



# HACHATHON

FIRST DRAFT

MAR. 18, 2020

# BACKGROUND



Disrupt Demand  
side in illicit supply  
chain



Find where  
customer appear



Predict possible  
transaction location  
in DMV area

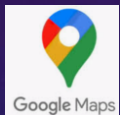
# Data Scale & Description

Collect training data from:

1. News
2. Court cases
3. Other sources (NGOs, any public report)

COLLECT OBSERVED DATA FROM THE PLACE THAT:

1. LOWER THAN 4 STARS
2. **TYPE:** HOTEL, MOTEL, APARTMENT, B&B
3. LOWEST PRICE PER DAY PER ROOM



Booking.com

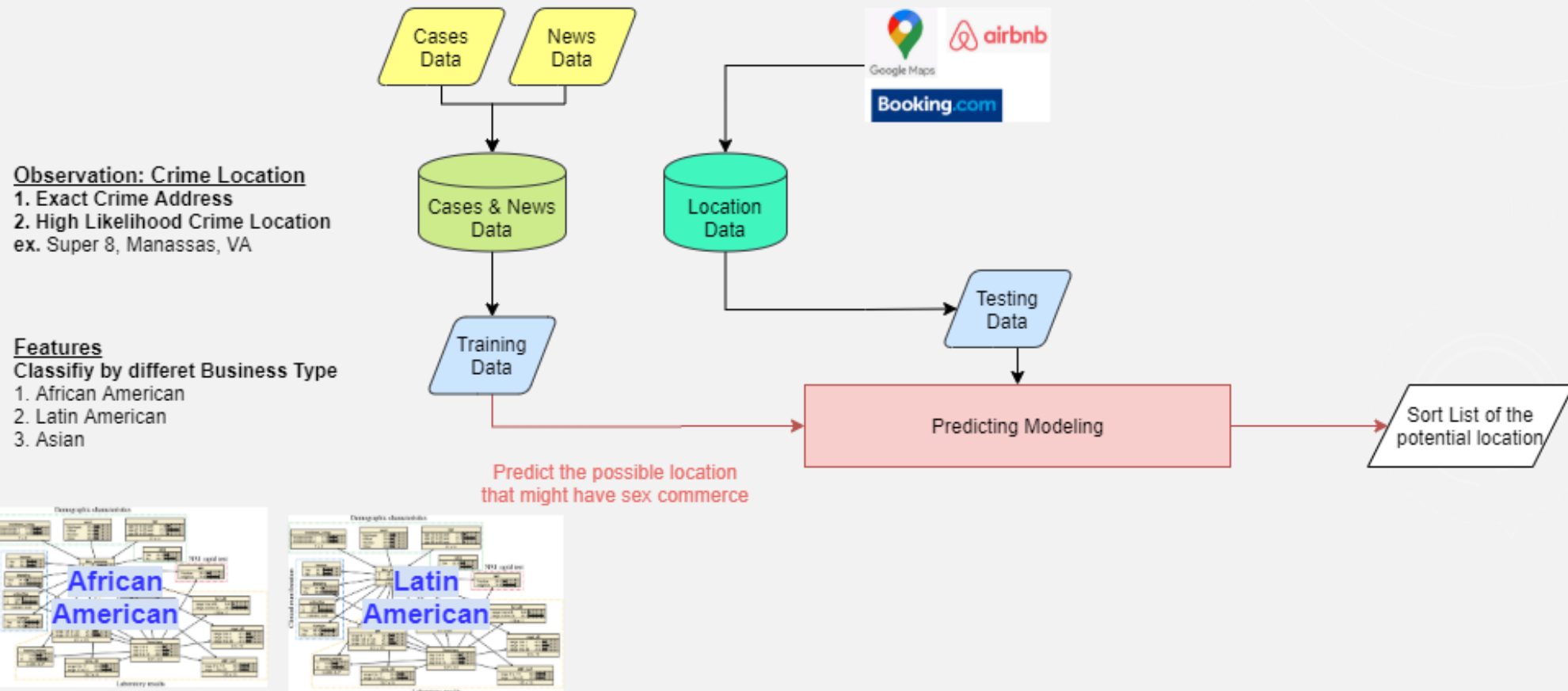


Location Data could be extension follow by the case we have

Website	Name	Type	Star	Adress	state	zipCode	LowestRoomPrice	Owner	Race	
Booking.com	Qceans 2700			3 2700 Pacific Avenue	Virginia Beach	VA	23451	\$47		
Booking.com	Best Western Center Inn	Inn		3 5718 Northampton Boulev	Virginia Beach	VA	23455	\$71		
Booking.com	Knights Inn Virginia Beach	Motel	1	804 Lynnhaven Parkway	Virginia Beach	VA	23452	\$56		
Booking.com	Something Near the Water	Apartment		430 24th st #4	Virginia Beach	VA	23451	\$175	John Griffin	African-American
Booking.com	Angie's Guest Cottage	Hotel		302 24th street	Virginia Beach	VA	23451	\$79		
