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Shawnna Hoffman, Brian Ulicny, Adriana Bora, David Crowley, Bryan Wilson, Tomas Lares, Dazza Greenwood

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In October, out team got a chance to present some of our research at the UN World Data Forum, alongside Gallup, the Walk Free Foundation, University of Massachusetts Lowell, and The Freedom Fund. Watch our full session, *Giving a Voice to Hidden Populations*, here.

0. Introduction

Not all computational law interventions directly require a legal intervention, such as the creation of a contract, the deployment of a new legal entity, or the passage of a new law. In fact, some computational law interventions merely involve making it possible to practice the law in a more computational way. As a means to improve collaboration between interdisciplinary stakeholders and build a comprehensive set of tools tailored to the scourge of modern slavery and human trafficking, computational law can is benefited from the inclusion of tools, techniques, and methods that are not native to the discipline of law.

In our modern economy, the technological sophistication and the potential reach of digital platforms have disrupted many traditional business models.[1] As a profession that is relatively insulated from technology, law has been mostly successful in resisting digital transformation in ways that other industries have not. In lots of cases, though, this is not a good thing. Digital platforms help coordinate the purchase of goods, the sharing of information, and provide deeper, richer insights to their users than would otherwise be received.

In this post, we survey the development of some of the business and technical practices that have led to the proliferation of platforms as an integral tool of the digital economy, outline some of the ways that these techniques can be implemented to combat human trafficking and modern slavery, identify some of the limitations of a platform-centered approach to combatting these issues, and conclude with a set of recommendations for platform providers and others to reduce incidence of criminality, bolster trust of users, and improve our collective ability to combat modern slavery and human trafficking in the future.

1. From Business Intelligence to Community Intelligence

From its first use in 1865 until now, Business Intelligence (BI) has demonstrated the power of collecting information in order to develop actionable insights.[2] An example of this type of thinking includes the reduction of business processes into entries of a spreadsheet that can be combined with other spreadsheets about other processes in order to develop a more comprehensive understanding of those key issues facing a business. Modern BI advances and developments are focused on access to more data sources, access to richer data, and interoperability of those systems that collect, classify, and organize data.

However, the same techniques that are used to develop rich insights for businesses can also be used to benefit communities. For example, the same location and financial data that can be used to predict where a company might want to place their next store could also be used as a means to identify localized instances of inequality, monitor the spread of COVID-19 and the efficacy of stay-at-home orders, and understand large-scale patterns of migration over time.[3]

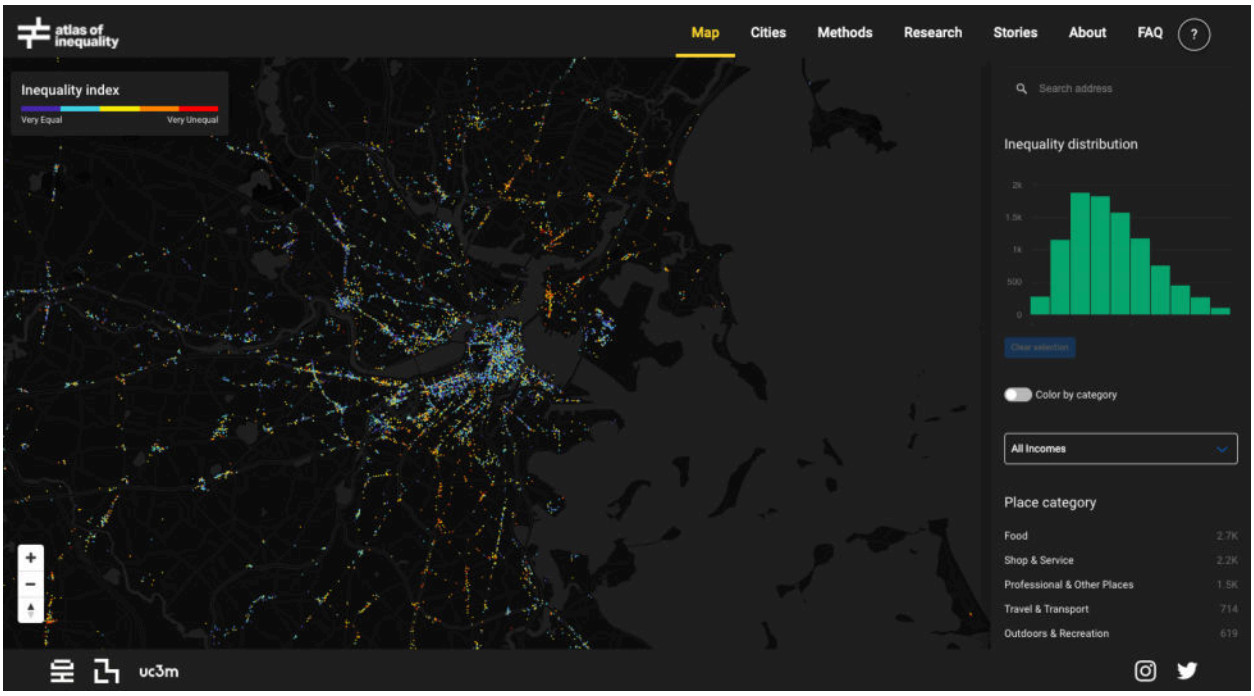


Figure 1: The Atlas of Inequality.

