

**Implications of Transportation on Human Trafficking in the United States: A Spatial Analysis**

by

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# **Implications of Transportation on Human Trafficking in the United States: A Spatial Analysis**

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University of Pittsburgh, 2022

Human trafficking often involves the movement of people across country borders, state borders, in between cities, and across town. Spatial analyses of the flows and connections that characterize human trafficking at all scales are limited. Likewise, the connection between modes of transportation and trafficking rates has yet to be fully explored. This paper addresses this gap by providing a descriptive analysis of the correlation between the number and type of transportation hubs (airports, ports, train stations, and border crossing stations) and human trafficking prosecution rates using Geographic Information Systems (GIS). The results show that human trafficking prosecutions are concentrated in areas with large urban places and populations, Texas, California, Florida, and Virginia, and one other state, South Dakota. Border states have the largest number of transportation hubs. A bivariate correlation, a statistical technique that determines the existence and strength of relationships between two variables, shows that there is a strong correlation between the number of transportation hubs in a states and human trafficking prosecution rates.

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## 1.0 Introduction

Human trafficking has been a global phenomenon plaguing society for centuries. It has so many complexities that it is more of a concept rather than something tangible, and it needs to be regarded as such<sup>1</sup>. While research on human trafficking has slowly increased since the turn of the century, much is still not known due to a general lack of dedicated research<sup>2</sup>. One of those neglected research areas is the relationship between human trafficking and transportation.

To begin to answer this question, what is the relationship between human trafficking and transportation? First human trafficking must be defined. Human trafficking takes many forms, and there are debates over what is and is not human trafficking. Due to a hyper-focus on women and sex work, some believe human trafficking is synonymous with sex trafficking, but it is not exclusively sex trafficking. However, many researchers have explicitly concentrated on sex trafficking<sup>3</sup>. The discourse surrounding human trafficking defines it, and all definitions are

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1 Gleason, Kristen D., et al. "Discursive Context and Language as Action: A Demonstration Using Critical Discourse Analysis to Examine Discussions about Human Trafficking in Hawaii." *Journal of Community Psychology*, vol. 46, no. 3, 2017, pp. 293–310., <https://doi.org/10.1002/jcop.21940>.

2 Gozdzia, E. M., & Bump, M. N. (2008). Data and research on human trafficking: Bibliography of research-based literature. Retrieved from <http://isim.georgetown.edu/112487.html>

3 Gozdzia, E. M., & Bump, M. N. (2008). Data and research on human trafficking: Bibliography of research-based literature. Retrieved from <http://isim.georgetown.edu/112487.html>

political acts<sup>4</sup>. The purpose of legal definitions is to limit or expand the application of protections and the scope of prosecutions, both inherently political.

Despite the difficulty in defining human trafficking, definitions are crucial to ensuring all participants in discourse are referencing the same forms of human trafficking and including the same circumstances. The following United Nations definition recognizes its status as a political act. When written, its sole purpose was to be included in international legislation and to guide individual countries' legal definitions upon which they govern human trafficking within their borders.

In the Palermo Protocol, officially known as the Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime — the United Nations defines human trafficking as such:

“Trafficking in persons” shall mean the recruitment, transportation, transfer, harbouring, or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation. Exploitation shall include, at a minimum, the exploitation

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4 Gleason, Kristen D., et al. “Discursive Context and Language as Action: A Demonstration Using Critical Discourse Analysis to Examine Discussions about Human Trafficking in Hawaii ‘i.” *Journal of Community Psychology*, vol. 46, no. 3, 2017, pp. 293–310., <https://doi.org/10.1002/jcop.21940>.

of the prostitution of others or other forms of sexual exploitation, forced labour or services, slavery, or practices similar to slavery, servitude, or the removal of organs.”<sup>5</sup>

This definition of human trafficking is used for a few reasons. It is laid out in the Palermo Protocol, the foremost internationally recognized legislation on human trafficking. Therefore, it is the definition that is widely cited in most human trafficking literature and heavily influences the discourse. This definition is broad, but it is also careful to define human trafficking, rather than narrowing in on one type of human trafficking such as sex trafficking or labor trafficking. It is crucial to include all kinds of human trafficking to fully understand the scope of human trafficking in the United States because all forms are present here.

## **1.1 Historical & Political Context**

Human trafficking is commonly referred to as “modern-day slavery.” This language points to human trafficking’s roots in the transatlantic slave trade (TAST) and creates connections that people, especially in the United States, already understand. There are several issues with this, the first being its comparative nature. The sentiment of this comparison in the media and the larger discourse often ends up being that human trafficking is more horrific than the transatlantic slave

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5 United Nations General Assembly. 15 November 2000. Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children, supplementing the United Nations Convention against Transnational Organized Crime. A/RES/55/25. Available at [https://www.unodc.org/res/human-trafficking/2021the-protocol-tip\\_html/TIP.pdf](https://www.unodc.org/res/human-trafficking/2021the-protocol-tip_html/TIP.pdf)

trade because it is more prolific and there is more victimization<sup>6</sup>. Victimization is measured through the estimates of slaves; it is estimated that 12.5 million people were transported out of Africa as slaves during the TAST<sup>7</sup>. It is also estimated that anywhere from 27 million to 40.3 million people worldwide are enslaved<sup>8,9</sup>.

It is not intentioned to put the transatlantic slave trade era of slavery in opposition to modern human trafficking — instead, call attention to how the factors driving the TAST is the same as those driving human trafficking.

During the time of the TAST, people were commodities that could be bought and sold, just like any other commodity. The slave trade was a business like any other beholden to supply and demand market forces. As demand increased, the merchants increased the supply as well. It was a profit-driven business that never ended; it simply changed and adapted.

Global responses to human trafficking have begun to materialize in the past twenty years. The United Nations has been a leader in the international community. The Palermo Protocol mentioned above is a part of a United Nations resolution. It is *the* framework for how countries should view, approach, and react to human trafficking. However, it is just how countries *should* view, approach, and react to human trafficking – it is a collection of suggestions. The protocol

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6 Bravo, Karen E. (2011) "The Role of the Transatlantic Slave Trade in Contemporary Anti-Human Trafficking Discourse," Seattle Journal for Social Justice: Vol. 9: Iss. 2, Article 3. Available at: <https://digitalcommons.law.seattleu.edu/sjsj/vol9/iss2/3>

7 Trans atlantic slave trade database. <https://www.slavevoyages.org/voyage/database>

8 Disposable people new slavery in the global economy Bales, Kevin. 2012; Rev. ed. with a new preface. (pg. 30)

9 [https://www.ilo.org/global/publications/books/WCMS\\_575479/lang--en/index.htm](https://www.ilo.org/global/publications/books/WCMS_575479/lang--en/index.htm) Global Estimates of Modern Slavery: Forced Labour and Forced Marriage ILO. 2017.

implements language of “shall consider,” “shall endeavor to,” and “consider implementing” to encourage countries to use these practices rather than mandate their usage<sup>10</sup>. This is typical of United Nations protocols, laying out a list of best practices without requiring signatory countries to fully implement them due to concerns about the strain on resources mandatory changes put on signatories, specifically for poorer countries. Nevertheless, the Protocol is a landmark achievement for the law enforcement of anti-trafficking protections internationally.

Another one of the United Nation’s major contributions to the anti-trafficking discourse is the release of the Global Report on Trafficking in Persons. It is released every two years as mandated by the 2010 United Nations Global Plan of Action to Combat Trafficking in Persons<sup>11</sup>. It gives a global overview of the state of human trafficking and regional reports that break down the demographics of identified victims and traffickers. This report is useful because it gives a coherent overview of the state of trafficking in the world. However, its regional structure is less than ideal due to a lack of homogeneity between countries—even those with similar geographical locations because of linguistic, cultural, and governmental differences. Questions of if it is possible to quantify human trafficking indicators on a global scale in a way that allow for cross cultural comparison at all have been raised by scholars<sup>12</sup>.

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10 Hyland, Kelly E. "The Impact of the Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children." Human Rights Brief 8, no. 2 (2001): 30-31, 38.

11 "Trafficking in Persons." 2020, accessed 10 October 2021, <https://www.unodc.org/unodc/data-and-analysis/glotip.html>.

<sup>12</sup> Merry, Sally Engle. *The Seductions of Quantification: Measuring Human Rights, Gender Violence, and Sex Trafficking* the University of Chicago Press, 2016.

The United States has made few attempts legislatively to define, prevent, and prosecute human trafficking within its borders. The most notable of these is the Trafficking Victims Protection Act (TVPA), initially passed in 2000<sup>13</sup>. It was the first law in the United States created specifically for the prosecution of human trafficking<sup>14</sup>. The entire government's response framework to human trafficking in the United States is the TVPA and uses a three-pronged approach. The government response framework, and subsequently the TVPA utilize the three P's: Protection, Prosecution, and Prevention. In 2009, a fourth P was added – Partnership. The protective aspect is directed at protecting victims internationally and domestically and created the T-Visa. The prosecution aspect involved the creation of new laws for trafficking to be prosecuted under and defined human trafficking for prosecution. The prevention aspect primarily focuses on the steps the United States takes to ensure that other countries have systems to protect victims and prosecute traffickers. The partnership aspect was added to signify the need to enlist all parts of society to combat human trafficking. The TVPA has been reauthorized and amended in 2003, 2005, 2008, 2013<sup>15</sup>.

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13 Trafficking Victims Protection Act, 22 U.S.C § 7106 (2006) [hereinafter TVPA]. The Trafficking Victims Protection Act of 2000 is one of three sections within the Victims of Trafficking and Violence Protection Act of 2000, Pub. L. No. 106-386, div. A, § 101, 114 Stat. 1464, 1466 (2000) (codified as amended at 15 U.S.C. § 7101 (2005)).

14 Hyland, Kelly E. "The Impact of the Protocol to Prevent, Suppress and Punish Trafficking in Persons, Especially Women and Children." Human Rights Brief 8, no. 2 (2001): 30-31, 38.

15 "International and Domestic Law." accessed October 10, 2021, <https://www.state.gov/international-and-domestic-law/>.

The Trafficking in Persons Report is a yearly report released by the United States Department of State; the TVPA mandates its release. It rates countries on a tiered system – tier 1, tier 2, tier 2 watchlist, tier 3, and special case. Governments' efforts to adhere to Section 108 of the TVPA and make “serious and sustained efforts” to end human trafficking in their country determine their ranking<sup>16</sup>. There are a few serious issues with the production of the TIP report. It puts the onus of ending human trafficking on the governments, disregarding the valuable efforts of activists, community groups, and non-profits. Criticisms have also come about regarding the lack of uniformity in data collection and lack of transparent and credible reasons for changes in ranking<sup>17</sup>. As well as political motivations behind rankings including being downgraded due to hesitation to share intelligence with the United States, and as retribution for lack of cooperation in separate ongoing disputes<sup>18</sup>. The United States also failed to include itself in the report until 2010, nine years after the release of the first report<sup>19</sup>.

