



Deeper Analysis of Human Trafficking

C. Surya Sena Reddy¹, V.Yogesh², T.Kruthay Kumar³, T. Shashi Kumar⁴, Ch. Samson⁵

^{1,2,3} BE Undergraduate, Department of Information Technology, Maturi Venkata Subba Rao Engineering College

⁴ Assistant Professor, Department of Information Technology, Maturi Venkata Subba Rao Engineering College

⁵ Professor, Department of Information Technology Maturi Venkata Subba Rao Engineering College

ABSTRACT:

The situation of human trafficking in India is examined in this paper. It asserts that the discourse on trafficking is still dominated by an emphasis on either prostitution or illegal immigration, which places state security ahead of human security and ignores the root causes of trafficking as well as the insecurity of people who are victims of it. Academic and policy circles have not acknowledged the underlying causes or vulnerability factors of trafficking, such as structural inequality, culturally accepted behaviors, poverty or economic insecurity, trafficking in organs, bonded labor, and gender violence—all of which are made worse by corruption. This paper makes the case that crimes involving human trafficking that put the security of those trafficked in India in jeopardy demand particular consideration. Therefore, it suggests some preventative measures by performing descriptive, diagnostic, predictive and prescriptive analytics.

Keywords: Human Trafficking, Descriptive Analytics, Diagnostic Analytics, Predictive Analytics, Prescriptive Analytics.

INTRODUCTION

Globally, the practice of trafficking people for sexual exploitation is on the rise. In the global illicit economy, trafficking is a sizable industry that is expanding at the highest rate. The definitions of bonded work, child labor, and sex trafficking that are utilized throughout the report according to both international and Indian legal norms are highlighted in this section. The new section 370 of the Indian Penal Code makes it illegal to traffic people for "physical exploitation or any form of sexual exploitation, enslavement or practices equivalent to slavery, servitude, and the forcible removal of organs." Under this clause, cases involving a variety of current slavery subtypes have been registered. Human trafficking for the purpose of sexual exploitation is absolutely prohibited in India since it joined the Palermo Protocol and modified its penal law. It is also prohibited by the Immoral Traffic in Persons Act of 1956 to take, obtain, or persuade someone to engage in prostitution. In accordance with the Protection of Children from Sexual Offences Act of 2012, some sexual offences committed against minors under the age of 18 are prohibited. Sex trafficking, labor trafficking, and organ trafficking are only a few of the various subtypes of human trafficking. Sex trafficking is a form of human slavery used for prostitution. When someone is coerced into performing non-sexual labor, labor trafficking has taken place. Two instances include a guy who has been coerced into farm work or a woman who has been coerced into domestic servitude. The transfer of people for the purpose of buying and selling their organs for transplantation is known as organ trafficking. It is also prohibited by the Immoral Traffic in Persons Act of 1956 to take, obtain, or persuade someone to engage in prostitution. In accordance with the Protection of Children from Sexual Offences Act of 2012, some sexual offences committed against minors under the age of 18 are prohibited. Sex trafficking, labor trafficking, and organ trafficking are only a few of the various subtypes of human trafficking. Sex trafficking is a form of human slavery used for prostitution. When someone is coerced into performing non-sexual labor, labor trafficking has taken place. Two instances include a guy who has been coerced into farm work or a woman who has been coerced into domestic servitude. The transfer of people for the purpose of buying and selling their organs for transplantation is known as organ trafficking. Physical coercion or false promises made by traffickers are just two ways that people might be forced into trafficking. False employment offers and transnational unions are examples of promises. India is home to an estimated 14 million victims of human trafficking, including victims of sex trafficking, bonded labor, child labor, domestic slavery, and forced marriage, according to the Walk Free Foundation Global Slavery Index 2014. This shows that human trafficking is still an international issue. The extent of the problem is enormous, "both in the number of trafficked victims and increasing number of sites," according to India's 2008 Integrated Plan of Action to Prevent and Combat Human Trafficking. Because there are few prosecutions and lax law enforcement, traffickers are drawn to the low risk and high reward of their business. Legal action must be taken to recover the assets and income of traffickers, as well as to prosecute and penalize offenders, in order to combat human trafficking.

RELATED WORK

Here is an overview of previous publications that have been referred during the process of research.

¹Detection of possible human trafficking in Twitter [1] a paper presented a different view on Human trafficking in this article. It involved collecting and processing tweets to detect deception related to sex trafficking using predefined criteria as input features to machine learning classifiers. The tweets are generated constantly on the Twitter platform, and the author tried to take advantage of the social platform to estimate the range of trafficking. For this

purpose, NLP classifiers are used as a first step to decode the meaning and emotion of a certain tweet. The major limitation is that the author only tried to look into sex trafficking, while other forms of trafficking have rarely been touched. Also, the majority of research was focused on female victims only.

