critical funder with a known history of labor exploitation and related violations, from acquiring the worksite—potentially preventing opportunities for labor trafficking to occur and increasing the effectiveness of the order for Buckeye to close. No actual or potential Trade disruptions were documented in the contemporary case.

Trade disruptions were primarily the result of government and corporate disruptor involvement. Government actors (many of whom also participated in Asset disruptions) engaged in Trade disruptions by legislating to improve labor laws, issuing embargoes, and revoking farms' permits to operate. In addition to these government actors, corporate actors such as end market consumers and food distributors heavily featured in Trade disruptions. For example, once informed of exploitative, unsafe, or unsanitary conditions, grocers boycotted or ceased doing business with the farms involved. Perhaps in part due to the uneven scope of the time period covered in each phase, actual and potential Trade disruptions were concentrated in the pre-recruitment network conditions phase.

Workforce

Workforce disruptions as defined by Bhimani (2019) result from a loss of usable labor to continue operations. In human trafficking contexts, Workforce disruptions can encompass a mixture of criminal justice interventions as well as less traditional interventions, including arrests and sentencing of offenders, workplace protests, and victims leaving their trafficking situation. Workforce disruptions made up a much smaller share of disruptions in the pre-recruitment network conditions phase, comprising under 10% of all identified disruptions in this phase, and appear to have had little impact on the exploitative conditions. In this phase, Workforce disruptions included the convictions and sentencing of individuals for conspiracy to bribe a federal Food and Drug Administration inspector in relation to the 2010 salmonella outbreak and for harboring illegal aliens.

Conversely, half of the disruptions in the contemporary case were classified as Workforce disruptions. Of these disruptions, 7 occurred during the exploitation phase, while the majority (13) occurred in the post-exploitation phase. The majority of the Workforce disruptions consisted of traditional criminal justice actions following the discovery of the criminal activity—traffickers arrested, detained pre-trial, and sentenced. Because the trafficker's arrest or sentencing often meant the removal of key members who were not replaced, these disruptions were categorized as severe. For example, the police raid conducted at Oakridge Estates on December 17, 2014, carried out by a joint task force comprised of officers from the FBI, I.C.E., and the local sheriff's department, was categorized as severe. During the raid, law enforcement officers arrested Conrado Salgado-Borbon and Bartolo Dominguez, delivering serious cuts to the network by removing actors responsible for the transportation to and from the worksite and supervision of trafficking victims while there.

Importantly, every action taken to remove actors from the supply chain network did not result in severe disruption; prior to his arrest in the wake of the December 2014 raid, Castillo-Serrano was deported twice. Rather than halt the trafficking, the labor trafficking network adapted by allowing one of Castillo-Serrano's associates to take on his role in the network. Moreover, 100% of severe Workforce disruptions depended on the catastrophic Information Security disruption that arose from a phone call by a minor victim to his uncle, which exposed the human trafficking to authorities trained to identify and respond in this case. This finding indicates that impactful criminal justice interventions rely on a sequence of very specific events and may be variable in effectiveness.

Examination of potential Workforce disruptions indicates that this disruption category may be especially helpful during the movement and pre-recruitment phases in preventing the flow of human beings through the labor trafficking supply chain. Castillo-Serrano and other traffickers specifically targeted minors for recruitment because they believed that minors were having an easier time crossing the border due to the border surge. At the time of this case, when undocumented minors were apprehended crossing the border by Customs and Border Patrol, it was the Department of Health and Human Services Office of Refugee Resettlement (ORR/HHS)'s policy to detain the minors until adult sponsors could retrieve them from ORR/HHS custody. Usually, ORR/HHS policy required sponsors to submit original or certified copies of their birth certificates and FBI criminal background checks for vetting purposes prior to releasing minors. From 2011 to 2014, however, as a result of adverse social and economic conditions in central America, more than 125,000 unaccompanied minors were stopped at the border, reducing the government's ability to thoroughly vet all sponsors. Co-offenders and associates, taking advantage of these socioeconomic conditions, were able to pose as relatives or family friends of the victims several times, effectively building a potential disruption source into the trafficking supply network. A Workforce disruption targeting the socioeconomic conditions underlying the border surge could have occurred even earlier, in the pre-recruitment phase; supplying potential victims with access to educational and work opportunities in their home countries would have reduced the victims' vulnerability to Castillo-Serrano's recruitment promise of an American education .

As Workforce disruptions are those disruptions involving a permanent loss of workers, or an inability to recruit workers, a limited number of actors are actually capable of producing such a disruption in the labor trafficking context. Law enforcement actors and government actors appeared with equal frequency in the Workforce disruptions that actually occurred across all phases of the case, indicating law enforcement actors' ability to arrest, as well as court actors' ability to sentence and incarcerate. Moreover, both domestic and international governments were represented in potential Workforce disruptions through their ability to target and ameliorate underlying social and economic conditions increasing victims' vulnerability to recruitment (e.g. by reducing the impact of conditions contributing to the border surge). However, actors internal to the trafficking network also have the capacity to carry out Workforce disruptions, either by orchestrating an escape or organizing workplace protests.