The international response to human trafficking centers on western governments, approaches, and voices. The United Nations has membership from all globally recognized countries, yet the security council is primarily western countries. Four out of five permanent members are European or the United States. Although the United Nations has been criticized for

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16 U.S Department of State. 2021 Trafficking in Persons Report. (14 September 2022).

<https://www.state.gov/reports/2021-trafficking-in-persons-report/>. 56.

17 Human Trafficking: State Has Made Improvements in Its Annual Report but Does Not Explicitly Explain Certain Tier Rankings or Changes. 2016.

18 Michael Weber, Katarina O'Regan, Liana Rosen. The State Department's Trafficking in Persons Report: Scope, Aid Restrictions, and Methodology, 2019.

19 IBID.

being Western-centric and is attempting to make strides to change this, the landmark conventions and protocols that address human trafficking came out of a United Nations that was heavily influenced by the west. The antihuman trafficking community upholds the United States' TIP report as the foremost comprehensive annual report on human trafficking. However, it comes across as the United States trying to police the actions of other countries' governments which can create more international conflict than the information the TIP report produces is worth. However, the framework for this study was heavily influenced by the reports, data, statistics, and approaches of the United Nations and the United States, giving it an increasingly westernized approach.

## **1.2 Role of Transportation in Human Trafficking**

Part of the definition of human trafficking in the Palermo protocol accounts for the victim's transportation. This is not a requirement for someone to be trafficked, as someone can be trafficked out of their home. Nor does transportation have to occur across international borders. However, it can be, and the world's interconnectedness makes this easier. Airports, train stations, and roads are everywhere in the United States, and using any of them constitutes using transportation or being transported as a victim of human trafficking. Transportation is involved in every level of the trafficking process. From transporting traffickers to places to traffic victims, transporting victims to a place of exploitation, aiding in escape for victims, and evasion from the authorities by traffickers.

Trafficking happens using the same modes of transportation that people who are not being trafficked use both in private modes of transportation such as a personal vehicle and public ones such as commercial airplanes. Because of this, many non-governmental organizations have

programs to aid in the identification and rescue of potential victims of trafficking along transportation routes and at major hubs like airports such as Truckers Against Trafficking and A21's "Can you see me?" campaign.

### **1.3 Methodology & Research Questions**

Understanding how human trafficking is related to transportation in the United States can guide where education and resources are directed for both governmental programs and non-profits. International travel nodes can show how human trafficking is supported and perpetuated by those traveling between the United States and other countries. Human trafficking prosecutions are the best indicator that the United States has available to measure human trafficking within its borders.

A few questions are driving the research discussed in this paper, and the primary one is: What is the correlation between human trafficking prosecutions and transportation in the United States? This question is only answerable in a thorough way spatially using Geographic Information Systems (GIS), a system that allows for creating, managing, analyzing, and mapping data<sup>20</sup>. Measurement of human trafficking is through prosecutions in the United States at the District Court level collected from Human Trafficking Data<sup>21</sup>. The data of major transportation hubs include locations of ports, border patrol stations, Amtrak stations, primary roads, and international airports.

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20 "What Is GIS." accessed October 10, 2021, <https://www.esri.com/en-us/what-is-gis/overview>.

21 Bouché, Dr. Vanessa. "Human Trafficking Data ", 2021. Database. <http://www.humantraffickingdata.org/terms>.

Several decisions were made in terms of methodology. The United States is the study area because it is one of the world's most influential voices in the anti-human trafficking discourse. Therefore, an analysis of its human trafficking landscape will be substantial. Prosecutions measure human trafficking because most estimations of human trafficking occurring in any given country at any given time are just that estimations. In contrast, prosecutions are definitive numbers, often challenging to find for criminal activity, without a legal perspective. Prosecutions occur in courts with a geographic location; this gives human trafficking a spatial link, even to a larger geographical area rather than a specific city or neighborhood. The database Human Trafficking Data was chosen because it is the only centralized database of human trafficking-related criminal proceedings in the United States of America.

Research linking human trafficking to transportation throughout the usage of Geographic Information Systems in the United States, had never been done before. The outcome of such research shows there is a correlation between the number of transportation hubs and the number of human trafficking prosecutions. As well as test the hypothesis 'where there are more transportation hubs there will be more human trafficking'.

## **1.4 Statement of Global Studies**

Human trafficking is a universal phenomenon that occurs in every country globally. People are moved within singular countries, transnationally, and in between continents. The goods and services that those trafficked provide can be consumed thousands of miles from the place of production. Forced laborers sustain entire industries by keeping costs low and output high. The vast majority of global consumers benefit in some way from various forms of human trafficking,

without directly trafficking people or, in some cases, without even knowing that they are benefiting.

Human trafficking is both a byproduct of and contributor to globalization, “the process of bringing the world together in more intense interaction through transnational activity”<sup>22</sup>. The Transatlantic slave trade was the earliest form of human trafficking, occurring after discovering the “new world” as parts of the globe were beginning to be explored and known by western people. Putting profit over people has always been a part of human nature and economy ever since the transatlantic slave trade and expansion of the “known world” and even before it. People's exploitation helped develop entire countries and connect the world as it was being “explored.”

Human trafficking in the United States is very nuanced. The sheer size of the United States, both geographically and populationally, creates more demand for all varieties of human trafficking than in smaller countries. For these same reasons, it becomes harder to police criminal activity in a centralized and uniform way. There are thousands of local precincts, hundreds of courts, dozens of federal agencies, and all are at least tangentially involved in the reduction and prevention of human trafficking. The prosecution of which is equally challenging to keep track of, and public access to central records is held by private, non-governmental organizations creating difficult in carrying out analysis on prosecution data at the national level.

The United States’ prominence on the world stage as a global superpower means that this country is involved in many human trafficking cases. Either as an intermediary, final destination, or place where goods and services are consumed or manufactured. Therefore, an examination of human trafficking prosecutions within the United States and around its major modes of

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22 Thinking Globally. A Global Studies Reader. Page 5.

transportation aids in understanding the global picture of the international movement surrounding human trafficking.

## 1.5 Literature Review

There has been no investigation of the correlation between transportation and human trafficking in the United States. The usage of GIS furthers the angles of analysis possible by adding in a spatial dimension that is difficult to have without a GIS lens. Yet, few studies have implemented GIS in their analysis of human trafficking. A paper on *The Prevention of Human Trafficking by Geographic Information* calls for GIS usage to combat human trafficking<sup>23</sup>. It states that while spatially linked, human trafficking data is limited because it is not yet being used to its full potential. The more the data available is utilized, more data will continue to be produced. In *Nature of Sex Trafficking in India: A Geographical Perspective*, Rai and Rai examined the sexual exploitation of women and girls in India, spatially, through “supply, transit, and destination states”<sup>24</sup>. In other words, states they were initially from, states they were transported through, and where exploitation occurred. This research is a spatial analysis where the final map visually shows geographic relations but does not use tools to analyze those relations.

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23 Deac, Ramona Neag and Veronica. "The Prevention of Human Trafficking by Geographic Information Systems Technology." *Curentul Juridic, The Juridical Current, Le Courant Juridique*, 50 (2012 2012): 97-103.

<https://EconPapers.repec.org/RePEc:pmu:cjurid:v:50:y:2012:p:97-103>.

24 Rai, R., and A. K. Rai (2021). "Nature of Sex Trafficking in India: A Geographical Perspective." *Children and Youth Services Review* 120.

Aside from the untapped resource of GIS to understand human trafficking patterns is the usage of transportation data. In *Leveraging Publicly Available Data to Discern Patterns of Human-Trafficking Activity*, Dubrawski et al. examine online ads to identify patterns of sex trafficking activity<sup>25</sup>. This online ad data is readily available but remains largely, apart from their research, an untapped source by researchers for several reasons; including how researchers and policymakers can use it to formulate prevention strategies worldwide. Similarly, the argument can be made that available data on transportation hubs is an underutilized tool to understand the movement aspect of human trafficking within the United States. The spatial connection between the location of major transportation hubs and the geographical boundaries of United States district courts shows a correlation between the amount of transportation between states and human trafficking prosecutions.

## **1.6 Conclusion**

Human trafficking is a global issue, still research on transportation-related to human trafficking is minimal and, in the United States, non-existent. This research, which uses available human trafficking and transportation data, seeks to rectify that to gain a fuller understanding of the degree that which transportation affects human trafficking in the United States. Hypothesizing, that the more transportation hubs there are the more human trafficking cases there will be.

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25 Artur Dubrawski, K. M., Matthew Barnes, Benedikt Boecking & Emily, and Kennedy (2015). "Leveraging Publicly Available Data to Discern Patterns of Human-Trafficking Activity." *Journal of Human Trafficking* 1(1).

Chapter 2 discusses the literature at the intersection of human trafficking, GIS, and transportation and how that impacts this study. Chapter 3 delves into the study's methodology, the data used, the assumptions when conducting the study, and the ethical implications. Chapter 4 lays out the study's results, provides analysis, and displays the maps produced as the final product. Chapter 5 discusses what should be done do with the findings and their implications for the field, as well as make recommendations for future research.

## 2.0 Methodology

To understand how major transportation hubs and human trafficking in the United States interact, it is crucial to first understand them individually. Looking first at the major transportation hubs for domestic and international travel in the United States. As well as the question: where is human trafficking occurring in the United States?

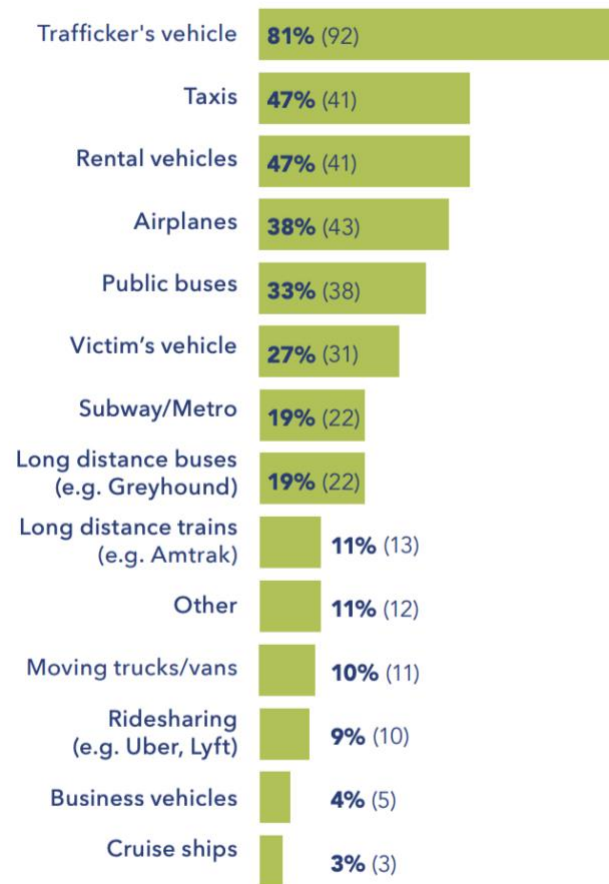
The human trafficking aspect of the question is far more subjective than the transportation aspect. Given its illegal nature, concrete numbers on human trafficking are scarce. Often, they are given in estimates by country and not broken down to the state level, let alone smaller units such as counties. The only genuinely concrete measurements of human trafficking are in legal cases, and even those are almost guaranteed to be lower than actual cases.