'Research trends on human trafficking' [2] a paper that assessed the research activity and research trends in human trafficking. Also, the author embraced the bibliometric strategy in the article. Writing distributed in scholastic diaries recorded in the Scopus data set was recovered. The review time frame was set from 2000 to 2017. Many documents were collected from different regions and were assessed to know the research done on different kinds of trafficking. Geographic dispersion of the recovered report showed that world districts with a high pervasiveness of illegal exploitation had the least research contribution. It has been found that writing on sex dealing ruled the field of illegal exploitation research. The author failed to provide any data on the age group, gender, and locations most affected by trafficking.

'New Directions in Research on Human Trafficking' [3] a paper evaluated four popular claims with respect to illegal exploitation's worldwide size, patterns, and seriousness relative to other illicit global activities. The author observed that the cases are neither proof based nor undeniable. The author contended for micro-level research, which enjoys the upper hand over terrific, macro-level claims — benefits that are both quantitative (i.e., recognizing the extent of trafficking inside a quantifiable setting) and subjective (i.e., recording intricacies in lived encounters) — and more qualified to figure out logically fitting strategy and requirement reactions. The author provided significant attention in assessing the claims and has shown the least interest in putting forward any current case numbers throughout the world. However, the author wonderfully justified his arguments.

'Human Trafficking Into and Within the United States' [4] a paper presented complete audit of current writing on illegal exploitation into and inside the US centers around studying what sociology or other writing has tracked down about the issues of recognizing and really serving dealing casualties. A more unambiguous focus concerns the peculiarity of homegrown trafficking (dealing with U.S. residents or legally extremely durable inhabitants, frequently inside the U.S.), the effect on homegrown youth, and the accessibility and additionally adequacy of administrations for these casualties. The authors have not used any data analytical operations in this article but only considered extensive research and surveys.

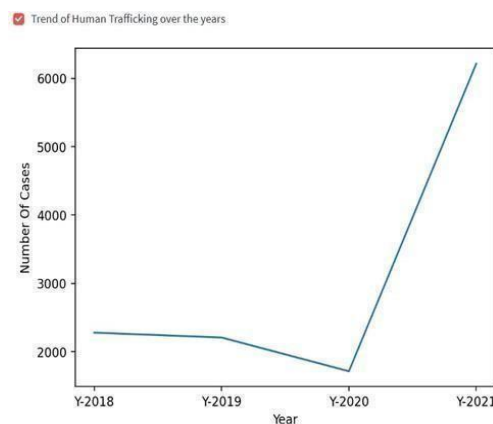
'Economics of Human Trafficking' [5] a paper presented a monetary model of illegal exploitation that includes all known financial elements that influence illegal exploitation both across and inside national borders. Utilizing a levelheaded decision structure of illegal exploitation, the authors made sense of the social circumstances that shaped the movement and working choices of weak populaces prompting illegal exploitation, the impulse for being a dealer, and the choices by managers of dealt people. The objective of this paper was to give a shared belief whereupon policymakers and scientists can team up to diminish the occurrence of dealing with people. The authors imagined illegal exploitation as a monopolistically serious industry in which dealers go about as mediators between weak people and businesses.

DESCRIPTIVE ANALYTICS

This kind of analytics is used to determine the precise details of what occurred. Below are some questions that have been addressed in the context of human trafficking cases in India in 2021.

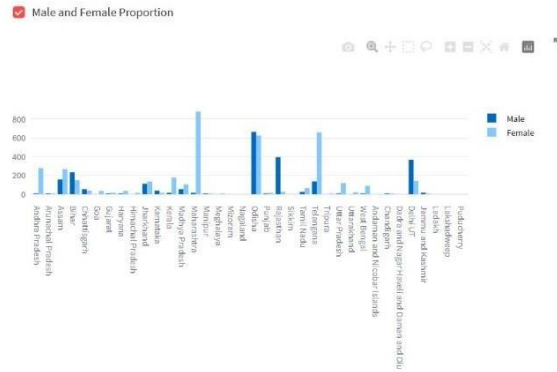
Analyzing the number of cases over the years.

The number of cases against the corresponding years has been shown in the form of a line chart in the figure below. It can be inferred that the cases of trafficking have increased after the year 2020, reaching approximately 6,000 cases in 2021. However, a decreasing trend has been observed in the number of cases before 2021.