Logistics

In human trafficking, logistics disruptions occur when resources—here, the workers—cannot be transported through the supply chain from the location of recruitment to location of exploitation. As a result, logistics disruptions often deal with interventions that occur as victims travel and cross state and international borders. No Logistics disruptions actually occurred in either the pre-

recruitment network conditions phase or in the contemporary case phase. One potential Logistics disruption did occur in the pre-recruitment network conditions phase, however, and illustrates how Logistics disruptions can prevent exploitation by keeping potential victims from entering the labor trafficking supply chain. Public records suggest that DeCoster specifically sought to hire undocumented individuals because of their perceived vulnerability and work ethic—individuals drawn to farms in the United States because of already desperate financial conditions (Lyttle, 2020; Mertens, 2010). Because the use of illegal methods of border entry can heighten vulnerability to exploitation, making legal immigration and asylum channels more accessible could reduce the victimization associated with labor trafficking.

In the contemporary case, two potential Logistics disruptions were identified, which also related to immigration policy. Both disruptions concerned policy choices that might have improved federal response after minors were apprehended by federal agents at the border. For example, alternative policies that required more rigorous background checks or other vetting safeguards may have prevented the traffickers from effectively building federal border policy into the movement phase of the labor trafficking supply chain; although the ORR/HHS policy was actually later changed, proactive border policies that consider and are responsive to the risks and vulnerabilities associated with labor trafficking was one potential Logistics disruption identified in the case.

Delivery

Delivery disruptions were rare. No actual or potential Delivery disruptions were identified in the network conditions pre-recruitment phase. The single Delivery disruption in the contemporary case was categorized as a minor disruption and occurred during the movement phase: Once recruited by Castillo-Serrano and transported through Mexico by a network of smugglers, most minors were detained by the Border Patrol.

While the previous Workforce disruptions relating to the ORR/HHS involved strategies that would improve the ability of government officials to adhere to its policy concerning minors at the border, a Delivery approach to disrupting the labor trafficking supply network during the movement phase would be to change the policy completely, thereby cutting off a critical route to the trafficking destination and preventing exploitation from occurring. A different policy would perhaps entail substantial training and screening tools designed to detect labor trafficking, with minors whose descriptions of circumstances leading to their entry into the U.S. raising “red flags” concerning their vulnerability to labor trafficking or potential exposure to traffickers being prevented from being delivered to sponsors until additional checks have been conducted. Such a targeted approach to background checks may prevent traffickers from taking advantage of overwhelmed border checkpoints.

Only law enforcement and government actors were involved in Delivery disruptions. Because federal border officials have jurisdiction over a key delivery route—the border—and only federal government actors have authority to set policy in that area, it makes sense that the number and type of actors involved in these disruptions are limited in the labor trafficking context. The single actual Delivery disruption occurred in the case when border patrol detained several minor victims as they crossed the border into the US. Similarly, Delivery disruptions may tend to cluster in the movement phase of the labor trafficking supply chain, a phase in which efforts to cross the border may feature prominently when victims are undocumented.

Discussion

Our analysis of the history of the *U.S.A. v. Castillo-Serrano* (2015) case using Bhimani's (2019)'s framework for disruptions echoed many of the findings of previous literature, while illuminating novel and understudied sources, processes, and actors involved in disruptions. In accordance with previous literature, we observed the remarkable flexibility of labor trafficking supply chain networks (D. A. Bright & Delaney, 2013; Cavallaro et al., 2020), as evidenced by the ability of traffickers to reallocate criminal responsibilities (as when Castillo-Serrano was deported) and funders to relocate to different states or even countries after sanctions (as when DeCoster was labeled a habitual violator in Iowa). We also documented numerous unintended consequences of disruption (such as when the closure of Buckeye was followed directly by the covert purchase of the property by Jack DeCoster).

Perhaps one of our most notable findings was the evidence of remarkable supply chain network resilience. Because multiple exploiters faced federal criminal prosecution, this case is commonly held as an example of law enforcement success. Yet, exploitative conditions and related criminal activity was ongoing at the Ohio worksite for nearly fifty years. This resilience may be the result of the economic nature of labor trafficking as a criminal offense. Like drug trafficking, labor trafficking is a unique criminal activity because it is economically motivated and embedded in broader financial markets (Bhimani, 2019; De Vries, 2019; LeBaron, 2021). Thus, the labor trafficking supply chain's ability to interact with legitimate markets may increase its resilience to disruption because it is able to build economic sanctions (Asset and Trade disruptions) into its business model. Similar to the limitations of the War on Drugs strategies which often targeted drug market participants, disruptions aimed at labor trafficking may be ineffective because the economic incentives motivating victims and offenders to participate in the labor trafficking supply chain persist despite risk, and sometimes law enforcement interventions create adaptations that strengthen the network.