Therefore, the best tangible measure of human trafficking for this analysis is prosecution data. They are concrete numbers, and while they don't show every case of human trafficking or where it occurs, the data it shows is definitive. Prosecutions of human trafficking occur at the federal level through district courts. There are 94 district courts in the United States, with at least one in every state<sup>26</sup>. Given this, the unit of analysis for this study is United States District Court jurisdiction boundaries. The human trafficking data was already divided into these geographic areas, and they are often smaller geographically than states which strengthens, and correlation found between prosecutions and trafficking hubs.

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<sup>26</sup> <https://www.uscourts.gov/about-federal-courts/court-role-and-structure>

The transportation aspect of the question is more concrete. Transportation hubs have physical spatial locations. The subjectivity of this question enters when attempting to define which modes of transportation are important to be examined. Research on the relationship between human trafficking and specific modes of transportation is limited. The Polaris Project, a United States-based anti-human trafficking organization has done substantial work in this area. Their report *On-Ramps, Intersections, and Exit Routes: A Roadmap for Systems and Industries to Prevent and Disrupt Human Trafficking* conducted a survey of trafficking survivors to assess what modes of transportation they or their trafficker used while they were actively being trafficked. Their findings were the main driver in determining which modes of transportation to include. While some of their findings weren't applicable due to the national, rather than local scope of the project it was overall helpful.



**Figure 1: Modes of Transportation During Exploitation**

**Produced by Polaris**

The transportation usage utilizing roads was very high. Airports, long haul buses, and long-distance trains were also popular, hence their inclusion as well. Cruise ships had more representation than anticipated. Their inclusion was based partially on this Polaris data and that, more broadly, ships are one of only a few ways to travel internationally to the United States.

## 2.1 Data

Various government agencies' open data portals provided the transportation data. It was often downloaded in a shapefile format. A shapefile is the primary file format for storing and using data for GIS done using ESRI software. ESRI is the Environmental Systems Research Institute. They produce the leading GIS software suite, ArcGIS Pro, the primary software this research was carried out in. Shapefiles store “nontopological geometry and attribute information for the spatial features in a data set”<sup>27</sup>. These geometries are vector features: points, lines, or polygons. This research only deals with points and lines. For example, point data are places with a single definitive location, such as border crossings and Amtrak stations. Line data in this research is roads.

This data was chosen to make the scope as broad as possible for this project. Other studies have been more focused on specific types while attempting to draw conclusions from the entirety of the transportation sector. These modes of transportation were chosen (airports, Amtrak stations, bus stations, border crossings, major ports, and primary roads) because they cover all ways of travel domestically and internationally.

The designation of “major” naturally excludes some hubs that don't fit the definition of major for that transportation sector. The line of exclusion for data points had to exist for most modes of transportation, and for this study, it is unique for each of them. Additionally, exclusions create a clearer statistical picture for analysis.

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27 *Esri Shapefile Technical Description* ESRI (1997). Page 5.

### **2.1.1 Human Trafficking Data**

The prosecution data used in this study was obtained from [humantraffickingdata.org](http://humantraffickingdata.org), hereafter referred to as Human Trafficking Data<sup>28</sup>. The principal investigator of Human Trafficking Data is Vanessa Bouché. The website [Humantraffickingdata.org](http://humantraffickingdata.org) has since been taken down.

This database is used because it is the only complete database of human trafficking prosecutions in the United States. It exclusively deals with human trafficking cases, making data cleaning and processing much more manageable given that there are no other crimes to be sifted through. Human Trafficking Data is a searchable database with several fields of data, such as the case name, number, state, number of defendants, and number of victims. Each case name connects to a dropbox folder containing all the documents that Human Trafficking Data obtained for that case, including docket files. Human Trafficking Data has several files of information on each case. Still, due to the sensitive and illegal nature of the cases, a lot of information is redacted, or parts of files are simply not included in the files and database.

### **2.1.2 District Court Boundaries**

The cartographic boundary file for the jurisdiction boundaries is of the United States District Courts. It from Homeland Infrastructure Foundation-Level Data (HIFLD) open data

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28 Bouché, Dr. Vanessa. "Human Trafficking Data ", 2021. Database. <http://www.humantraffickingdata.org>.

portal<sup>29</sup>. This cartographic boundary file also includes data for Puerto Rico, which falls outside the scope of this study, and was removed.

### **2.1.3 Ports**

Data for the location of Major Ports was downloaded as a shapefile from the United States Department of Transportation (DOT) Bureau of Transportation Statistics<sup>30</sup>. The United States Army Corps of Engineers (USACE) compiled it. Under the USACE definition, major ports are the 150 ports with the most cargo in tons in a given year. This data set is for 2018 and is the most updated data set available.

### **2.1.4 Airports**

Airport data was downloaded as an Excel workbook from the DOT Bureau of Transportation Statistics<sup>31</sup>. It shows the top 50 airports by the total number of passengers who boarded a plane at that airport in 2020.

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29 "Us District Court Jurisdictions." Homeland Infrastructure Foundation Level Data Open Data Updated March 22, 2021, 2021, <https://hifld-geoplatform.opendata.arcgis.com/datasets/us-district-court-jurisdictions/explore?location=10.093410%2C9.519525%2C0.01>.

30 "Major Ports." United States Department of Transportation Bureau of Transportation Statistics Updated October 18, 2021, 2021, <https://data-usdot.opendata.arcgis.com/datasets/usdot::major-ports/about>.

31 "Passengers Boarded at the Top 50 U.S. Airports " United States Department of Transportation Bureau of Transportation Statistics Updated October 13, 2021, 2021, <https://www.bts.gov/content/passengers-boarded-top-50-us-airports>.

As of 2020, there are over 19,000 airports in the United States for both public and private use<sup>32</sup>. While it is impossible to definitively say that any of these nearly 20,000 airports have never been used for any human trafficking-related activities, Inclusion of all of them in a national analysis of all parts of the transportation sector would overcrowd the data making the results less significant. The Bureau of Transportation Statistics only ranks their top 50 based on the number of passengers who embarked on a plane, and that data is only available for those 50 publicly. This inherently creates biases; the airports frequented the most are likely international and surrounding large cities, not where human trafficking exclusively occurs. Private airports were also naturally excluded.

### **2.1.5 Amtrak Station**

Data for railroads are Amtrak stations and was downloaded as a shapefile from the DOT Bureau of Transportation Statistics<sup>33</sup>. The data was provided by Amtrak originally to the Federal Railroad Administration (FRA). Trains were included because “identification from passengers is not required when traveling or purchasing a ticket, offering greater anonymity than air travel”<sup>34</sup>.

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<sup>32</sup> "Number of U.S. Airports." United States Department of Transportation Bureau of Transportation Statistics Updated April 29, 2021, 2021, <https://www.bts.gov/content/number-us-airportsa>.

<sup>33</sup> "Amtrak Stations." United States Department of Transportation Bureau of Transportation Statistics Updated October 28, 2021, 2021, <https://data-usdot.opendata.arcgis.com/datasets/usdot::amtrak-stations-1/about>.

<sup>34</sup> Campaign, Blue. *Transportation Tool Kit* Department of Homeland Security [https://www.dhs.gov/sites/default/files/publications/18\\_0803\\_Blue-Campaign-Transportation-Toolkit.pdf](https://www.dhs.gov/sites/default/files/publications/18_0803_Blue-Campaign-Transportation-Toolkit.pdf).

Amtrak stations and trains are the only representation for the rail sector. Amtrak is undoubtedly not the only long-haul passenger rail service operating in the United States. Still, it is the largest and is a quasi-public corporation funded in part with government subsidies. Additionally, stations are mapped rather than routes for an added degree of clarity in where people embark and disembark the train. Amtrak operates in the contiguous United States except for South Dakota and Wyoming, where the inclusion of exclusively Amtrak stations skews the overall results of the number of transportation hubs per state given that there are likely other passenger rail companies that operate in these states.

### **2.1.6 Border Crossings**

Data for the border crossings was compiled by the Department of Homeland Security and was downloaded from the Homeland Infrastructure Foundation-Level Data (HIFLD) open data portal<sup>35</sup>. The shapefile is for crossings into Mexico and Canada and displays point data.

Border Crossings are included to illustrate the connectivity between the United States, Canada, and Mexico. Ports and Airports are international entry points located in almost every state. The land borders between Mexico, Canada, and the United States are concentrated. These are the formal border crossings often staffed by United States Customs and Border Protection agents (CBP). A large amount of land provides for unstaffed, unofficial, illegal crossing that remains unaccounted for in this research.

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<sup>35</sup> "Canada and Mexico Border Crossings." Homeland Infrastructure Foundation Level Data Open Data Updated March 27 2022, <https://hifld-geoplatform.opendata.arcgis.com/datasets/canada-and-mexico-border-crossings/explore>.

### 2.1.7 Bus Stations

Data for the buses is from the DOT Bureau of Transportation Statistics Intercity Bus Atlas. This online application shows bus routes and stops, among other identifying data for 2019 and 2020<sup>36</sup>. The intercity bus atlas combines several long-distance bus companies between cities, including Greyhound and regional companies. Bus stops as of April 2020 in a GeoJSON format are used in this analysis.

Bus stations are a cheap mode of intercity travel, hence their inclusion. Polaris found that long-distance buses were used by traffickers 19% of the time during exploitation<sup>37</sup>. The Intercity Bus Atlas was used over other data because it was the most updated and comprehensive. There are several large companies and focusing on just one would leave out other critical pieces of data the atlas is used to avoid this specific problem.

### 2.1.8 Roads

Data for primary roads was downloaded from the United States Census Bureau as a TIGER/Line Shapefile<sup>38</sup>. A TIGER/Line Shapefile is a shapefile specifically produced by the Census Bureau by using information selected from the “Census Bureau's Master Address File

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<sup>36</sup> *Inter City Bus Atlas Statistics*, Bureau of Transportations, 2022.

<sup>37</sup> Anthony, Brittany. *On-Ramps, Intersections, and Exit Routes: A Roadmap for Systems and Industries to Prevent and Disrupt Human Trafficking*. Polaris (2018). Figure 5. Page 25.

<sup>38</sup> "2021 Tiger/Line Shapefiles: Roads " United States Census Bureau, 2021 2021, <https://www.census.gov/cgi-bin/geo/shapefiles/index.php?year=2021&layergroup=Roads>.

(MAF)/Topologically Integrated Geographic Encoding and Referencing (TIGER) Database (MTDB).” The MTDB is a database that includes various geographic data for the entire country<sup>39</sup>. The United States Census Bureau defines primary roads as “generally divided limited-access highways within the Federal interstate highway system or under state management”<sup>40</sup>.