Examining these developments in an even broader light, this trend of creating or identifying data, using it to model predictions, and tuning it based on results, feedback, and new considerations is actually the basis of many platform-based industries. The reason that platforms like SETI@home, Wikipedia, Uber, and Airbnb have achieved such a high level of success is because they solve challenges in ways that would otherwise be prohibitive or inefficient without the use of technology. SETI@home was able to solve funding challenges by distributing computing tasks among users in order to analyze radio signals for extraterrestrials.[4] Wikipedia was able to overcome the challenge of keeping encyclopedias up to date by democratizing access to the way those records are stored.[5] Uber and Airbnb were able to overcome resource coordination challenges by making it easier for people with some unused asset (either a vehicle or a home) to connect with those who needed that asset.[6] Law could be useful in developing more useful legal interventions via platforms, e.g., making it easier for vulnerable citizens to interface with law enforcement when they feel at-risk, visualizing the spread of these problems, and fostering conversations about these problems with data instead of anecdotal evidence.

It is critical to point out, however, that these trends are beginning to be applied in more and additional verticals. In fact, platforms like the silk road, Backpage, and others have served as a place where users can list or purchase adult services and where human trafficking has taken place.[7] Imagining how computational law could be a solution to the challenges posed by modern slavery and human trafficking necessarily requires examining the negative impacts of platforms like Backpage.com in facilitating illicit behavior and the positive power of platforms such as education, resource coordination, and providing a spotlight on these issues.

2. Applications and Platforms

To gain a better understanding of exactly how these challenges manifest, it is necessary to look at the mechanics of platforms that enable them to be both a force for good and evil. The rest of this section examines the role of platforms in computational law, what it means to design for trust, and explore some applications of these platforms in the context of combatting modern slavery and human trafficking.

a. What Have Platforms Changed?

Platforms use data to understand trends and make predictions. Examining platforms in further detail can be instructive in understanding the benefits and risks of platforms in the context of both computational law and modern slavery.

i.) Outsourcing Responsibility: From Ownership to Leasing

Over the past quarter-century, trends in consumer demands have significantly shifted from ownership of property toward a focus on subscription services and leasing. This much is evidenced by shifts in generational shopping, which sees millennial consumers flocking toward subscription services while the baby boomer generation notably emphasized the ownership of goods (such as housing, cars, rental homes, timeshares, and clothing).[8] Current consumers prefer to lease cars instead of purchasing, subscribe to gym memberships instead of acquiring home gym equipment, renting luxury apartment units instead of buying property, and so on. The focus of the modern economy is the benefit of access without the responsibility of ownership. Conversely, companies have adopted a similar approach to their employees and consumers: benefiting fiscally from in platform activities without incurring the legal responsibilities of traditional employers.

Conventional employers contract workers on a full or part-time basis and are legally responsible for facilitating benefits such as health insurance, overtime, maternity leave, human resources, and worker training. Such offerings, while beneficial to the worker, often come at a significant financial expense to the institution, hindering a company's ability to scale. Conversely, digital platform services utilize worker services on a freelance/independent contractor agreement while also offering the

added benefits of eliminating the limitations of physical space. For example, in order to scale the product or reach of the platform, an employer is not confined to the barriers of an office. As many of the operations are reduced into clicks on a screen, the process of scaling operations is also greatly reduced.

Externalizing many of the costs outside of the platform itself also demonstrates that is is possible to structure terms of service and end user license agreements in such a way that prevents platforms from legally having to provide the usual benefits to workers operating in a given sector. Such legal autonomy affords companies the ability to expand at unprecedented rates while allowing workers to set their own hours, refuse and accept contracts at will, and even (in some cases) determine their prices for goods and services. Airbnb is the world's largest hotel chain, and it does not own a single hotel, Uber is the world's largest taxi service that does not own a single car, and Esty is the world's largest craft fair that does not own a single booth.[9] But, such freedom comes at a cost.

Without the legal obligation to facilitate benefits to employees, contractors working within these sectors are subject to work conditions that may be harmful to either themselves or to the client without any institutional support (such as a human resource department or workers' compensation). Furthermore, the absence of on-site supervision and managerial roles subjects workers to potential illegal activity without a safety net of support. Uber drivers have reported being unwilling participants in unlawful activities such as drug runs and criminal transportation.[10] Without access to a direct supervisor and the fear of deactivation from a platform due to a low consumer rating (a concern for many low-income workers), drivers feel that they have no choice but to complete such contractual tasks. Additionally, the legal stance of utilizing workers, drivers, and apartment hosts as freelancers absolves platforms from the legality of vetting clients, closely monitoring transactions, and thoroughly investigating damage claims from users and workers. The outsourcing of legal responsibility from employer to employee lends itself to the execution of criminal activity.