While our analysis of the Trillium case demonstrates opportunities for intervention from a broad range of authorities, it also reveals that law enforcement tactics can effectively participate the fight against criminal networks. We found that law enforcement delivered significant disruptions in the pre-recruitment network conditions and post-exploitation phases by removing significant traffickers and funders from the network (e.g. arrest and deportation of traffickers). Though these disruptions were significant, they were not uniformly severe in magnitude and frequently spurred network adaptations. Given that law enforcement strategies typically focus on the immediate criminal incident, they have been found to be ineffective or even counterproductive, and are concentrated "in the tails" of the labor trafficking supply chain phases. Alternative strategies of criminal network disruption that target intermediate phases of labor trafficking supply chains are likely vital to permanently disabling labor trafficking supply chain networks.

Criminologists and other stakeholders can begin to envision new strategies of disruption outside the traditional criminal justice arena by drawing on the more contemporary approaches reviewed here, particularly those disruption categories and disruptors targeting the middle phases of the supply chain (pre-recruitment through exploitation). Doing so requires law enforcement to develop and sustain substantial partnerships with authorities that likely have more interactions with and exposure to the illicit supply chain and its actors in these middle phases. This requires training, partnership and information sharing processes. Law enforcement can also work harder to ensure opportunities that expose trafficking operations are not missed. Law enforcement was not a stranger to the poor housing conditions of the victims in the contemporary case. Yet despite

over 200 visits to the location of victim housing, local law enforcement took no action to prevent the human trafficking violations. In fact, pressure from an external agency (the Collier County Sheriff's Department) and activation of a federally funded human trafficking task force was required to complete the critical disruption in this case, initiated by a minor victim.

Each of these findings has implications for the development of the disruption concept. First, we should expect successful criminal network disruption to be iterative and involve multiple strategies to account for their remarkable flexibility; many of these strategies should be preventive rather than reactive to avoid unintended consequences of law enforcement disruption such as improvements in network functioning or increases in network solidarity. Second, law enforcement approaches should be selective, targeting those actors who are unique and difficult to replace, such as heads of exploitive networks, funders or certain kinds of transporters like smugglers. In this way, the risks of unintended consequences of network disruption can be offset by the benefits of targeting actors whose removal will not simply result in adaptation.

Third, disruption of labor trafficking should be informed by a broader range of disruption strategies and tactics. Recognition of the economic and business motivations present in labor trafficking supply chains underscores the need to not only draw non-traditional actors into efforts to prevent or reduce labor trafficking but also to apply supply chain and other business concepts to criminal justice efforts to target labor trafficking. Recognition of the economic motivations underlying labor trafficking may prove necessary to developing more effective strategies to combat labor trafficking as a business. Insight may be gained from justice system investigation of and interventions into other forms of financial crime or well-resourced networked criminal enterprises. Such strategies can utilize the vast economic and business operation records to identify key perpetrators and bolster prosecutions, particularly as those records provide evidence of coercion, force or fraud. It is important to recognize that incapacitation through incarceration is often insufficient to break up more complex illicit business networks; key actors in the pre-recruitment network condition phase faced criminal prosecution and terms of incarceration without significant disruption to illicit operations. Additionally, more work is needed to identify the crimes that correspond to or travel with labor trafficking operations. Patterns of regulatory violations or other criminal activities that bring in or support revenue streams in the trafficking operation should be identified and further pursued.

Such innovations also require law enforcement to move beyond the current "victim-centered" approach that other scholars have noted places significant burden on individual victims who must identify the trafficking, report it, and cooperate, often while dealing with the risk of retraumatization by criminal justice actors and the very real threat of retaliation by offenders not yet apprehended. Such an approach systematically reduces the overall chances of successful prosecution because law enforcement may have trouble identifying labor trafficking elements in an individual's experience, and prosecutors may have trouble bringing labor trafficking cases without the cooperation of a very specific kind of victim. A network approach, on the other hand, could reduce the burden of responding to labor trafficking on the party most vulnerable to it, providing law enforcement with a wider view of the operation and the ways labor trafficking elements such as fraud or coercion manifest in patterns across multiple victims. While improving law enforcement responses to labor trafficking is important to anti-trafficking efforts, reliance on law enforcement to disrupt labor trafficking carries numerous inherent limitations. As demonstrated by the analysis in this case study, numerous agencies and actors have opportunities to disrupt labor trafficking operations, particularly in the middle phases of exploitation.

Additionally, far less attention has been devoted to understanding how points in a labor trafficking supply chain can be leveraged to prevent victimization.

Finally, preventive measures that could have reduced vulnerability at earlier stages of the labor trafficking supply chain could be identified for the contemporary case. Socioeconomic unrest and economic depression in one geographic region allow criminal networks to flourish in multiple places around the world, international efforts to stabilize countries and put an end to internal conflict will also reduce the ability of transnational criminal networks to coordinate with one another and thus to act. These are clearly more challenging and longer term disruption measures but they remain critical to preventing operations that prey upon vulnerable communities. Outside of large macro-level changes, efforts to prevent labor trafficking victimization at a more micro level should be pursued in part because such efforts are most likely to reduce suffering, possibly before it begins. A growing body of prevention research has developed around sex trafficking, particularly programming to shore up vulnerabilities of youth to commercial sexual exploitation (Rothman et al., 2021). Much less is known about how to prevent labor trafficking and disrupt the networks that fuel victimization and abuse. There are potential leverage points to inform individuals about their rights as workers in the US and opportunities for agents who may interact with victims in other professional contexts to ensure worker knowledge and protection. Developing a solid base of understanding of the most effective points to intervene in labor trafficking supply chains to reduce the likelihood of victimization is critical to informing prevention and intervention efforts.