Roads were included because cars are a very private mode of transportation. Unlike airports, buses, and trains, there is no proof of travel in the form of a ticket. Of course, it is not entirely undetectable due to highway tolls and gas station records. Inclusion of all roads in the United States would be futile. Primary roads increase connectivity between towns, counties, and states the most, hence their inclusion.

## **2.2 Limitations & Assumptions**

### **2.2.1 Limitations**

The limitations of this research are many and can mostly be directly tied to the decisions made during the data acquisition phase. Limiting human trafficking to the prosecutions that occur at the federal level leaves out several groups of cases. Those prosecuted at the state level and those cases never entered the legal system. Additionally, the capacity to prosecute cases and the willingness to prosecute human trafficking cases varies between jurisdictions, something that is not accounted for in this analysis.

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<sup>39</sup> *Tiger/Line Shapefiles Technical Documentation* (United States Census Bureau, 2021). Page 11.

<sup>40</sup> *Tiger/Line Shapefiles Technical Documentation* (United States Census Bureau, 2021). Section 4.12.3 (4-31)

Although what was determined to be necessary, the usage of United States District Courts as the unit of analysis is far less than ideal. Court jurisdictions are rarely used as cartographic boundaries and are far less recognizable by the public than other cartographic boundaries such as states or counties. While they are sometimes smaller units of analysis than a state, they are still far more extensive than the county level, which would be ideal and aren't always smaller like in Wyoming and Delaware. Human trafficking data is unavailable nationwide at the county level, especially for concrete numbers like prosecutions; that is why counties aren't the unit of analysis for this study.

Definitions of "major" transportation hubs are different for each mode of transportation. There is not a universal top x number of airports or ports by volume of people. The top 50 airports and the top 150 ports are used. The respective agencies who compiled the data sets decided these numbers were significant. However, the study would be improved overall if standardized, showing the top say 50 hubs for every mode of transportation. Additionally, all the border crossings, Amtrak stations, and bus stations are used rather than those that generate the most traffic. That is because there is a far more limited number of these types of hubs. They also tend to be present in some of the less urban parts of the country, unlike airports, and in landlocked states without major rivers, unlike ports.

The most recent data for each of the modes of transportation were used. This means that the data is from a range of years. The Mexico border crossing data is from 2015, and the Canada border crossing data is from 2019. The Amtrak stations and ports are both from 2021. The Primary Roads are from 2016. The bus stations data is from 2020. The 50 Top Airports data is also from 2020. Since the government restricted travel heavily for much of 2020, the data is potentially not what it would have been if there wasn't a global pandemic. A massive influx of people also

counteracts this in March of 2020 before countries shut down and people attempted to get back home or even just into the country, which would skew toward larger airports.

### **2.2.2 Assumptions**

Several assumptions were made at the beginning of this study. Perhaps the most major assumption made in this study is about the prosecution data. Primarily that there were no wrongfully prosecuted cases in addition to the previously discussed issues with using prosecution data as a metric. The measurement of prosecutions itself is also imperfect. Through the usage of prosecutions, it is assumed that there have been no wrongfully prosecuted human trafficking cases. The data also included settled cases where defendants were found not guilty. This is reconciled by stating that this research does not focus specifically on individual cases but rather on trends of which cases can be indicators.

Another major assumption when approaching this study is that traffickers transport people between cities, states, and countries. While it has been well established that this occurs in many cases, it is not a prerequisite for human trafficking as various forms of trafficking can occur without transporting the victim far. However, even if victims are not transported, they were still trafficked, and other people involved in their trafficking likely traveled. Perhaps the trafficker or someone who took part in their exploitation traveled, even if just down the street—keeping the link between transportation and human trafficking.

## **2.3 Research Methods**

### **2.3.1 Gathering Data**

The usage of third-party data made data collection straightforward. After all the data was gathered from its respective sources, it was cleaned, beginning with the human trafficking data. Docket files in the dropbox folder associated with each case include the United States District Court and the division where the case was prosecuted. Some District Courts further divide their jurisdictions into divisions, this happens in larger jurisdictions with multiple courthouses per District Court. All the necessary data was extracted from the dropbox files and entered a spreadsheet: State, District Court, division, case name, case number, the number of defendants, and the number of victims.

The original scope of this research was the divisions of District Courts. The scope was expanded to the District Court boundary due to the unavailability of a cartographic boundary file and unsuccessful attempts to create one. The divisions would have provided a smaller research unit and more precise results.

Data cleaning is organizing and reducing data to make it usable and only show pertinent information for the transportation data involved in narrowing the scope of the data. The Amtrak stations data originally included both train stations and in select cities bus stations. The bus stations were removed from the data set before mapping because of their inclusion in the Intercity Bus Atlas. None of the other data sets required data cleaning.

### 2.3.2 Geoprocessing

After the data was gathered, cleaned, and added into ArcGIS Pro, there were still two data sets that needed to be converted to be displayed geospatially. The dataset for major airports was downloaded in an excel workbook without coordinates. The data was first geocoded using Geocodio<sup>41</sup>. Geocoding is the process of correlating an address to coordinates consisting of latitude and longitude that makes data recognizable by the GIS software. After geocoding it, the coordinates were used to create an XY event to display the data on the map. An XY event uses the latitude and longitude of a location to add a point to the map. The dataset for the Intercity Bus Atlas was downloaded as a GeoJSON. It was then converted it to a shapefile using Mapshaper<sup>42</sup>.

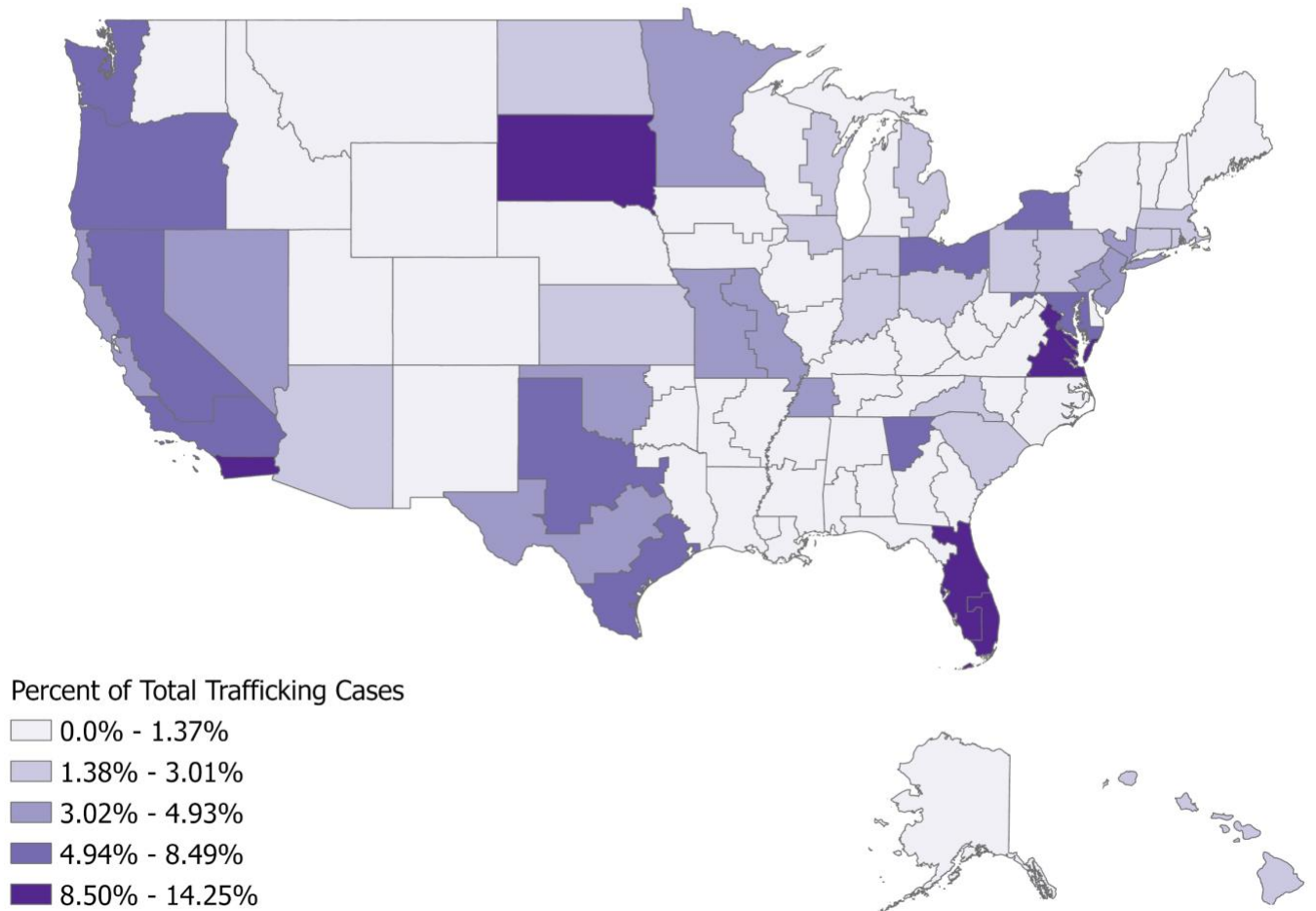
To display the human trafficking data spatially, it was joined to the District Court cartographic boundary file and changed the map's symbology to graduated colors based on the number of human trafficking prosecutions. Using Jenks Natural Breaks to create five data classes using natural groupings within the data. Jenks Natural Breaks was chosen because it accounts for non-uniform distributions. This map was eventually overlaid with the transportation data, but it is essential to understand on its own.

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<sup>41</sup> "Geocodio ". <https://www.geocod.io/>.

<sup>42</sup> "Mapshaper ". <https://mapshaper.org/>.

## Human Trafficking Cases in United States District Courts



**Map 1: Human Trafficking Cases**

### 2.3.3 Data Analysis Plan

While the raw data does reveal many patterns, analysis is required to draw any conclusions. To calculate the total number of transportation hubs within each District Court jurisdiction, starting with the point data by doing a spatial join for each data set: airports, ports, border crossings, bus stations, and Amtrak stations. A spatial join is when one set of data is joined with another set based on the relative location of those two data sets. The point data was joined with the District Court boundaries in this case. ArcGIS pro connected how many of a given point data is located within

each District Court's jurisdiction by performing a spatial join—creating a new field within the attribute table of the given point dataset. That field displayed the join count or the number of points that fell within a given District Court jurisdiction. From there it was simple to add up the join counts for all the point data and adjust the symbolization accordingly.