Booking.com	Atlantic Hotle	Hotel		203 19th Street	Virginia Beach	VA	23451	\$42		
Booking.com	Four Sails Resort			3301 Atlantic Avenue	Virginia Beach	VA	23451	\$99		
Booking.com	Quality Suites Lake Wright	Norfolk Airport		6280 Northampton Boulev	Virginia Beach	VA	23502	\$80		
Booking.com	The Breakers Resort Inn			1503 Atlantic Avenue	Virginia Beach	VA	23451	\$65		
Booking.com	Comfort Inn & Suites Norfolk	Inn		5808 Burton Station Road	Virginia Beach	VA	23455	\$67		
Booking.com	Cutty Sark Efficiencies			3614 Atlantic Avenue	Virginia Beach	VA	23451	\$69		
Booking.com	Knights Inn & Suites Virgini	Inn		207 29th Street	Virginia Beach	VA	23451	\$55		
Booking.com	The Founders Inn & Spa Tapestry Collection By Hilton			5641 Indian River Road	Virginia Beach	VA	23464	\$119		
Booking.com	Crowne Plaza Hotel Virginia Beach-Norfolk			4453 Bonney Road	Virginia Beach	VA	23462	\$139		
Booking.com	Surfbreak Oceanfront Hotel, Ascend Htel Collection			1101 Atlantic Avenue	Virginia Beach	VA	23451	\$144		
Booking.com	Ramada Plaza by Wyndham Virginia Beach			2809 Atlantic Ave	Virginia Beach	VA	23451	\$99		
Booking.com	Best Western Plus Sandcastle Beachfront Hotel			1307 Atlantic Avenue	Virginia Beach	VA	23451	\$102		