Limitations & Future Research

Our analysis is not without limitations. The supply chain network mapping process illustrated here relied on criminal justice records as the primary source of data. These records introduce well-documented limitations into our study of criminal labor supply chain networks; as labor trafficking is by nature a hidden activity, criminal justice records and other publicly available records are often incomplete and require researchers to define network boundaries and ties; establish an acceptable level of data validity; cope with missing data; and acknowledge the limits of generalizability (D. Bright et al., 2021). Criminal justice records also only include information relevant to the criminal prosecution at hand. Relationships, activities and network ties that are less critical to the criminal case against a specific set of defendants may be excluded from the record, particularly if such complexities muddies the water of a prosecutors' case. Our sample is also limited to one federally prosecuted labor trafficking case in the agricultural sector. We chose a single case study approach to document the potential of labor trafficking supply chain mapping to expand our understanding of disruption points in a criminal enterprise. Future work should test our findings and compare disruptions patterns across a wider sample of cases.

Despite these limitations, our study has underscored the importance of additional research seeking to expand the disruption concept in the context of labor trafficking. The current study illustrates the nature and patterns of disruptions that span beyond those traditionally considered by criminology scholars, informed by supply chain theory and methodologies primarily emerging from business scholars. Future research should examine more cases to develop and refine the Bhimani (2019) disruption framework, with attention to studying disruptions occurring during the middle phases of exploitation and understanding of the availability of certain categories of disruption in particular criminal contexts. Given the remarkable flexibility and resilience to disruption demonstrated here by the labor trafficking supply chain network, future research should also seek to study labor trafficking adaptations.

Criminology has traditionally neglected disruption as a concept despite its centrality to examination of criminal networks. This study employed a novel theoretical approach and methodology to explore the variety of disruptions possible in labor trafficking. Using this approach, we identified a wider range of disruptions in the Trillium case than those traditionally assumed by criminology scholars. And yet, despite the large number of actual and potential disruptions in this “successful” case, most were ineffective at stopping the illicit operation or preventing victimization. More work is needed to ensure disruption opportunities are not missed and to increase the effectiveness of disruptions that do occur.

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Appendix

This appendix contains an illustrative, not exhaustive, list of example disruptions across multiple phases of the labor trafficking supply chain. Examples were chosen to provide an overview of the variety of sources, actors, and processes involved in the disruption of the labor trafficking supply chain in the *U.S. v. Castillo-Serrano* (2015) case. If the disruption was included in either the Fig. 3 or Fig. 4 supply chain mapping, its number on that map is listed in the final column of the table.

Category	People Involved	Description	Actual/Potential	Phase	Magnitude	Supply Chain Mapping Number
trade	Maine State Legislature, Austin DeCoster	In 1975, James Tierney, then Majority Leader in the Maine's State Legislature, proposed legislation meant to force DeCoster to adhere to minimum wage laws. In Maine, some agricultural companies are exempt from minimum wage, but Tierney's new law "created an exemption from the exemption"—any farm that has more than 300,000 laying birds now has to pay all workers minimum wage. The new rules, according to Tierney, specifically targeted DeCoster, whom Tierney felt was running an assembly-line-based factory operation and not a traditional farm. The bill passed, and by 1976, DeCoster was forced to pay the minimum wage. Tierney cites it as a watershed moment—after the legislation, DeCoster began to look for property in other states.	actual	network conditions pre-recruitment	severe	Fig. 3-4
assets	unknown government regulators; Quality Egg	In 1976, DeCoster is fined \$16,500 by government regulators who show that Quality Egg truckers, under DeCoster's supervision, have been doctoring their log books. The logs claim truckers have worked only the federal limit of hours—when they have actually worked far longer shifts.	actual	network conditions pre-recruitment	minor	
information security	Maine Times; Vietnamese workers at Quality Egg	In 1977 the Maine Times reported that DeCoster was habitually deducting penalties and expenses from the paychecks of Vietnamese workers without prior consent or means of appeal. The workers were being charged inflated prices, the Times said, to live in company-owned trailers from which they would be immediately evicted if they resigned or were fired.	actual	network conditions pre-recruitment	minor	
workforce	Austin DeCoster; unknown DeCoster Egg	In November 1978, 27 DeCoster employees are fired after walking out in protest of low wages and poor working conditions. A Maine judge would later rule that the workers had to be restored to their roles, and ordered DeCoster to desist "interfering with or	actual	network conditions pre-recruitment	minor	Fig. 3-5