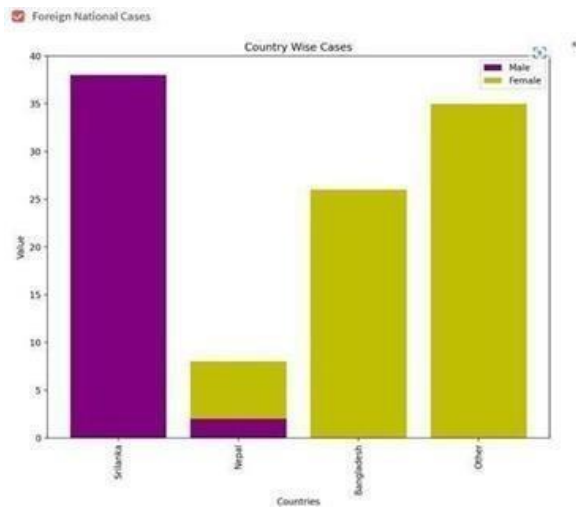
Analysis of the Male and Female Proportion in thecases

In order to represent the proportion of male and female victims, the following graph has been considered. Dark blue represents the male gender, while light blue corresponds to female victims. It is clear from the graph that states/UTs such as Maharashtra, Telangana, Odisha, Bihar, Assam, and Delhi have a high number of overall cases. While other places like Mizoram, Nagaland, and Puducherry have negligible reported cases. In the majority of states/UTs, there are more female victims than males. However, the states with more overall cases seem to save almost or higher numbers of male victims than females. Examples of this pattern include areas like Rajasthan, Delhi, Bihar, and Odisha. To conclude in most cases, the female victim population seems to surpass that of male victims.



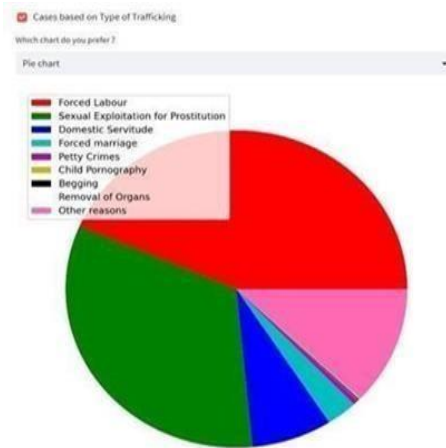
Analysis of Foreign National Cases

There are many foreign nationals living in India, especially from the neighboring countries such as Sri Lanka, and Bangladesh. From the research, it has been noted that the human trafficking horror is also affecting these people. There are over 35 cases reported in India, where the victims are nationals of Sri Lanka. The ratio of male and female victims is given in the colored bar graph below. The corresponding numbers of other national cases are also given in the following graph. Victims from Bangladesh and Nepal make it to the chart as well, with about 25 and 8 cases respectively. However, one can notice that the proportion of foreign people getting trapped in India is relatively low when compared to the local people getting trafficked.



Different Kinds of Human Trafficking

There are many forms of trafficking like forced labor, sexual exploitation for prostitution, forced marriage, removal of organs etc. The following pie chart shows the most prevalent form in today's time. One can clearly note that about 35 percent of cases are forced labor. It is closely followed by sexual exploitation. Trafficking for the purposes of Removal of organs and begging is the least prevalent form of trafficking.



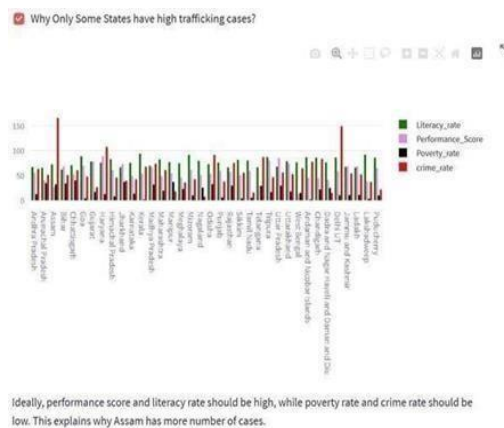
DIAGNOSTIC ANALYTICS

In this form of analytics, reasons for why things happened as they did would be found out. For this purpose, we have considered two main questions which were later analyzed.

Why do only certain states/UTs have a high number of cases?