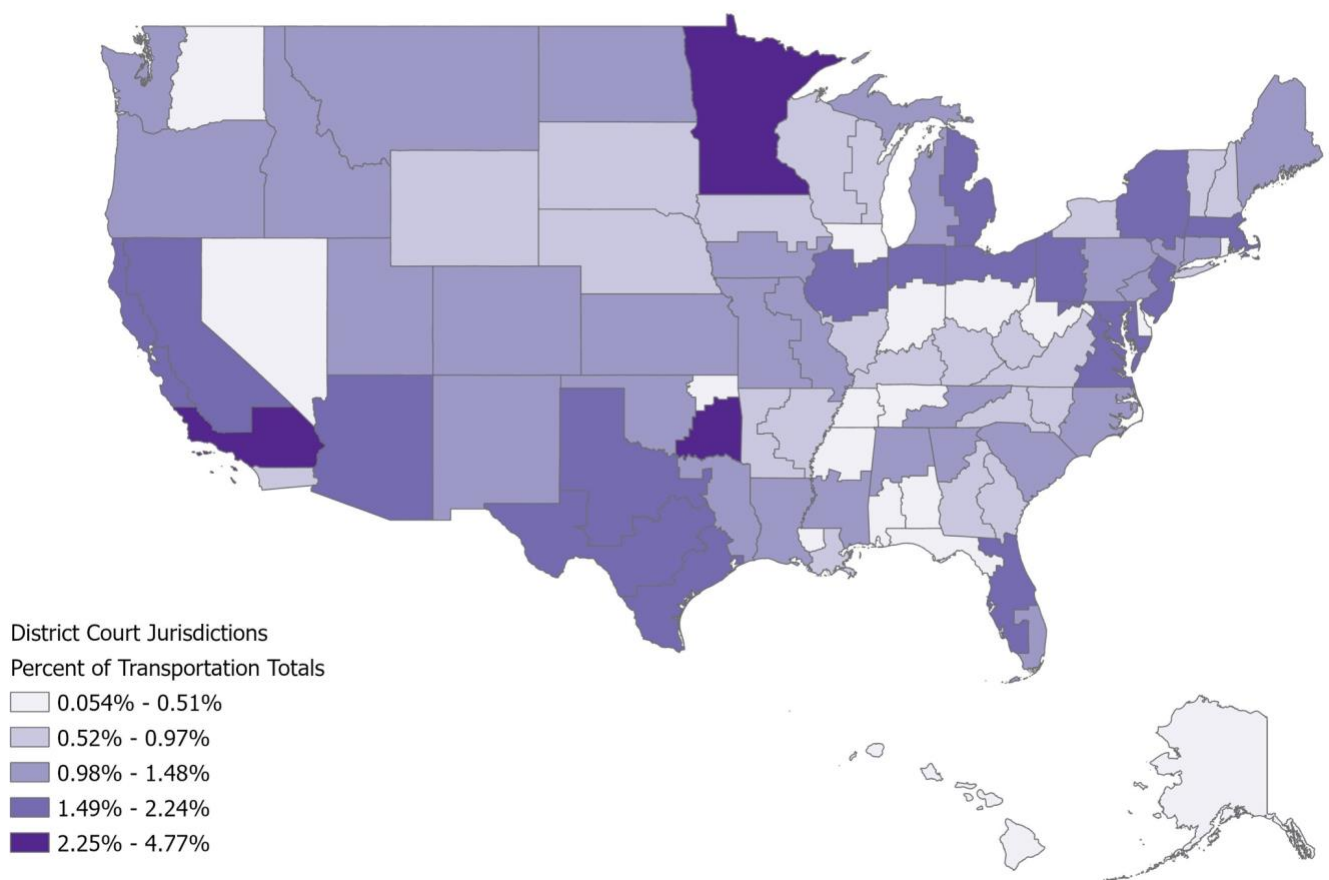
Line data poses more of a challenge. The only line data type in this analysis is primary roads defined by the United States Census Bureau. The data displays normally, but many of the roads are segmented, creating issues for analysis. This meant that simply looking at the table of the data and counting the number within a given jurisdiction would not have been sufficient, as several duplicates referenced the same road.

This segmentation was discovered when an intersection analysis of the primary road data was attempted. An intersect is a spatial analysis tool that takes the individual data points within a data set and displays where they overlap with each other. For this dataset, if the data wasn't segmented, it would have shown where interchanges were. Due to the data segmentation, this intersection analysis yielded over 26,000 results. Since an intersect analysis wasn't a viable option, the decision was made to show the number of unique primary roads rather than interchange locations. Analysis of attribute tables in ArcGIS Pro tends to be clunky, so the attribute table was exported to be analyzed in Excel.

Removing duplicates was a multi-step process. First, the spreadsheet was filtered by the district so as not to remove roads with the same name in other states. Then duplicates were removed by using the remove duplicate data tools. Then the data was manually sifted through to remove duplicates manually that weren't caught because of formatting issues, such as an extra space, use of shorthand, different placement of hyphens, and HOV lanes. This produced the number of unique primary roads in each District Court Jurisdiction.

After collecting the totals for both the line and point data, they were added to create the total number of transportation modes in each jurisdiction. The map showing the final tally of transportation, as a percent of the total number of transportation hubs is below.

## Percent of Total Transportation Hubs



**Map 2: Transportation Hubs Choropleth**

## **2.4 Conclusions**

To answer the overarching question, one must first understand the landscapes of human trafficking and transportation in the United States individually. When working with secondary data, several decisions must be made that inherently limit the possible scope. Such concessions were made in this study, but they do not affect the overall legitimacy of its results. The next chapter delves into the results of the study, analyze them, and provide the final maps. There will also be a discussion of this study's implications for the broader community.

### 3.0 Results

It is best to attempt to analyze the question, what is the relationship between human trafficking prosecutions and transportation spatially. All data collection, cleaning, and spatial analysis culminate in a map of the United States. It shows both the location of the various transportation hubs, and the number of human trafficking prosecutions present in the District Court Jurisdiction. Human trafficking is mapped as a percent of the total cases, to normalize the data to account for the size of the different states.

In addition to this overarching map, regional maps display the same data as the more extensive map on a smaller scale. Since they are more concentrated, they are larger and show the details better, especially in the New England area– but all maps display the same data.

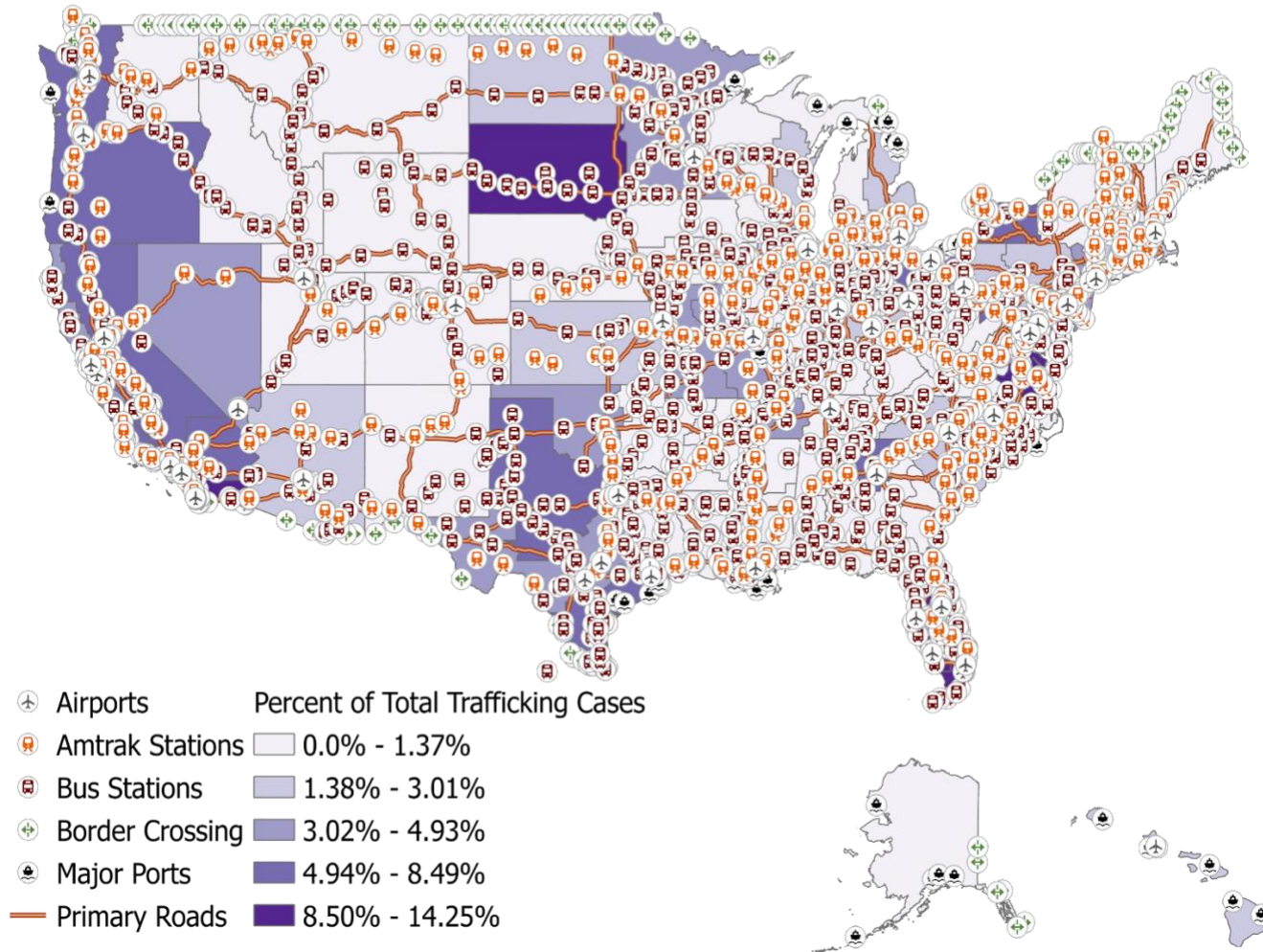
The regions are as defined by the Census Bureau’s Geographic Areas Reference Manual (GARM)<sup>43</sup>. These are the official regions that Bureau uses in their statistical analysis and groups states into four categories: Northeast, Midwest, South, and West.

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<sup>43</sup> *Geographic Areas Reference Manual*. United States Census Bureau, 1994.