	Farm employees	restraining" their attempts to unionize. This line of code represents the workers' attempt to unionize (walk-out).				
information security	U.S. Department of Labor; DeCoster Egg Farms	On May 2, 1980, the U.S. Department of Labor files a civil action against DeCoster Egg Farms, Inc. and Maine Egg Producers, and Jack DeCoster is also named personally in the suit. The complaint alleges that the defendants "have violated the minimum wage, overtime and record-keeping provisions of the Fair Labor Standards Act since May 1st, 1977, and, since January 29, 1978, have violated provisions of the Act prohibiting the use of oppressive child labor." One portion of the case accuses DeCoster of employing five 11-year-olds and a 9-year-old in his facilities. The U.S. Department of Labor files a civil action against DeCoster Egg Farms, Inc. and Maine Egg Producers, and Jack DeCoster is also named personally in the suit. The complaint alleges that the defendants "have violated the minimum wage, overtime and record-keeping provisions of the Fair Labor Standards Act since May 1st, 1977, and, since January 29, 1978, have violated provisions of the Act prohibiting the use of oppressive child labor." One portion of the case accuses DeCoster of employing five 11-year-olds and a 9-year-old in his facilities.	actual	network conditions pre-recruitment	minor	
information security	Anton Pohlmann, German government	Pohlmann moved to the United States in the 1980s and moved in his egg production business, which would later become Buckeye Farm. He was accused in Germany of responsibility for a salmonella outbreak and in 1996 was banned for life from owning animals in Germany as a result of animal cruelty in his German facilities. The German government might have alerted the US of Pohlmann's various offenses in the agricultural and livestock industries, preventing him from expanding the facilities in Ohio .	potential	network conditions pre-recruitment	NA	
logistics	Ramiro Salgado, Immigration and Naturalization Services	Ramiro Salgado came to the US illegally in the 1980s, walking across the border from California. He was an employee who worked for DeCoster from 1988 to 2004 in Maine and Iowa and later claimed that DeCoster hired undocumented workers because of their vulnerability and work ethic. If more potential victims had access to legal immigration processes, they would have been less vulnerable to labor trafficking.	potential	network conditions pre-recruitment	NA	Fig. 3–1

assets	Austin DeCoster, U.S. Department of Labor	On February 20, 1985, The Department of Labor orders DeCoster Egg Farms to pay over \$200,000 in back wages as a result of the civil suit brought in May 1980. The court orders also "prohibit the defendants from further minimum wage, overtime, recordkeeping, and child labor violations."	actual	network conditions pre-recruitment	minor	Fig. 3-6
trade	New York State; Austin DeCoster	On June 21, 1988, New York State embargoes DeCoster eggs raised in Maryland and Maine facilities after three Salmonella outbreaks in the state are traced to the company's eggs. During one outbreak, 500 New Yorkers are hospitalized, and 11 die. DeCoster has to dispose of at least 200,000 contaminated hens. To reverse the embargo, commercial egg producers in Maine agree to greater oversight under direction of Dr. Donald Hoenig, Maine's state veterinarian. The embargo was lifted after the company agreed to vigorous testing.	actual	network conditions pre-recruitment	moderate	Fig. 3-7
assets	Wright County Egg, Immigration and Naturalization Services	In 1989, Wright County Egg received a fine from the INS because it specifically hired undocumented workers for their vulnerability and work ethic (according to non-profit group Mercy for Animals).	actual	network conditions pre-recruitment	minor	
information security	Austin DeCoster; Maryland State	In 1991, salmonella tests (as part of the agreement with New York State to submit to vigorous testing and lift the embargo in 1988) revealed a salmonella outbreak at one of DeCoster's Maryland farms, prompting another statewide ban on his eggs. This line of code represents the discovery of the salmonella in Maryland as a result of the mandated testing.	actual	network conditions pre-recruitment	minor	
information security	New York State, Austin DeCoster	In 1992, DeCoster was found guilty of violating the New York State ban, but given only a token fine. By then he was already shifting his operations to Iowa, which didn't require salmonella testing. This line of code represents the guilty finding.	actual	network conditions pre-recruitment	minor	
assets	New York State, Austin DeCoster	In 1992, DeCoster was found guilty of violating the New York State ban, but given only a token fine. By then he was already shifting his operations to Iowa, which didn't require salmonella testing. This line of code represents the fine.	actual	network conditions pre-recruitment	minor	