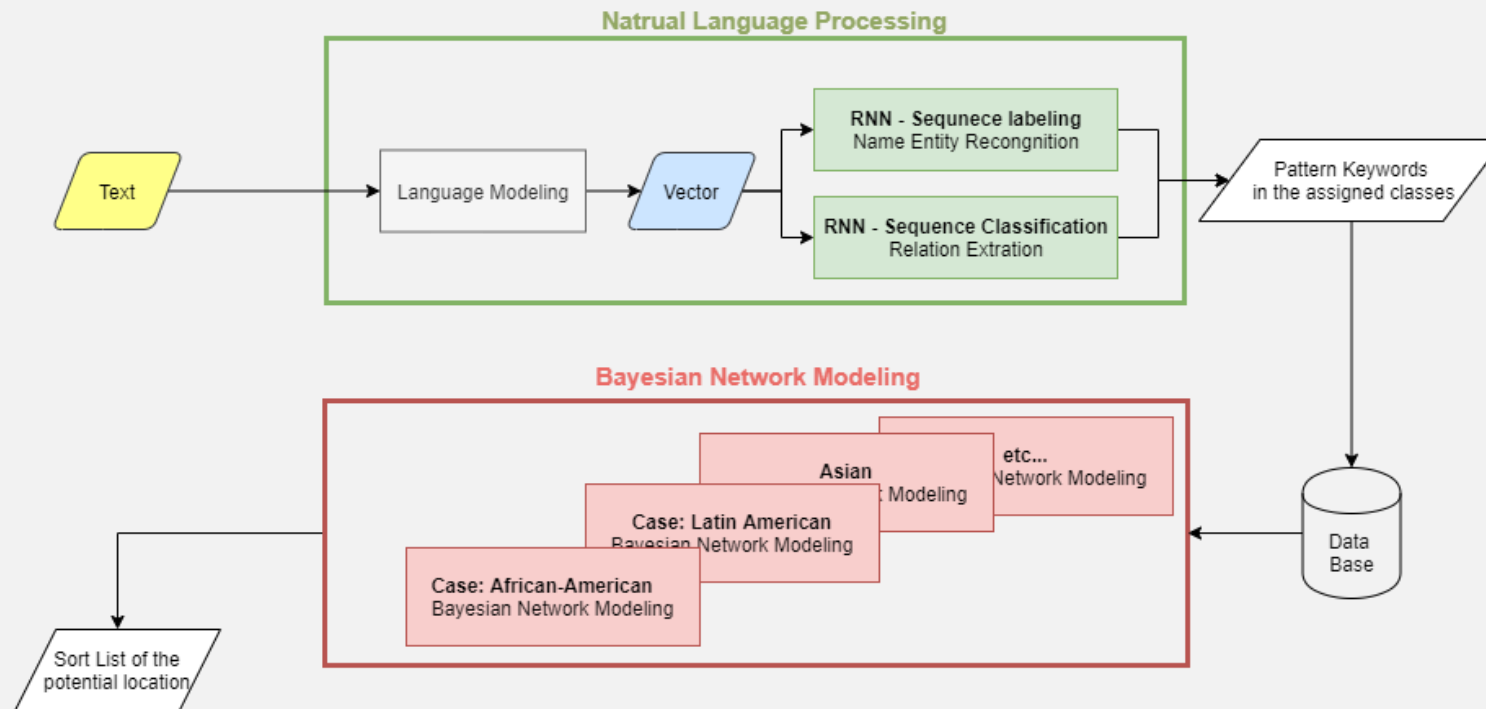
# MAIN METHOD: BAYES INFERENCE

- Using prior information to find the next likelihood(probability)



# CYCLE ANALYSIS SYSTEM

- Target: if this location is involving with human trafficking or not
- Variables: constructed by different regional prospective
- AI: automatically find the important variables – by NLP processing scholar's analysis reports





Hackathon

# Combating Human Trafficking

Team  
**Blue-Rabbit**

March 19, 2020



# Team PATRIOTS

March 19, 2020

## PATRIOTS



Background



Dashboard



Analysis



Reference

## Background

Team

Introduction

## PATRIOTS

### Chu Chuan Jeng

Ph.D. Student  
System Engineering & Operation Research  
George Mason University

### Shu Wang

Ph.D. Student  
Information Technology  
George Mason University

### Xu He

Ph.D. Student  
Information Technology  
George Mason University



# Background

Team

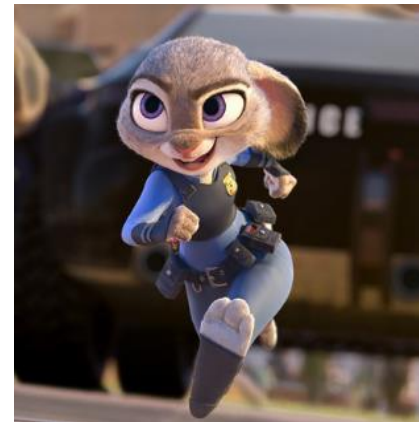
Introduction

## BLUE-RABBIT



### Chu Chuan Jeng

Ph.D. Student  
System Engineering & Operation Research  
George Mason University



### Shu Wang

Ph.D. Student  
Information Technology  
George Mason University



### Xu He

Ph.D. Student  
Information Technology  
George Mason University





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Introduction

## What Problem we want to solve?

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**Disrupt the Demand Side in their Supply Chain**

Example, typing .....

## Focus

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**Design an AI-Driven Cyclical Analysis Platform**

Dashboard

🔍 Search the Potential Crime Location Nearby You!