### 3.1 Map Outcomes

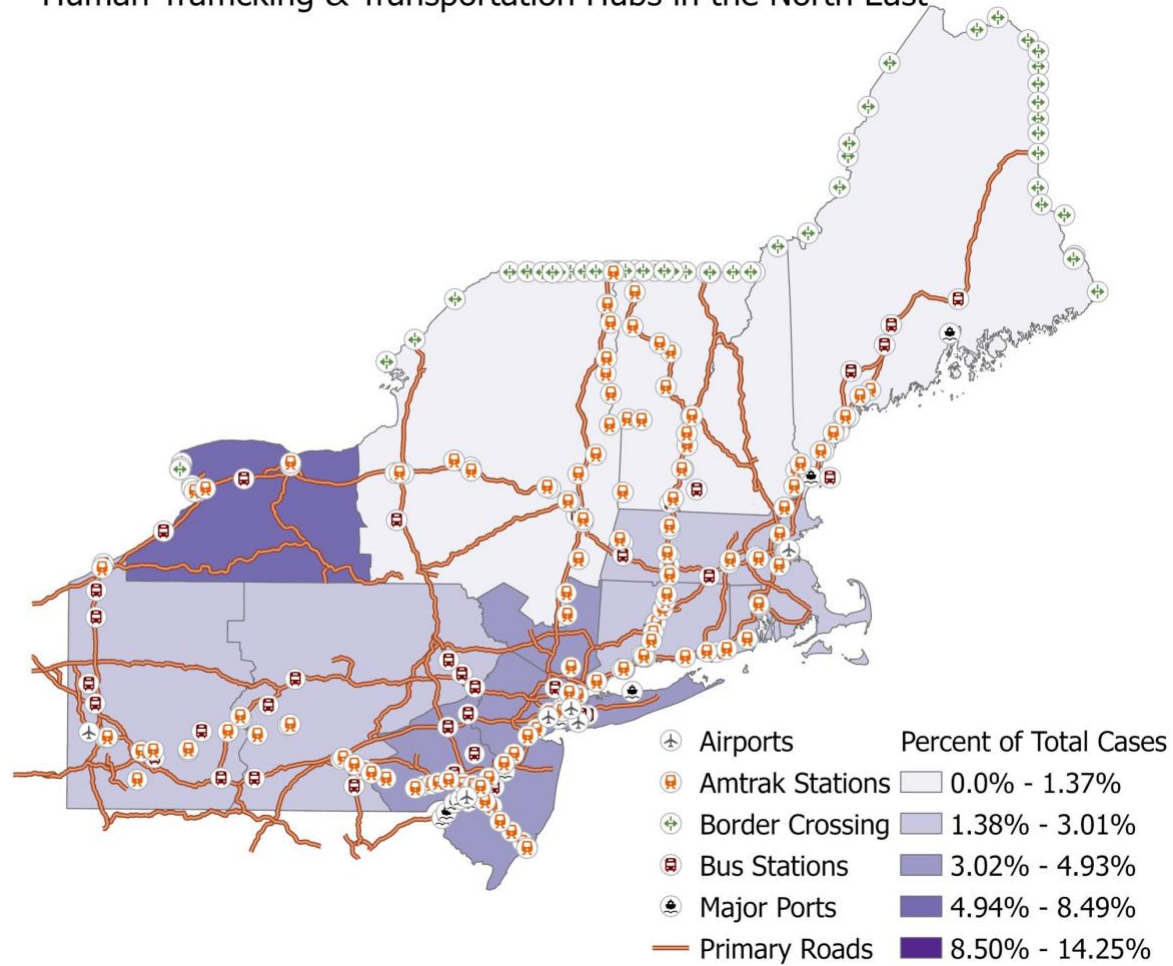
#### Human Trafficking Cases in United States District Courts



Map 3: Whole United States Map of Human Trafficking Overlaid With Transportation Hubs

### 3.1.1 Northeast

#### Human Trafficking & Transportation Hubs in the North East

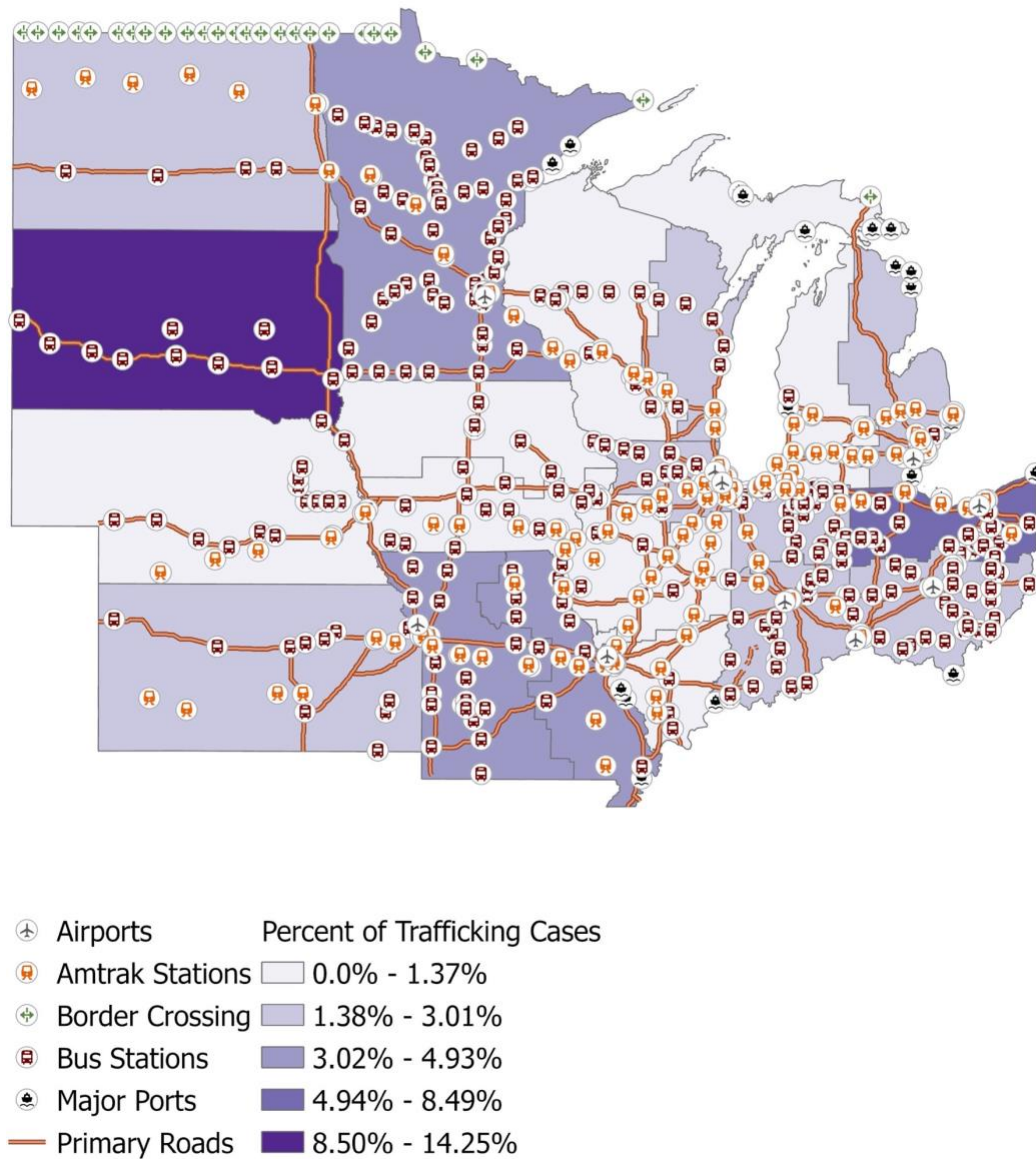


**Map 4: Northeast Map of Human Trafficking Overlaid With Transportation Hubs**

The Northeast includes Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont

### 3.1.2 Midwest

#### Human Trafficking & Transportation Hubs in the Midwest

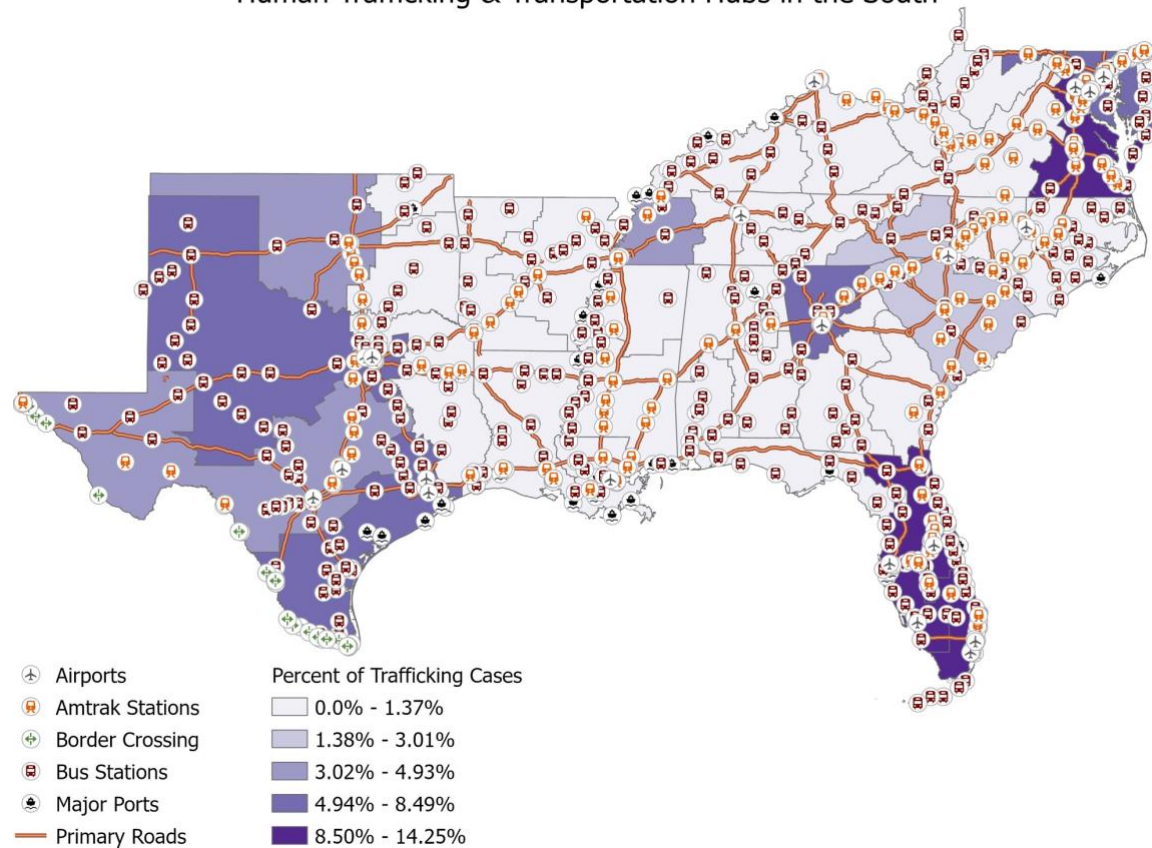


**Map 5: Midwest Map of Human Trafficking Overlaid With Transportation Hubs**

The Midwestern includes Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin

### 3.1.3 South

#### Human Trafficking & Transportation Hubs in the South



**Map 6: South Map of Human Trafficking Overlaid With Transportation Hubs**

**The South includes Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia**

### 3.1.4 West

#### Human Trafficking & Transportation in the West



**Map 7: West Map of Human Trafficking Overlaid With Transportation Hubs**

The West includes Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

## 3.2 Analysis

The maps show some interesting patterns. But were largely what were to be expected given the assumptions made in this research and what is already known about human trafficking. It was hypothesized that the more transportation hubs a district had, the more human trafficking would be present. According to this research this is more of a general rule rather than something that is definitively proven and possibly provable.

### 3.2.1 Human Trafficking

There are a higher percentage of prosecutions in highly populated areas and places with large cities such as California, Texas, Virginia, and Florida. The western states, which are more rural due to the terrain, generally have fewer cases. This could indicate a correlation between the population and trafficking cases.