information security	Rumford Falls Times; Austin DeCoster	At some point during 1996, DeCoster received renewed scrutiny in Maine after an expose in the Rumford Falls Times revealed widespread abuse of migrant Mexican and Mexican-American workers. Workers – who told reporters they were treated like “slaves” – were packed into company-owned trailers infested with cockroaches, rats and mice. “I saw employees living 12 to a trailer with bare wires, holes in the floors and roaches all over the place,” recalled Greg Davis, the reporter who broke the story. “If someone was injured, they’d be sent back to Texas. That was their workman’s comp: to be sent home.” Workers – who told reporters they were treated like “slaves” – were packed into company-owned trailers infested with cockroaches, rats and mice. “I saw employees living 12 to a trailer with bare wires, holes in the floors and roaches all over the place,” recalled Greg Davis, the reporter who broke the story. “If someone was injured, they’d be sent back to Texas. That was their workman’s comp: to be sent home.” U.S. Labor Secretary Robert Reich denounced DeCoster, saying conditions at the Turner farm were “as dangerous and oppressive as any sweatshop we’ve seen.”	actual	network conditions pre-recruitment	minor	
trade	New England major supermarket chains; Rumford Falls Times	As a result of the Rumford Falls Times expose in 1996, New England’s major supermarket chains learned of DeCoster’s activities.	actual	network conditions pre-recruitment	minor	
assets	Occupational Health and Safety Administration, DeCoster Egg Farms	On July 12, 1996, because of the large number of workers' compensation claims filed against DeCoster Egg Farms, OSHA begins an investigation of the company that results in a historic \$3.6 million citation for a multitude of "egregious and willful violations of health and safety and wage and hour laws." At the time, the Turner operation's estimated annual sales are more than \$40 million. OSHA cites 33 instances since 1993 in which DeCoster failed to record injuries or improperly recorded them; the agency decides to stop letting DeCoster self-report and takes a look themselves. The largest single fine is for "unguarded machines"—37 citations at \$40,000 each, for a total proposed penalty of \$1,480,000. But the citation includes a litany of other serious but less costly violations, including "exposed live electrical parts and ungrounded machinery" (\$70,000), "overexposures to air contaminants and lack of suitable respiratory protection," "lack of	actual	network conditions pre-recruitment	moderate	Fig. 3-2

		prompt medical care," "failure to provide personal protective equipment," and "noise overexposures" (\$40,000 each).				
information security	Iowa Department of Natural Resources, Austin DeCoster	In 2000, Iowa's Department of Natural Resources labelled DeCoster the state's first ever "habitual violator" of environmental laws and banned him from expanding operations in that state for 4 years. As a result of increasing scrutiny in Iowa, DeCoster sold his hog farm there and needed to invest the profit from that sale to avoid paying capital gains taxes; his purchase of Buckeye Egg Farm in 2004 may have been motivated by this desire.	actual	network conditions pre-recruitment	severe	
trade	Austin DeCoster, Immigration and Naturalization Services	Public backlash against Buckeye Egg Farms in Licking County was so bad that stores began to post signs stating that store-brand eggs had been supplied by Buckeye Farms and offering an alternative, Happy Chicken eggs. Though the alternative eggs were slightly more expensive, customers preferred to avoid Buckeye when possible. But importantly, finding out exactly where Buckeye's eggs were sold was difficult because they were marketed under several different brand names, and Buckeye refused to disclose the information.	actual	network conditions pre-recruitment	minor	Fig. 3-3
trade	Ohio Department of Agriculture; Austin DeCoster	This disruption refers to the shadow lending that enabled DeCoster to acquire Buckeye Farms. Hershey and Bethel later testified that Jack DeCoster had provided all the funds for the purchase of Buckeye, there was no formal or informal agreement to repay the money or assume any financial risk on their part, and DeCoster maintained an option to purchase the company. While DeCoster invested nearly \$125 million, they only fronted \$10,000 of the initial money; nonetheless, they maintain that they were the only owners of Ohio Fresh Eggs. In essence, this elaborate scheme allowed DeCoster to avoid discovery by the Ohio Department of Agriculture and become the "tax owner" of Ohio Fresh Eggs. If	potential	network conditions pre-recruitment	NA	Fig. 3-8

		this arrangement had been detected by the state of Ohio, Jack DeCoster would not have been able to acquire Buckeye (later Trillium) Farm.				
information security	Austin DeCoster, Ohio Department of Agriculture	In June 2002, an attorney representing DeCoster met with Director Dailey to inquire whether DeCoster could get the permits to operate Buckeye's facilities but because DeCoster had a poor environmental record from his hog operations in Iowa, the Director told Crawford that it was unlikely the Ohio Department of Agriculture would issue DeCoster any permits because of his record in Iowa.	actual	network conditions pre-recruitment	minor	
trade	Ohio Department of Agriculture; Buckeye Egg Farms, L.P.	Buckeye's operating permits were revoked in July 2003 and the Director of the Ohio Department of Agriculture Fred Dailey ordered Buckeye facilities to close no later than 2004.	actual	network conditions pre-recruitment	minor	
information security	Ohio Department of Agriculture, Trillium Farms	Ohio Department of Agriculture conducted regular inspections at Trillium Farms, where the boys worked long hours. But the inspector noted nothing wrong with the workers in dozens of reports, which focused on chickens not people, according to inspections.	actual	exploitation	minor	
workforce	Wright County Egg; U.S. Immigration and Customs Enforcement	At least four raids resulting from the Wright County Egg Settlement in 2003 took place between 2003 and 2008. All revealed the company was still employing undocumented workers. For example, in 2006 and 2007, dozens of suspected illegal immigrants were arrested at his farms in Iowa, where state authorities had already labeled him a "habitual offender." This included a raid in September 2007 in which children were among the 51 people arrested. Yet in 2008 Assistant Deputy Chief U.S. Probation Officer Jay Y. Jackson signed a document saying that DeCoster had met the conditions to be released from the probation.	actual	network conditions pre-recruitment	minor	