In the previous section, it has been established that certain areas like Maharashtra, Telangana, Odisha, Bihar, Assam, and Delhi have a relatively high number of trafficking cases. In order to find reasons for it, we have considered four main parameters which are Literacy rate, Poverty rate, Performance score, and Crime rate. Each parameter stands differently like performance score gives insights into the state government's efforts to uplift the lower sections of society. While the Crime rate has been taken to stress the general safety provided to civilians in states/UTs. The literacy rate indicates the awareness of the public, and the Poverty rate indicates whether they are capable to make effective use of the available resources. From the graph below it has been observed that trafficking cases occur in plenty when the Crime rate and Poverty rate are high, while the Performance score and Literacy rate are low in a particular area. It can be easily understood, that when no proper security is provided while people are already in financially desperate situations it would create opportunities for traffickers. Also, the situation becomes more tense when people lack proper awareness. Therefore, one can easily use the following graph to deduce why some states have a high number of cases.

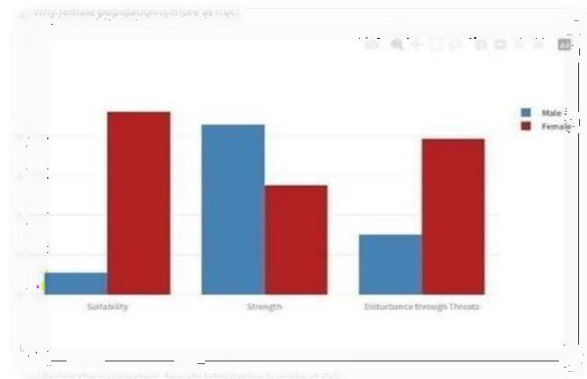
Here, consider Assam as an example, which has a high crime rate and low performance score. Also, the poverty rate is low and the literacy rate is average. Here the low performance score indicates that the government is not making efforts to support the low-income public, now coupled with unsafety in the state the cases would surely be high. A similar explanation can be made with other states too.



Why women are prone to Trafficking?

Consider the given graph. From the data, it can be inferred that women are almost suitable for every type of trafficking (like forced labor, sexual exploitation for prostitution, forced marriage, removal of organs, begging, petty crimes, domestic servitude) when compared to men.

Also, their physical strength is comparatively weak. From our research, it has also been found that women are disturbed greatly by psychological violence like threats, which traffickers often use to keep the victims trapped. With these reasons, one can clearly understand why the attackers usually choose women as their targets.



PREDICTIVE ANALYTICS

Here classification has been performed to determine whether a person will fall into the trap of human trafficking based on the given input features. The features are Age, Gender, State, working status, Poverty status, Education status, and Fraud (whether a person is receiving false calls or information about better work prospects, but at distant lands with a high workload). The users will input values to these fields as shown below in the diagram. One can clearly understand what each feature means, and the user needs to enter his/her data corresponding to these features to find out the result. Consider the below image where sample data is entered and the result is shown. Here in the state field, a unique ID of a state should be provided, which can be found when the user clicks on the checkbox below.

Predict the Human Trafficking Chance

Gender of the person (-1 if Male; 0 otherwise)

Age of the person

State/UTs ID

Received atleast secondary education

Poverty line

Does the person currently work sufficiently

Is the person receiving any information about better work and more pay in a shady manner

See the state/UTs ID

You may not fall in the trap of Human Trafficking

Random Forest algorithm has been used here, which gives an accuracy score of 97.83%. But before the data tuples are tested over other algorithms such as Naive Bayes, Decision Tree, and Logistic regression. The final call of using random forest has been made after considering its high accuracy score. For building this model, a dataset of 686 data tuples spread over seven attributes (ID, Age, Gender, State, Working, Poverty, Education, and Fraud) has been considered. The train-test ratio is 80:20. Also, the user can contribute any new case to the dataset as shown below in the pictures. The new tuple is added to the secondary dataset, which will be later integrated with the primary dataset.

Contribute to Our Dataset

Gender of the person (= 1 if Male; 0 otherwise)

1

Person's age

1

State/UTs ID

24

Received atleast secondary education

0

Poverty line

0

Does the person currently work sufficiently

0

Is the person receiving any information about better work and more pay in a shady manner