The Southern District of California, South Dakota, the Southern and Middle Districts in Florida, and the Eastern District of Virginia have the highest share of human trafficking prosecutions. The Southern District of California includes San Diego County which according to the National Human Trafficking Hotline in 2016 ranked 26<sup>th</sup> in unique cases per capita cases of human trafficking reported to the hotline<sup>44</sup>. The Eastern District of Virginia encompasses the cities of Richmond, and Norfolk, which rank 24<sup>th</sup>, and 60<sup>th</sup> <sup>45</sup>. The Southern District of Florida contains

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<sup>44</sup> *Ranking of the 100 Most Populous U.S. Cities* (National Human Trafficking Hotline, 2016).

<https://humantraffickinghotline.org/sites/default/files/100%20Most%20Populous%20Cities%20Report.pdf>.

<sup>45</sup> IBID

the cities of Miami, Ft. Lauderdale, West Palm Beach. Miami ranks 4<sup>th</sup> in the 2016 Human Trafficking Hotline report<sup>46</sup>. The Middle District of Florida encompasses the cities of Tampa, Orlando, and Jacksonville which rank 3<sup>rd</sup>, 7<sup>th</sup>, and 73<sup>rd</sup> respectively<sup>47</sup>. These District Courts all have at least one of the top 100 cities that have a significant number of calls in human trafficking. South Dakota is a significant outlier for this pattern, and which is explored later in the chapter in section 3.3.

### **3.2.2 Transportation**

The districts in the group that have the most transportation hubs are, New Hampshire, Wisconsin, Central and Eastern Districts of California. These districts are mainly along the borders, except for Eastern California. Due to their geographic positioning, these geographical areas include ports and border crossings, which are only located in specific parts of the country. Border crossings are especially pertinent when looking at the international dimensions of human trafficking. The International Organization for Migration found that nearly 80% of those trafficked internationally cross through official border points, both border crossings and airports<sup>48</sup>. Of these only 9% were carrying false documents and 23% weren't in possession of their own documents<sup>49</sup>. This study also found that the majority of international trafficking occurred by travelling in groups

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<sup>46</sup> IBID

<sup>47</sup> IBID

<sup>48</sup> *Victims of Trafficking on the Road* International Organization for Migration, (United Nations, July 2018, 2018).  
[https://www.iom.int/sites/g/files/tmzbd1486/files/press\\_release/file/wdatip\\_databrief\\_2018.pdf](https://www.iom.int/sites/g/files/tmzbd1486/files/press_release/file/wdatip_databrief_2018.pdf).

<sup>49</sup> IBID.

and only 11% of international group travel occurred via airplane<sup>50</sup>. These statistics are global and not focused on the United States, where it can be assumed that more international trafficking happens via airplanes, simply because it is the most popular way to get into and out of the country, given there are only two land borders. Smaller southern states account for a large contiguous swath of the districts with the fewest number of transportation hubs. This could be because they are more rural states, and lower population density results in more reliance on private vehicles for both local and distance travel<sup>51</sup>.

### **3.2.3 Population**

Human trafficking is subject to the influences of supply and demand. Where there are people, there is a potential for a demand for trafficking, therefore population and population density are an important factor to analyze regarding human trafficking. Two maps are included to analyze this, Map 8, and Map 9. Map 8 is a choropleth map showing the population of each state as of the 2020 Census as a percent of the total population of the United States. States are used as the unit of analysis for this map because data is not available for the population of District Court Jurisdictions. Map 9 shows urban areas as of 2018. According to the Census Bureau an urban area,

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<sup>50</sup> IBID.

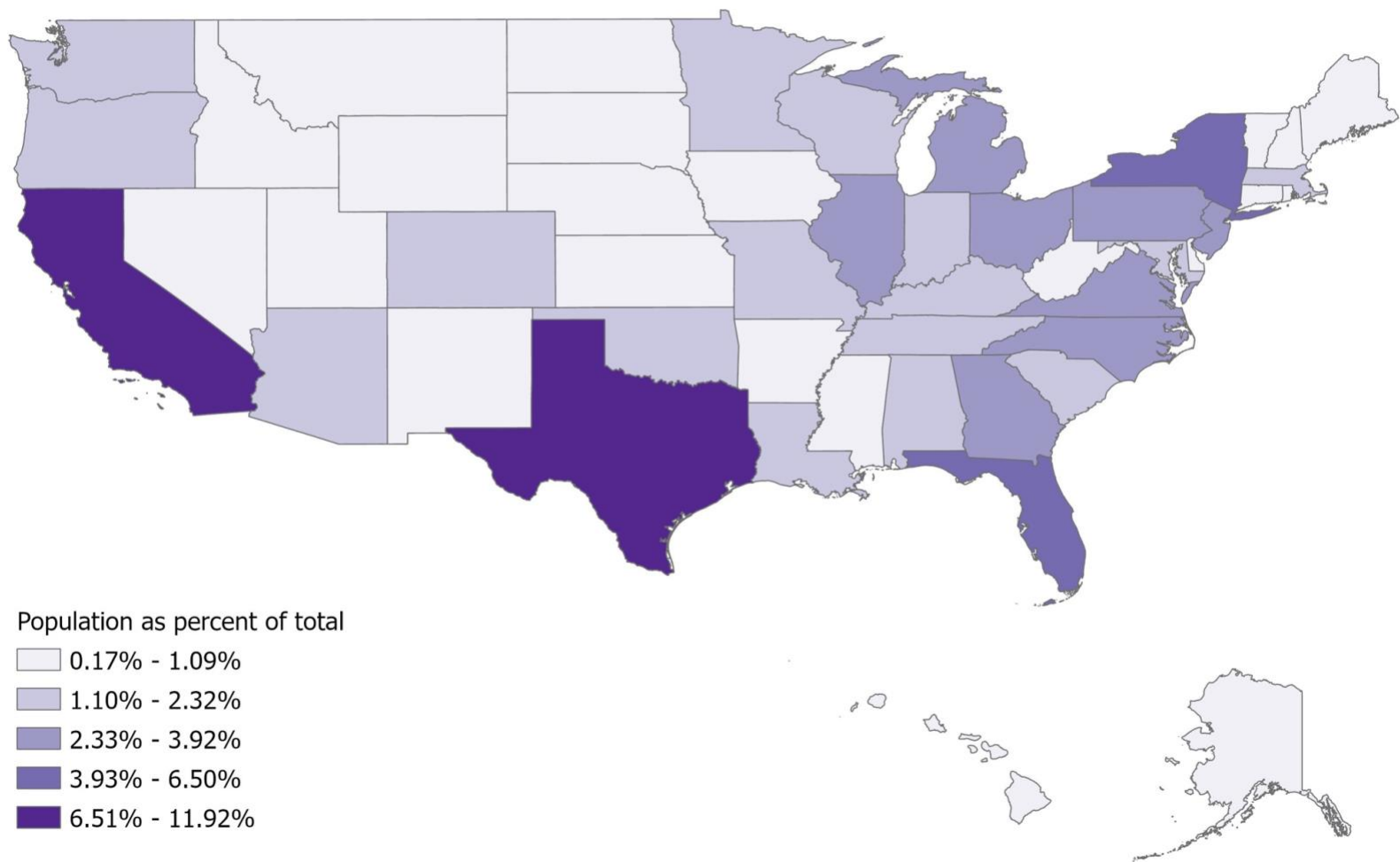
<sup>51</sup> "Barriers to Transportation in Rural Areas " Rural Health Information Hub  
<https://www.ruralhealthinfo.org/toolkits/transportation/1/barriers>.

or an urbanized area is a densely developed residential and nonresidential area with more than 50,000 people residents<sup>52</sup>.

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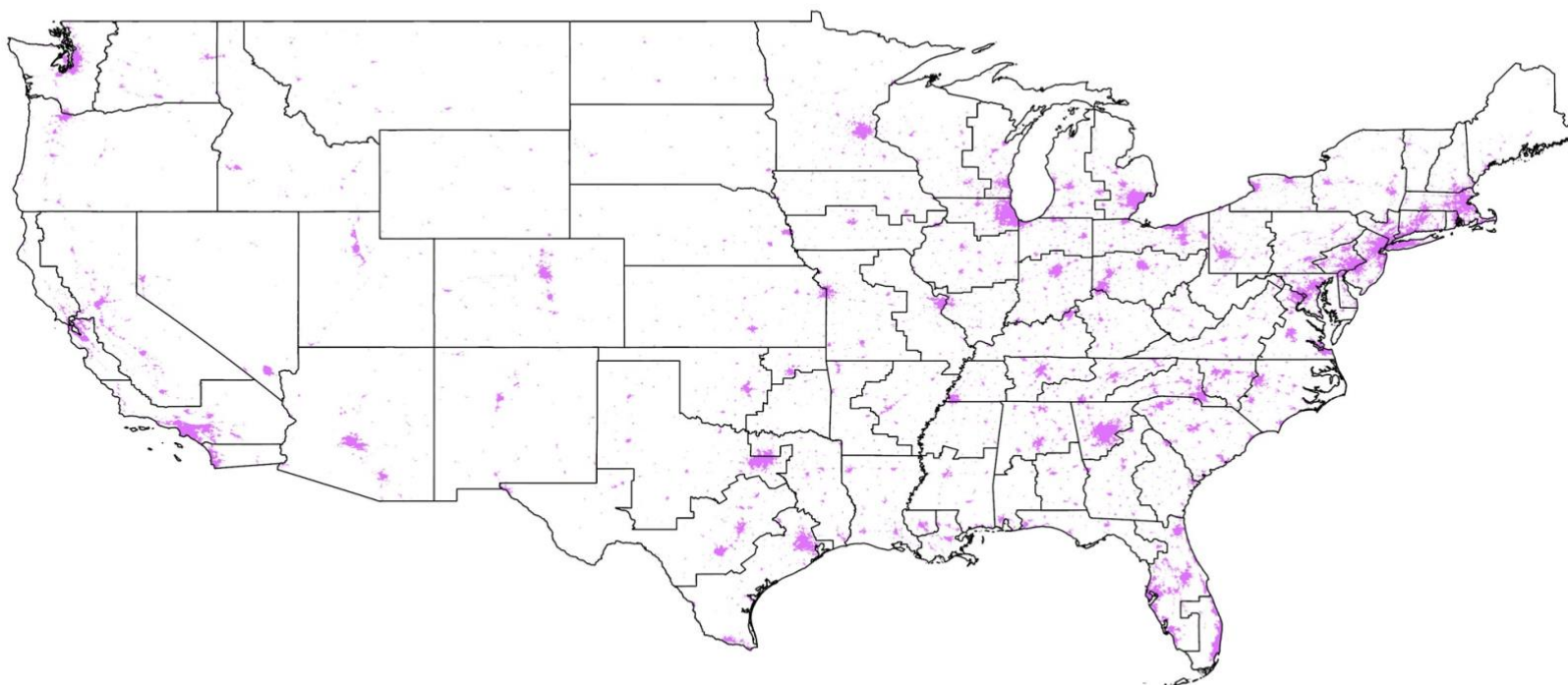
<sup>52</sup> "2010 Census Urban and Rural Classification and Urban Area Criteria." United States Census Bureau 2010  
<https://www.census.gov/programs-surveys/geography/guidance/geo-areas/urban-rural/2010-urban-rural.html>