ii.) Low Barriers to Entry

Commercially successful platforms benefit from a "high network" effect - meaning that to gain a profitable return from transactions, a large population of users and service providers must be present within the platform. High community populations are, in part, attributed to a low barrier of entry for the consumer (this often means a fast registration process). Most consumers would not book a car, purchase groceries, or order service if a platform required a lengthy application and verification process. As a result, most platforms allow users to download, register, and pay for services within minutes (at most) without any verification or background checks. Surprisingly, most services can be acquired using cash cards or debit gift cards purchased with cash. Consumers can rent Airbnb properties, transport clients, transfer money, and even employ unknowing "taskers" to collect and mail drugs all without a digital footprint. Such low barriers potentially enable criminals to execute crimes

in newer, faster ways. Before, where there were multiple gatekeepers to hinder criminals in activities associated with transferring of funds, transportation, accommodations, and shipping, there now stands an open road.

iii.) Security

Protection for both employees and clients is a top concern for all companies. Traditional businesses utilize tools such as security cameras, on-site security employees, ID verification on payment, and more. Uber is a car service that affords workers no dashboard cameras, no security tools, and no barriers for protection. Airbnb facilities employ no doormen, no security guards, no surveillance footage, and no in house staff. Lack of supervision has led to damage incurred on the platform worker side but also enables clients to engage in services without the risk of being traced, caught in illegal activity, or reported. Car services now make it possible to transport Persons across state borders in vehicles that are not their own (bypassing the flagging of license plates) without a record of the individual being transported. Airbnb allows guests to check into spaces and use them for potentially illegal activities such as sex activities, hosting/ transportation of human trafficking victims, and drug laundering without the risk of on-sight security guards or a record of surveillance footage.

b. Designing for Trust

One of the key features that amazes everyone about some of these platforms is that they were able to understand the ways that design could overcome the lack of traditional measures of trust, such as central registry with a state office through the design of the application's platform.[11]

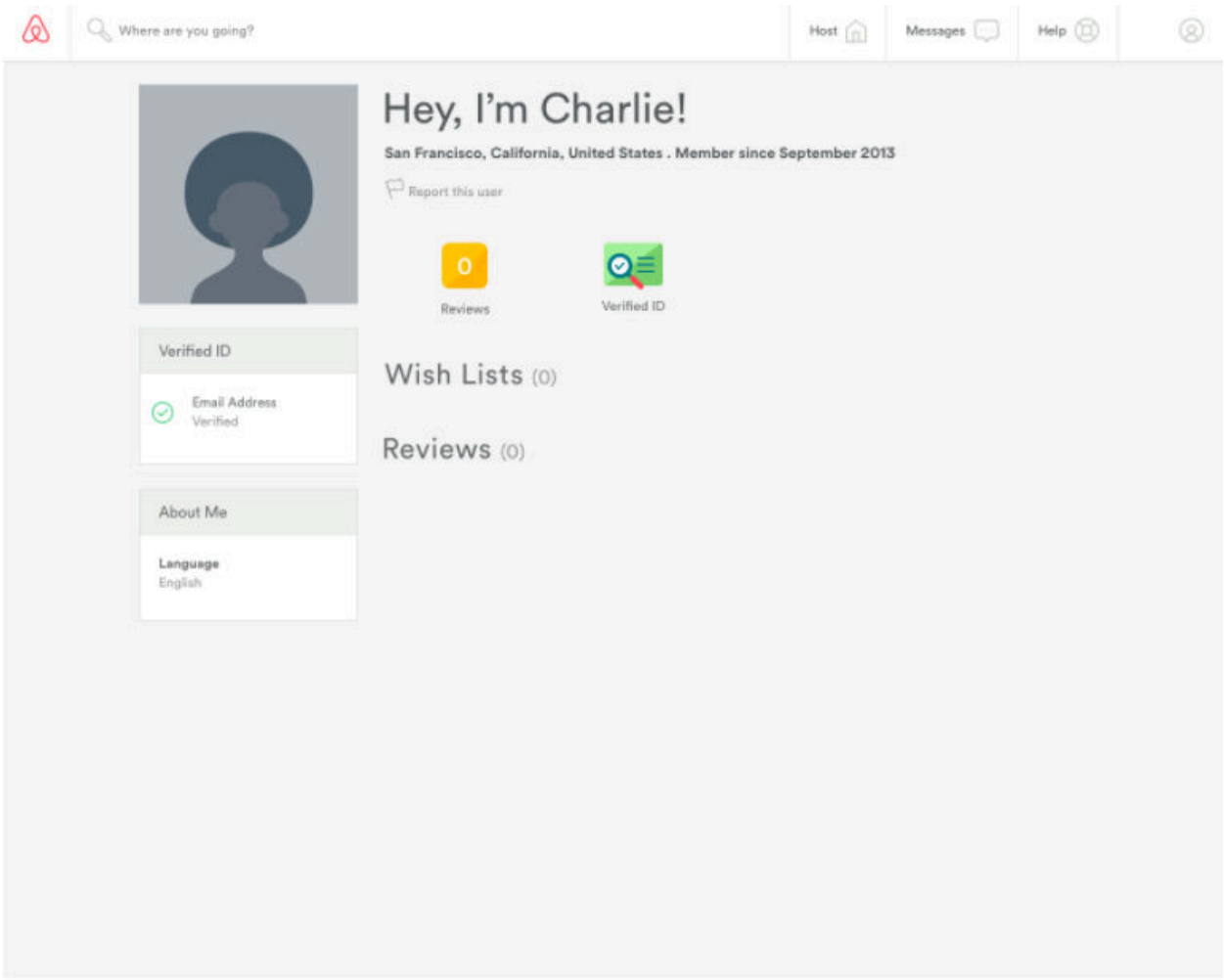


Figure 2: Airbnb - Designing for Trust (1)