1

Is the person a victim

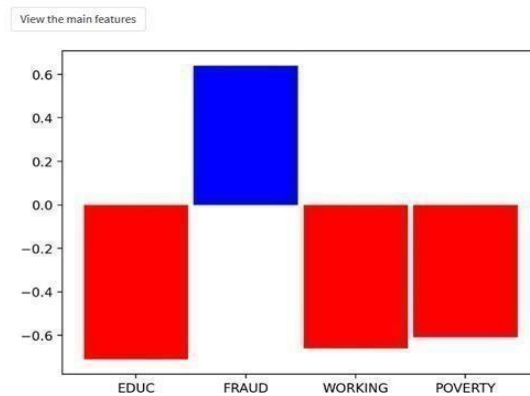
1

submit

Submitted

PRESCRIPTIVE ANALYTICS

This form of analytics prescribes ways to achieve the desired result. Here, our main purpose is to reduce the chance of getting trafficked. For these needs to first consider the main features dictating the trafficking. Consider the following chart, where it's shown that features like Working (whether a person is sufficiently doing a certain legal job), poverty status, and educational knowledge (awareness) features are inversely proportional to the trafficking parameter. It means if these features are well or the magnitude of them is increased then the chance of getting trafficked significantly decreases. Also, when feature Fraud (whether a person is receiving false calls or information about better work prospects, but at distant lands with a high workload) increases, then the chance of getting trafficked also increases. However, if a person has an appreciable standard of living, a decent-paying job, and is well acquainted with the societal knowledge imparted at the school level then he can sufficiently dodge any trap of trafficking. Any trafficking preventive organizations should work on these four features in order to curb this crime.



As shown the key features are education, poverty status, working status, and fraud. Therefore, these need to be monitored effectively to reduce trafficking.

Predict the Human Trafficking Chance

Gender of the person (= 1 if Male, 0 otherwise)
0

Age of the person (= 0 if Child, 1 if Youth, 2 if Old)
1

State/UTs ID
1

Received atleast secondary education (= 0 if No, 1 if Yes)
0

Poverty line (= 0 if below, 1 if Average, 2 if Above)
0

Does the person currently work sufficiently (= 0 if No, 1 if Yes)
1

Is the person receiving any information about better work and more pay in a shady manner (= 0 if No, 1 if Yes)
0

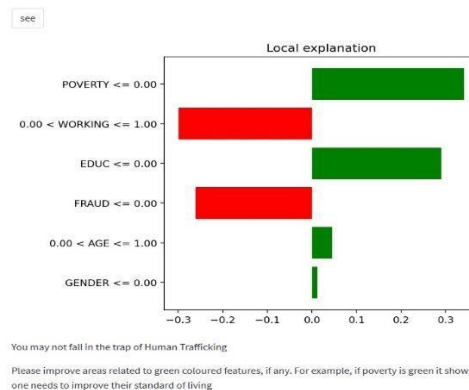
See the state/UTs ID

You may not fall in the trap of Human Trafficking

In the application interface that has been developed, one can input features in order to know about the areas needed to be worked on to prevent trafficking situations. Here, the user who accesses the interface needs to move to the prescriptive page, and then enter details regarding Gender, Age, State, Working, Poverty line status, working status, and whether the concerned person is receiving any fraud information.

One can see the below image, where the input boxes are available with corresponding information. Consider that the following information has been loaded, where gender is female, age of the person is youth, person is from Andhra Pradesh, she did not receive any secondary education, she belongs to a family whose financial status is below the poverty line, she is currently engaged in some work, she did not receive any fraudulent calls from anyone in recent times.

Once entered, the person can click on the button available, and he/she will be shown an image like this. In the case considered, the user needs to improve on the green-colored features. Here, the concerned person needs to focus on enhancing his standard of living and improving his awareness of the trafficking situation.



CONCLUSION

All societies, countries, and local communities are impacted by the issue of human trafficking. This is a widespread problem, particularly in the pandemic. Even though analytics can significantly help, the area of data science is only just beginning to research human trafficking. Here, an interactive application has been developed that would perform data analytical operations on the trafficking datasets, and fetch the results in an easy and appealing manner. Therefore, we conclude that the interface/application has been built successfully which would help in predicting whether a person will fall into a human trafficking trap. Also, the application has found the key features that influence human trafficking, which are the education of people, poverty rate, and occurrence of fraud. In the end, there are also suggestions given to the users on the areas to be improved, thereby preventing any trafficking situation.

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IDs of different states

1. Andhra Pradesh
2. Arunachal Pradesh
3. Assam
4. Bihar
5. Chhattisgarh
6. Goa
7. Gujarat
8. Haryana
9. Himachal Pradesh
10. Jharkhand
11. Karnataka
12. Kerala
13. Madhya Pradesh
14. Maharashtra
15. Manipur
16. Meghalaya
17. Mizoram
18. Nagaland
19. Odisha
20. Punjab
21. Rajasthan
22. Sikkim
23. Tamil Nadu
24. Telangana
25. Tripura
26. Uttar Pradesh
27. Uttarakhand
28. West Bengal
29. Andaman and Nicobar Islands
30. Chandigarh
31. Dadra and Nagar Haveli and Daman and
32. Diu
33. Delhi UT
34. Jammu and Kashmir 34-Ladakh
35. Lakshadweep 36-Puducherry