## Population of States



Map 8: Population Map

## Urban Areas in the United States

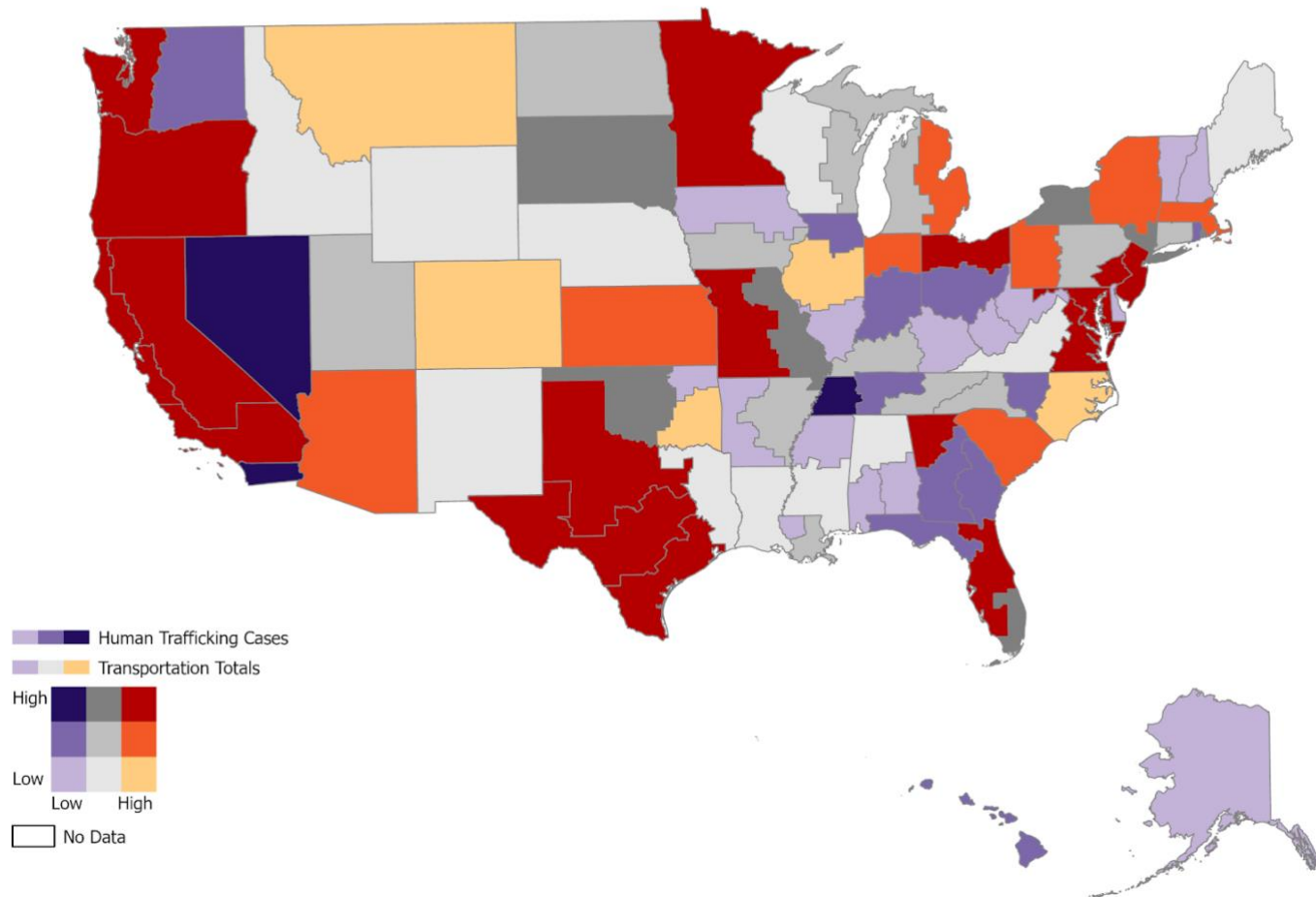


-  US District Court Jurisdictions
-  Urban Areas

**Map 9: Urban Areas Map**

### 3.2.4 Relationship between Trafficking & Transportation

#### Human Trafficking & Transportation Hubs in US District Court Jurisdictions



**Map 10: Bivariate Map Human Trafficking Cases & Transportation Hubs**

The intent of this research was to see if high levels of transportation correlated to high levels of human trafficking. Map 10 shows both the number of human trafficking cases and the number of transportation hubs. It is a bivariate map: a map that simultaneously shows multiple variables. The six colors represent the intersection of the amount of human trafficking and transportation hubs. The data for each variable is divided into three equal classes, with each class being different ranges but having the same number of District Courts within it.

The light purple signifies both low human trafficking cases and low transportation totals, whereas the deep red signifies the numbers of both human trafficking cases and transportation totals being at the highest level possible for both categories. These results are significant given that they are in line with what was stated in the hypothesis. Dark red is the color that appears most often and light purple the second most. Together this makeup 36% of the District Courts. Adding in the range where both variables are in the middle data class – medium grey – which accounts for eleven of the districts; brings the total percentage up to 48%. These three data classes making up nearly 50% of the transportation hubs, shows a connection between the number of transportation hubs and the amount of human trafficking in the district – and clearly prove the hypothesis.

Light Purple	15
Medium Purple	12
Dark Purple	3
Light Gray	12
Medium Gray	11
Dark Gray	7
Light Orange	5
Medium Orange	8
Dark Red	17

**Figure 2: Breakdown of Bivariate Map Colors**

The most notable regarding going against the hypothesis is dark purple and light orange. Dark purple shows the high cases of human trafficking and low numbers of transportation totals. Light orange shows high numbers of transportation totals and low numbers of human trafficking cases. These two data classes most clearly go against the original hypothesis. These two categories make up 9% of all District Courts.

Everything in the middle of the four extremes— Light Purple, Dark Purple, Light Orange, and Dark Red — isn't necessary to analyze. They show varying degrees of correctness for the hypothesis but neither fully confirm nor disprove it.

### **3.3 Anomalies**

South Dakota is perhaps the most striking anomaly in this research. The transportation hubs are visually sparse, but they fall within the highest bracket of human trafficking cases. According

to the data collection, cleaning, and analysis that has been completed, South Dakota has 35 human trafficking prosecutions and 30 transportation hubs. The breakdown for transportation hubs is 11 bus stations and 19 unique roads. While the name of the roads might be unique, many of them refer to the same road. However, while this is a flaw in the research design, its resolution would lower the number of transportation hubs, making South Dakota more of an anomaly. One possible factor of note is that South Dakota only has one district court that encompasses the entirety of the state. In contrast, many other states have at least two districts in their state, evening out the spread of the numbers. Therefore, this is not an anomaly that this research alone can answer. High numbers of human trafficking cases and prosecutions in South Dakota have captured the attention of advocates and the government for years. It has come to be accepted by advocates, reporters, and government officials alike that “man-camps” are primarily to blame for a rise in violence against women, including trafficking<sup>53</sup>. “Man-camps” are temporary housing for transient workers; in South Dakota, they are established primarily around constructing pipelines such as the Keystone XL<sup>54</sup>.

Additionally, South Dakota has a high native population. A report from the National Congress of American Indians found that an average of 40 percent of the women involved in sex

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<sup>53</sup> "Is Sex Trafficking Happening in South Dakota or on Reservations?" South Dakota Coalition Ending Domestic & Sexual Violence, 2015 [https://www.sdcedsv.org/media/sdcedsvfactor360com/Dec-2015-SDC-Sex-trafficking-facts\\_stats.pdf](https://www.sdcedsv.org/media/sdcedsvfactor360com/Dec-2015-SDC-Sex-trafficking-facts_stats.pdf).

<sup>54</sup> Pember, Mary Annette. "Will Keystone XL Pipeline Pump Sexual Violence into South Dakota?". (2014). <https://indiancountrytoday.com/archive/will-keystone-xl-pipeline-pump-sexual-violence-into-south-dakota>.

trafficking identified as American Indian<sup>55</sup>. These are only two of several reasons why there is a disproportionate and unexpected number of human trafficking prosecutions in South Dakota.

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<sup>55</sup> *Human & Sex Trafficking: Trends and Responses across Indian Country* National Congress of American Indians (<https://ncai.org/>; 2016). <https://www.ncai.org/policy-research-center/research-data/prc-publications/TraffickingBrief.pdf>.

## **4.0 Conclusions**

Based on the research conducted in this thesis and the data used to conduct it, there is a correlation between the number of transportation hubs and the amount of human trafficking. The districts that have similar numbers (lower class, medium class, and high class) for *both* variables account for 48% of the districts. While this isn't a majority of districts, it is still a significant connection.

Seventeen of the districts in the highest class of transportation hubs also were in the highest class for human trafficking cases. This accounts for just under 19% of all the districts in the United States. That statistic could be much larger, but when it comes to human trafficking, any number of human trafficking cases is too many.

### **4.1 Recommendations & Implications**

A correlation between human trafficking and transportation has significant implications for the field of human trafficking research. Since this is the first time a study of this magnitude has occurred, the first implication is that further research is needed. By no means does this study's results alone indicate definitive causation between transportation and human trafficking. But they do incite a need for further confirming research.

Anti-trafficking work can't be sustained without a flow of passionate people about the topic. Intermittent symposiums that occur merely once in university or even grad school do not produce passion. More formal education on human trafficking, beginning in middle school as part

of awareness efforts sustained through higher education, inspires passionate people to continue this research and implement programs that make a difference. Higher education institutions are implicated in these results to participate in formal human trafficking education at all levels.

Evidence for a connection between human trafficking and transportation demands a targeted response. The DOT and the United States government need to get more serious about their anti-trafficking efforts focusing more heavily on the prevention aspect of their approach. However, they aren't starting anew; there are already nonprofits and nongovernmental organizations targeting human trafficking in the transportation sector — but the onus shouldn't be on the private sector. The DOT can and should build up its prevention programs in conjunction with the organizations in the private sector that have already been doing this work. There is too much emphasis on awareness as part of the prevention strategy without enough proactive programs. The human trafficking awareness project has been occurring in the United States for decades, it is time to act on that awareness with real education, tougher legislation, programs that prevent trafficking, and those that stop it.

## **4.2 Recommendations For Future Research**

The use of GIS in human trafficking research has proven to be highly productive, and there are many areas of expansion for this research. Future researchers can use this asset in replicating the methodology of this study in other countries to see if the connection is universal or uniquely American. Further research could also use a smaller unit of analysis in the United States, such as counties. This will prove difficult given that there isn't a centralized database of human trafficking data on the county level, and the data isn't readily available even though the individual counties.

Another option is to use a different measure for human trafficking data. These measures could be tips from the human trafficking hotline, suspected cases, or a combination. Reassessing and expanding the definition of major transportation hubs could also be a tenant of further research. Even with the same methodology in the United States, continuing to conduct research years from now, after transportations hubs grow, shrink, and shift would also contribute to the field.

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