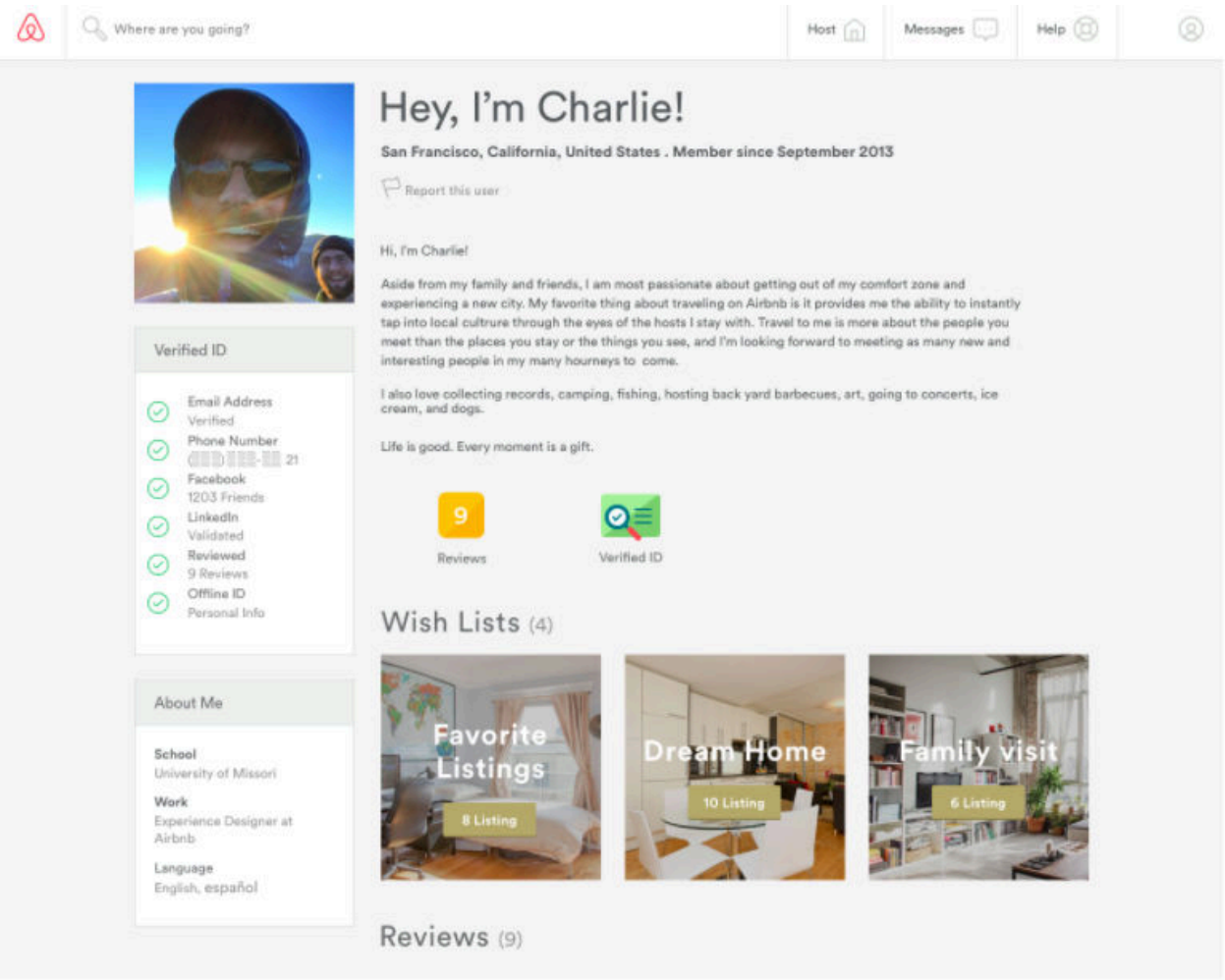


Figure 3: Airbnb - Designing for Trust (2)

These two images from Airbnb help indicate a little bit about why this is so. On the top, is a mostly blank profile without very many features. Basic features such as name, Verified ID, and Verified Email Address are there. However, the profile on the bottom inspires a much higher degree of trust. There, we have lots of additional information that goes far beyond what you might see on an application with the state, such as number of Facebook friends, a LinkedIn connection, and reviews by other real users that have used the site.