information security	U.S. Immigration and Customs Enforcement; U.S. Federal Bureau of Investigation	Though both I.C.E. and the F.B.I. came to independently learn of the case, they did not collaborate, thus contributing to the delay in disrupting the trafficking scheme. As early as October 2011, investigators with I.C.E. suspected people were being smuggled into the United States to work at an egg farm in southeastern Hardin County, according to federal court records. The farm had been owned by Ohio Fresh Eggs—once one of the largest egg farms in the country. Ohio Fresh Eggs had a history of environmental, health and contract violations. Trillium Farms and its parent company Centrum Valley Farms in Alden, Iowa, were taking over the six properties. Agents with the F.B.I. first learned about the scheme in early 2013 but little was done on the investigation until October 2014, when Carlos Enrique Pascual called authorities in Collier County, Florida about his nephew.	potential	pre-recruitment	NA	Fig. 4-4
workforce	Department of Health and Human Services' Office of Refugee Resettlement	Since 2011, more than 125,000 unaccompanied minors from central America have been stopped at the border, but the agency conducted post-release checks on only 6,500 children in fiscal year 2014. If the conditions contributing to the border surge had not occurred, ORR/HSS may have had more capacity to conduct background checks, collect fingerprints and otherwise carry out protocol that could have helped detect the trafficking or the minors might not have been recruited at all.	potential	movement	NA	Fig. 4-3
workforce	Aroldo Rigoberto Castillo-Serrano, Immigration and Customs Enforcement	Castillo-Serrano was deported in 2013; however, the exploitation of workers was not discovered or halted. Instead, Pedro Juan took over Castillo-Serrano's duties at the trailers when he was deported.	actual	exploitation	minor	Fig. 4-6
delivery	U.S. Customs and Border Patrol, unnamed minor 1	Once recruited by Castillo-Serrano and transported through Mexico by a network of smugglers, most minors were detained by the Border Patrol.	actual	movement	minor	Fig. 4-5

logistics	NA	ORR/HHS policy (allows minors to be delivered to families and other sponsors). ORR officers might have noticed that the sponsors the minors were delivered to were fake. However, because the officers were overwhelmed, ORR might have not conducted all requisite follow-ups. Specifically: In the spring of 2014, as the crisis at the border grew, prosecutors said, the traffickers attempted to bring a second teenager to the trailer park. But federal agents caught him at the border and he was placed in a shelter funded by the Office of Refugee Resettlement. On June 6, 2014, prosecutors say, Castillo-Serrano arranged for someone to file a Family Reunification Application, claiming to be a family friend of the teenager. The ploy worked, and the agency released the teen to the traffickers, who took him to the trailer park. Over the next three months, according to the indictment, the traffickers repeated the process at least five times, filing false applications that fooled federal refugee officials into delivering the boys to them. If the policy had been different, the minors might not have been delivered into the hands of the traffickers at the border.	potential	movement	NA	Fig. 4-2
information security	Department of Health and Human Services' Office of Refugee Resettlement, Ana Angelica Pedro Juan	It is ORR/HHS policy to vet sponsors (requiring sponsors to submit original or certified copies of their birth certificates and FBI criminal background checks). However, social conditions leading to violence and poverty caused an influx of minors coming to the United States from Central America in record numbers. Since 2011, more than 125,000 unaccompanied minors from central America have been stopped at the border, but the agency conducted post-release checks on only 6,500 children in fiscal year 2014. If ORR/HHS had more capacity, it would not have become overwhelmed and they could have continued doing these proper background checks, potentially identifying the fake sponsors as traffickers.	potential	movement	NA	Fig. 4-1
information security	Marion Police Department, Carlos Enrique Pascual's nephew	Minors were housed in in an isolated trailer park known for its dilapidated and rundown appearance, as well as for the frequent fighting and drug dealing that occurred there. Sheriff's officers came out to break up fights and arrest people for dealing drugs often. The Marion County Sheriff's Office responded to more than 200 calls at the trailer park Oakridge Estates while the boys were there. Sometimes, they were knocking on doors that police would later raid as part of the human trafficking investigation, according to sheriff's office records. But deputies weren't actively involved in the labor trafficking investigation until a few months before the	actual	exploitation	minor	Fig. 4-10

		December raid. Had the police investigated the rundown housing, the trafficking might have been discovered sooner.				
information security	Ohio Department of Agriculture, Trillium Farms	Ohio Department of Agriculture conducted regular inspections at Trillium Farms, where the boys worked long hours. But the inspector noted nothing wrong with the workers in dozens of reports, which focused on chickens not people, according to inspections.	actual	exploitation	minor	Fig. 4-8
information security	Pablo Duran, Jr., Trillium Farms	Trillium Farms could have discovered that Pablo Duran, Jr., Salgado Soto and Bartolo Dominguez were not distributing workers' paychecks and/or that victims did not have the proper protective equipment and/or other abuses/exploitation because they worked at various Trillium Farms sites.	potential	exploitation	NA	Fig. 4-7
information security	Conrado Salgado Soto, Trillium Farms	Trillium Farms could have discovered that Pablo Duran, Jr., Salgado Soto and Bartolo Dominguez were not distributing workers' paychecks and/or that victims did not have the proper protective equipment and/or other abuses/exploitation because they worked at various Trillium Farms sites.	potential	exploitation	NA	Fig. 4-7
information security	Bartolo Dominguez, Trillium Farms	Trillium Farms could have discovered that Pablo Duran, Jr., Salgado Soto and Bartolo Dominguez were not distributing workers' paychecks and/or that victims did not have the proper protective equipment and/or other abuses/exploitation because they worked at various Trillium Farms sites.	potential	exploitation	NA	Fig. 4-7
information security	Carlos Enrique Pascual, Carlos Enrique Pascual's nephew	Sometime on or before October 6, 2015, the minor nephew of Carlos Enrique Pascual called Pascual and told him what was going on at the farms.	actual	exploitation	severe	Fig. 4-9
information security	Collier County Police; Federal Bureau of Investigation	On October 6, 2014, acting on his nephew's phonecall, Pascual called the police in Collier County, FL who contacted the human trafficking task force in Ohio, the FBI and the HHS.	actual	exploitation	severe	Fig. 4-13