This design pattern hits on a key theme that we want to flesh out: the use of platforms and computational technologies allow for opportunities that would not otherwise exist without them. That is, platforms have unique strengths that their analog equivalents do not; they also have unique weaknesses that their analogous equivalents do not. It is for these reasons that they can serve as part of the solution and part of the problem in the fight against modern slavery and human trafficking.

c. Facilitating Criminal Activity

In the same way that platforms can be designed for trust, they can be designed to facilitate criminal activity. Some of this activity is overt, like with backpage.com; other forms of this activity are permissive. Regulations like the First Amendment of the U.S. Constitution protect free speech and Section 230 of the Communications Decency Act protect the hosts of platforms from liability that is owed to users. Further, platforms can be designed to permissively facilitate criminal activity and behavior. Low barriers of entry for clients ensure anonymity and ease - people can easily create profiles and enact services without background checks, verification, or a traceable form of payment (cash cards can be used in lieu of credit cards). Services such as Uber and Airbnb often do not require workers to have security features such as cameras or video surveillance making criminal activity easy to hide and difficult to trace. Money laundering is a common and easily enactable crime that can be executed on platforms (often with the aid of an innocent or unknowing party by requesting some task, such as delivering a package, be completed for a specified price through Task Rabbit).

Yet, the discussion of how to effectively address the problems is complicated. Developing an effective way to combat the behaviors that lead to sex trafficking, such as grooming, enabling exploitative adults to contact the would-be-trafficked, and publishing material remains difficult due to the potential downstream impacts of possible solutions. Even in the case of platforms that directly facilitate criminal activity, banning activity on the internet can be viewed as creating marketplace uncertainty, increasing litigation against legitimate businesses, and potentially leading to increased censorship across the internet. And while the regulation of the internet is certainly an important issue, beyond this brief introduction to some of the aforementioned challenges, it remains outside the scope of this article.

d. Platforms, Human Trafficking, and Modern Slavery

While modern slavery and human trafficking is certainly a complicated challenge to solve, there are also several strategies that can be deployed to create platform-inspired solutions for modern slavery and human trafficking.

Similar to the way Wikipedia allows users to upload and share knowledge with one another, Exchange Initiative's traffickcam.com is an online site where users can post images of hotel rooms to help identify those places where human trafficking has taken place. The site accounts for trust by requiring users to upload the photo within the same geographic area as the hotel they are in, to reduce the potential of false uploads. According to the site, "Traffickers regularly post photographs of their victims posed in hotel rooms for online advertisements. These photographs are evidence that can be used to find and prosecute the perpetrators of these crimes. In order to use these photos, however, investigators must be able to determine where the photos were taken. The purpose of TraffickCam is to create a database of hotel room images that an investigator can efficiently search, in order to find

other images that were taken in the same location as an image that is part of an investigation." As a tool this is relatively lightweight and does not require an incredible degree of sophistication.

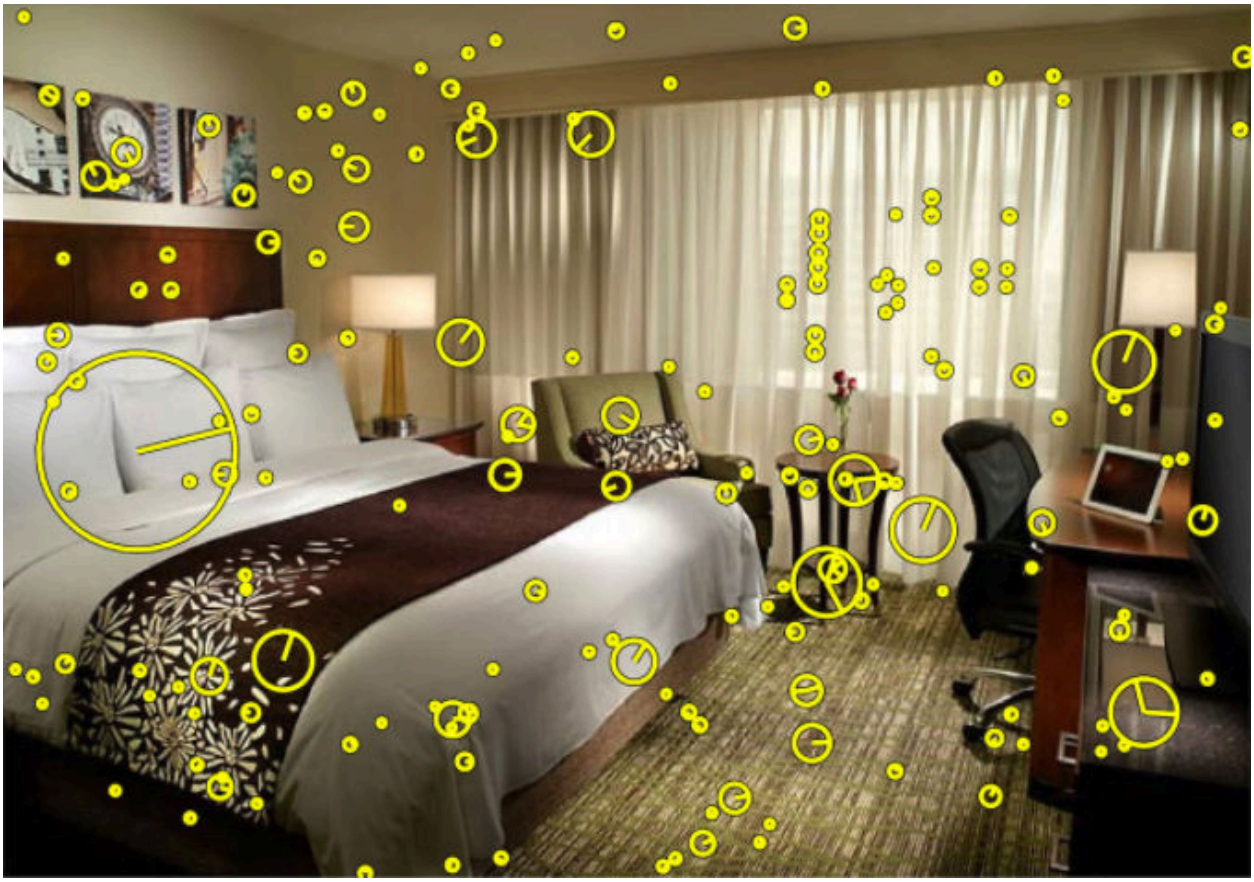


Figure 4: TraffickCam allows **anyone with a smartphone** to fight sex trafficking when they travel by uploading photos of hotel rooms to a law enforcement database.

Then, too, there are more complex solutions that can be used to combat modern slavery and human trafficking. Critically, however, the sophisticated solutions and the simpler solutions require the same basic approach that parallels the growth of BI. Data about a process is collected and operationalized as a means to reveal deeper and richer insights than previously existed. The insights can enable a number of different things to happen. That, however, is up to the platform designer and should serve a specific need.

A more complex solution to deliver insights about the spread of human trafficking is Traffik Analysis Hub, a joint project from Stop the Traffik and IBM. Traffik Analysis Hub has aggregated 300,000 records from various news sources, courts, and others to provide a better understanding of where human trafficking has taken place, to help mobilize resources to these places.

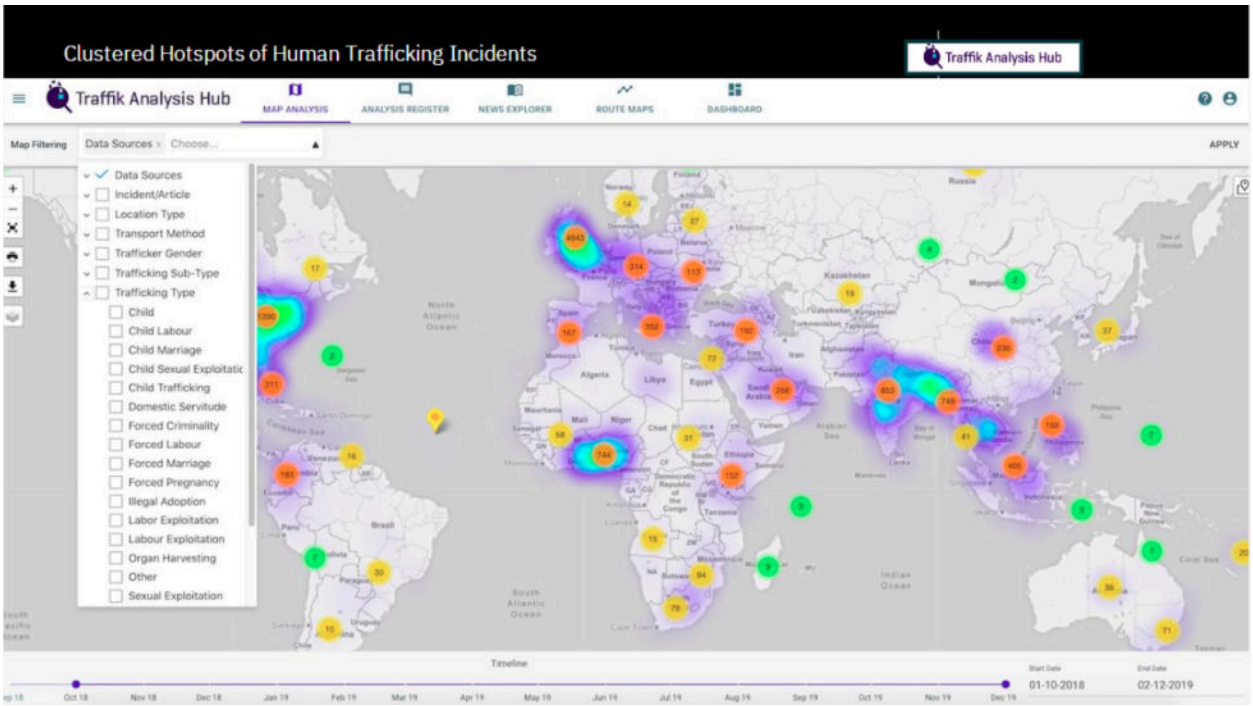


Figure 5: A sample of the type of analysis that Traffik Analysis Hub supports.

3. Limitations

As the old saying goes, everything looks like a nail to the person with a hammer. The same is true of both platforms. Each has a set of strengths that it will be suited for and weaknesses or precautions that must be considered when using it. Equally, looking at the challenge of modern slavery and human trafficking, there will be certain types of solutions that are more useful than others. The next section explores some of these limitations in more depth.

a. Limitations and Precautions for the domain of Modern Slavery and Human Trafficking

The fast pace of technological change and the inability of legislators and educators to stay abreast of these developments has created a series of conditions that make it easy for vulnerable people to be exploited online. As we have seen, even great discoveries can be weaponized to perpetuate abuse from traffickers, such as the secure communication among their ring, the use of GPS location to track their victims, or the use of cryptocurrency to hide their gains. This also allows human trafficking and modern slavery to be transformed into a very lucrative industry.