workforce	U.S. Federal Bureau of Investigation, Marion police department, U.S. Immigration and Customs Enforcement	Police, in conjunction with federal officials, executed warrants at Oakridge Estates early on the morning of December 17, 2014. Spencer Hickey, Enslaved in Marion County, Marion Star, April 11, 2016. http://www.marionstar.com/story/news/local/2015/09/05/enslaved-marion-county/71786932/ . During the raid, agents pulled about 45 people from the trailers, including all eight of the boys working at the egg farm. The Castillo-Serrano case was investigated by the FBI Cleveland Division's Mansfield Resident Agency, U.S. Immigration and Customs Enforcement-Homeland Security Investigations, the Marion Police Department and the Marion County Sherriff's Office. The case is being jointly prosecuted by Trial Attorney Dana Mulhauser of the Civil Rights Division's Criminal Section and Assistant U.S. Attorney Chelsea Rice of the Northern District of Ohio.	actual	exploitation	moderate	Fig. 4-14
information security	Community members; unnamed minor 1	Minors were housed in in an isolated trailer park known for its dilapidated and rundown appearance, as well as for the frequent fighting and drug dealing that occurred there. "People won't even let their kids go trick-or-treating in the trailer park," said Jamie Johnson, 37, who has lived there for five years. "I don't blame them. There are some nasty trailers out here. People keep to themselves." Had the community members reported the unsafe housing, the trafficking might have been discovered sooner. VanSickle, Overwhelmed federal officials released immigrant teens to traffickers in 2014.	potential	exploitation	NA	Fig. 4-11
Information security	Scott Douglas; unnamed minor 1	Scott Douglas had a number of contacts with the workers when he would drive them to the Mexican grocer, Walmart and Chinese restaurant in Marion, OH. However, because he only spoke English and they only spoke Spanish, he did not know they were being exploited.	potential	exploitation	NA	Fig. 4-12
assets	Austin DeCoster; United States District Court for the Northern District of Iowa	U.S. District Judge Mark Bennett on April 13, 2015 sentenced egg and pork barons Austin "Jack" DeCoster, 81, of Turner, Maine, and his son Peter DeCoster, 51, of Clarion, Iowa, to serve three months each in prison and pay fines of \$100,000 each for selling salmonella-contaminated eggs from their Iowa farms in 2010.	actual	network conditions pre-recruitment	minor	

assets	Peter DeCoster; United States District Court for the Northern District of Iowa	U.S. District Judge Mark Bennett on April 13, 2015 sentenced egg and pork barons Austin “Jack” DeCoster, 81, of Turner, Maine, and his son Peter DeCoster, 51, of Clarion, Iowa, to serve three months each in prison and pay fines of \$100,000 each for selling salmonella-contaminated eggs from their Iowa farms in 2010.	actual	network conditions pre-recruitment	minor	
assets	Austin DeCoster; United States District Court for the Northern District of Iowa	U.S. District Judge Mark Bennett on April 13, 2015 sentenced egg and pork barons Austin “Jack” DeCoster, 81, of Turner, Maine, and his son Peter DeCoster, 51, of Clarion, Iowa, to pay fines of \$100,000 each for selling salmonella-contaminated eggs from their Iowa farms in 2010.	actual	network conditions pre-recruitment	minor	
assets	Peter DeCoster; United States District Court for the Northern District of Iowa	U.S. District Judge Mark Bennett on April 13, 2015 sentenced egg and pork barons Austin “Jack” DeCoster, 81, of Turner, Maine, and his son Peter DeCoster, 51, of Clarion, Iowa, to pay fines of \$100,000 each for selling salmonella-contaminated eggs from their Iowa farms in 2010.	actual	network conditions pre-recruitment	minor	
assets	Federal District Court for the North District of Ohio, Aroldo Rigoberto Castillo-Serrano	On January 14, 2015, a grand jury in the Northern District of Ohio, Western division issued a three-count indictment that would later be superseded. This original indictment included a forfeiture allegation for a 2010 Ford Econoline E350, Extended Club Wagon because it was a vehicle used in the commission of the trafficking crime alleged.	actual	post-exploitation	moderate	Fig. 4-15