The sharing platforms saw a particular increase in popularity, with over 28M peer-to-peer network users in 2017, over 3.5B active social media users and an increase in live video streaming (with approximately 18% of Snapchat users being minors). The current structure of the platforms offer the opportunity for traffickers to access, watch, record, and disseminate information about these victims.

They can access more information and hack more materials, as more users tend to share personal and intimate information (as 4 in 10 children remove privacy settings and 15–30% minors are sexting), they can also share and hide that stolen information easier (~500,000 files seized in average are child pornography case) or to buy and sell materials (133,000 ads were posted daily on Backpage.com before it being seized). Online platforms are now a key destination for online grooming. The great amount of personal details that are freely shared on them allows abusers to study the profile of their victims and target them aiming to stalk, bully, manipulate, coerce and abuse victims online.

Investigations led by diverse stakeholders such as media, law enforcement agencies or academia bring to light the realities of how commune social media platforms that we use daily are also employed to openly sell and abuse other humans. For instance, in November 2018, a headline across the media calls our "Child bride auctioned on Facebook in 'barbaric use of technology'", which allows parents in South Sudan to sell their minor daughters for marriage. A Polaris study on this issue realized in 2018 shows an overview of some of the social media platforms intersections with various types of trafficking) as illustrated below.

Types of Trafficking	Types of Social Media Platforms					
	Facebook	Instagram	Snapchat	Chat apps (Kik, KakaoTalk, WeChat, WhatsApp)	Dating Sites & Apps	YouTube
Agriculture & Animal Husbandry	●			●		●
Arts, Sports, & Entertainment	●	●				
Bars, Strip Clubs, & Cantinas	●	●				●
Domestic Work	●			●		
Escort Services	●	●	●	●	●	
Illicit Massage Businesses	●	●		●		
Outdoor Solicitation	●	●	●			
Personal Sexual Servitude	●	●	●	●	●	
Pornography	●	●		●		●
Remote Interactive Sexual Acts			●	●	●	
Restaurants & Food Service	●			●		
Traveling Sales Crews	●	●	●			●

Figure 6: An overview of the different touch points between social media and types of trafficking by the Polaris Project.

This evidence brings to light the fact that traffickers misusing technology at all the stages of the crime, for recruitment, renting/purchasing of premises, transportation, control and compulsion, advertising, exploitation, communications, and financial transaction. The rapid growth of these digital platforms has transformed human trafficking into a highly lucrative industry accessible to anyone with a

computer. "*Human trafficking and modern slavery, like technology, is a dynamic business, endlessly innovative and infinitely adaptable. Only by understanding how these two sectors interact can we get the best out of the one and begin to shut down the other.*" The perpetrator behaves similar to an entrepreneur, building a business plan, perfecting skills, innovating, etc. This business does not run in a vacuum, but rather it is dependent on the existing, mostly legitimate ecosystem, including, banks, hotels, social media platforms and much more. The traffickers are using online platforms around the entire chain of the business, and to lure potential victims of labor and sexual exploitation by covering up their criminal intent.

Some of the opportunities brought by the possibility of misusing online platforms to the human trafficking and modern slavery industry are as follows:

- New business opportunities and delivery of new services
- Increasing access of traffickers to a larger market
- Improving the access of buyers to the market
- Reducing risk for traffickers

In the light of the COVID-19 pandemic, and the increase in exposure and vulnerability to exploitation, law enforcement agencies ask for an increase of vigilance, as they see an increase in the use of online grooming and abuse on online platforms. FBI investigations show how those platforms are used both for forced sex and forced labor recruitment. They use dating tools to geo-locate potential victims and profile them using social media, they take advantage of messaging apps or other online platforms to create contact and at the same time to advertise their victims. Some reports show that not all victims are from low economic backgrounds. Due to higher exposure to sexual materials online and technology platforms, young people from richer households are often lured into trafficking. Even for them, the lack of awareness, education in the domain, or parental support are crucial factors in increasing their vulnerability.

This shows how this crime facilitated by online platforms crosses all geographical, language and social barriers. The multi-stakeholder and interdisciplinary community needs to collaborate, to better understand the phenomenon, and to move from a reactive to an active approach in order to eradicate it. Thus, the online platforms need to be engaged to help law enforcement agencies understand how the victims, traffickers, and survivors are using those platforms and to fight against the crime and also to keep their users safe on their platforms.

Because of the above considerations, it is important that solutions to modern slavery and human trafficking focus on education of the vulnerable, identification of emerging trends, and mitigation strategies for areas that are questionably legal through collaboration, auditing, and reporting.

b. Limitations of Platforms as Business Models

The platforms and applications that have been built are also going to run into these issues of being fit for a particular purpose and unfit for others. As mentioned earlier, platforms make their money by making it easier for users to coordinate and solve complex issues. This coordination, however, comes with costs, liabilities, and responsibilities that have been externalized to users.[12]

Beyond this, however, the apps develop lots of leverage over their users by making it difficult to export or transfer a rating from one app to another. Amazon's Mechanical Turk system is notorious for paying users to complete tasks at a rate that would otherwise be below minimum wage, just because of the structure of the arrangement.[13] Similarly, Uber and Lyft have classified many of their workers as independent contractors and not employees as a way to manage risk.

In many ways, the business models of these platforms incentivize questionable behavior. Platforms with a focus on short-term contract work and client anonymity lend themselves to criminal behavior. Laws never keep up/ are slow to adapt with variations and newly developed uses of technology. Platform workers (Uber, Lyft, Task Rabbit) are often subject and complicit in illegal activity without their knowledge. Sites like PayPal and Task Rabbit report high levels of money laundering and fraudulent activity. Platforms and Digital Marketplaces employ workers on a freelance/ sub-contractor basis meaning that individuals incur the burden/ legal responsibility of illegal actions instead of the platform. Platforms outsource liability to service workers. Service workers on platforms are often low-income, struggling members of society who feel they cannot turn down/ reject work for fear of being "kicked-off" of the platform, e.g., Uber drivers being employed to facilitate drug runs, task workers aiding in the shipment of drugs and money laundering. Most platforms have an easy registration process for clients (easy to fake identities/ hide IP addresses) allowing criminals to utilize services with maximum privacy levels. Platform companies secure and protect their data in walled-gardens of information/ do not share data with other platforms making crime easy to transact and hide. Many platforms focus on temporary accommodations and transportation without the use of physical ID's or high levels of security (scenarios such as this make for ideal human trafficking transportation).

Because of the above considerations, it is important that there be mechanisms for independent audits of these platforms as a way to determine that they are being run in an accountable manner. The recent demonstration by workers on Shipt, a platform for obtaining groceries, demonstrates how algorithmic exploitation requires using the same data that produces insights about how to do better as a tool for collective bargaining. The non-profit ForHumanity goes one step further and argues for an independent audit of platforms that coordinate these behaviors and examines the areas of control, safety, ethics/standards, privacy, cybersecurity, and bias. The Polaris project also has a great list of opportunities for platforms to specifically fight against human trafficking and modern slavery available here. Further, by proceeding in an open manner using sites like GitHub to store information,

it is possible for a diverse set of collaborators to work on big and complicated projects asynchronously in a transparent fashion.

4. Closing Remarks

The above discussion walks through some of the specific strengths and weaknesses of using platforms to combat modern slavery and human trafficking, as well as the issues raised in the domain through their use. In exploring these issues, we hope the insights that we arrived at can provide some value to those reading the article and combating modern slavery and human trafficking.

In the coming months, our Task Force will be continuing our mission to convene leaders, doers, and thinkers dedicated to abolishing modern slavery and human trafficking.

If you'd like to get involved with the Task Force on Computational Law to Combat Modern Slavery and Human Trafficking, please fill out this Google Form.

Footnotes

1. *See e.g.,* Zervas, Georgios and Proserpio, Davide and Byers, John, The Rise of the Sharing Economy: Estimating the Impact of Airbnb on the Hotel Industry (Nov 18, 2016). Boston U. School of Management Research Paper No. 2013-16, Available at SSRN: https://ssrn.com/abstract=2366898 or http://dx.doi.org/10.2139/ssrn.2366898. ↩
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4. *See generally*, "SETI@home" Wikipedia. Available at: https://en.wikipedia.org/wiki/SETI@home (last visited August 11, 2020). ↩

5. *See generally* "Wikepedia" Wikipedia, Available at: https://en.wikipedia.org/wiki/Wikipedia (last visited August 11, 2020). ↩

6. *See generally* Zervas note 1 *supra*. ↩

7. Christine Biederman, "Inside Backpage.com's Vicious Battle With the Feds" Wired, June 18, 2019. Available at: https://www.wired.com/story/inside-backpage-vicious-battle-feds/. ↩

8. Hillary Hoffower, "One asonishing statistic shows just how behind American millenials are when it comes to homeownership." Business Insider, January 21, 2020. Available at: https://www.businessinsider.com/millennials-own-less-real-estate-than-boomers-statistic-2020-1. ↩

9. *See* Geoffrey G. Parker, Marshall W. Van Alstyne, Sangeet Paul Choudary, *Platform Revolution: How Networked Markets Are Transforming the Economy - and How to Make Them Work for You*. W.W. Norton, 2017. ↩

10. *See* Alexandrea J. Ravenelle, *Hustle and Gig: Struggling and Surviving in the Sharing Economy*. University of California Press, 2019. ↩

11. *See* e.g., Joe Gebbia "How Airbnb designs for trust" TED 2016. Transcript and video available at: https://www.ted.com/talks/joe_gebbia_how_airbnb_designs_for_trust/transcript?language=en ↩

12. Lauren Kaori Gurley, "Target's Gig Workers Will Strike to Protest Switch to Algorithmic Pay Model" Vice, July 11, 2020. Available at: https://www.vice.com/en/article/v7gzd8/targets-gig-workers-will-strike-to-protest-switch-to-algorithmic-pay-model. ↩

13. Alane Semuels, "The Internet Is Enabling a New Kind of Poorly Paid Hell" The Atlantic, January 23, 2018. Available at: https://www.theatlantic.com/business/archive/2018/01/amazon-mechanical-turk/551192/. ↩