Ranking List



Dashboard

Ranking List

All

> 50%

> 70%

Rank	Name	Location	Likelihood of sex trade at this location
1	Vienna Wolf Trap Hotel	430 Maple Avenue West, Vienna, VA	89.0%
2	Super 8	8691 Phoenix Dr, Manassas, VA	88.1%
3	Best Western Manassas	8640 Mathis Ave, Manassas, VA	74.8%
4	Motel 6 Dumfries	17133 Dumfries Rd, Dumfries, VA	73.7%
5			
6			
7			
8			
9			





Background



Dashboard



Analysis

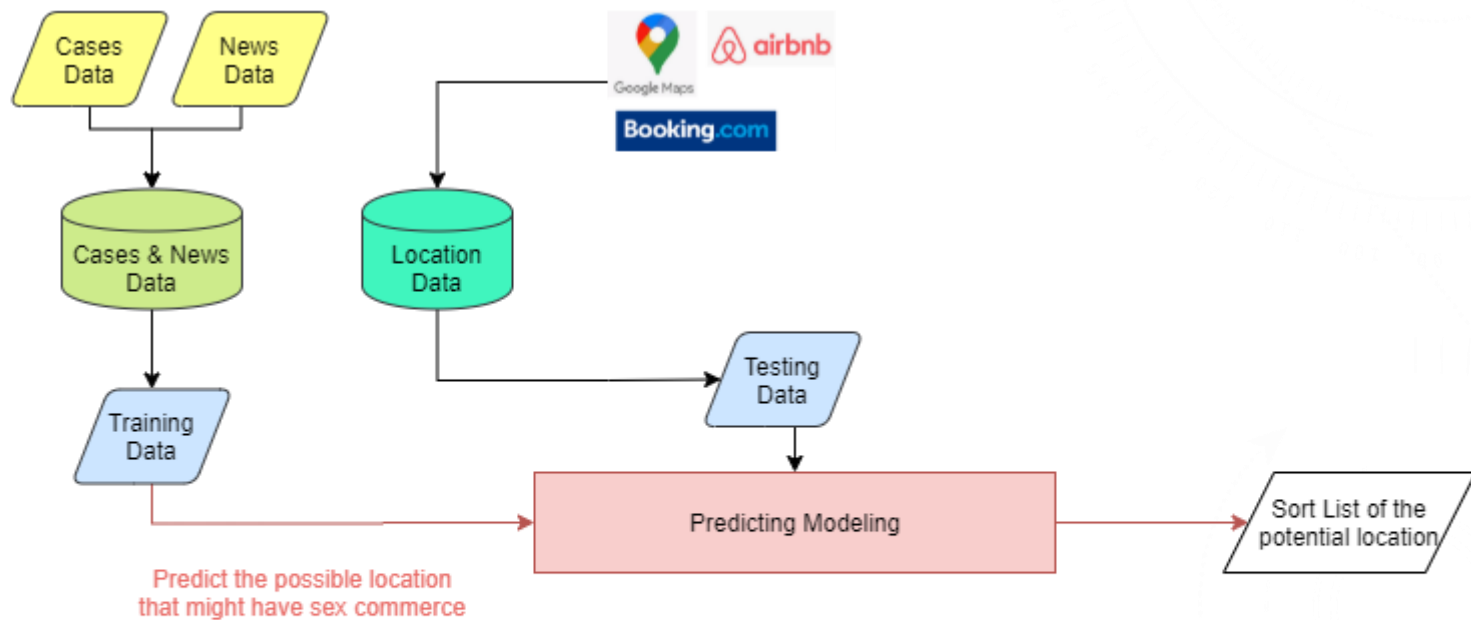
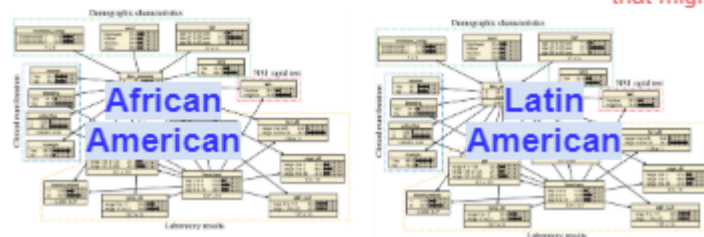


Reference

### Analysis Structure

**Observation: Crime Location**  
 1. Exact Crime Address  
 2. High Likelihood Crime Location  
 ex. Super 8, Manassas, VA

**Features**  
 Classify by different Business Type  
 1. African American  
 2. Latin American  
 3. Asian





Background



Dashboard

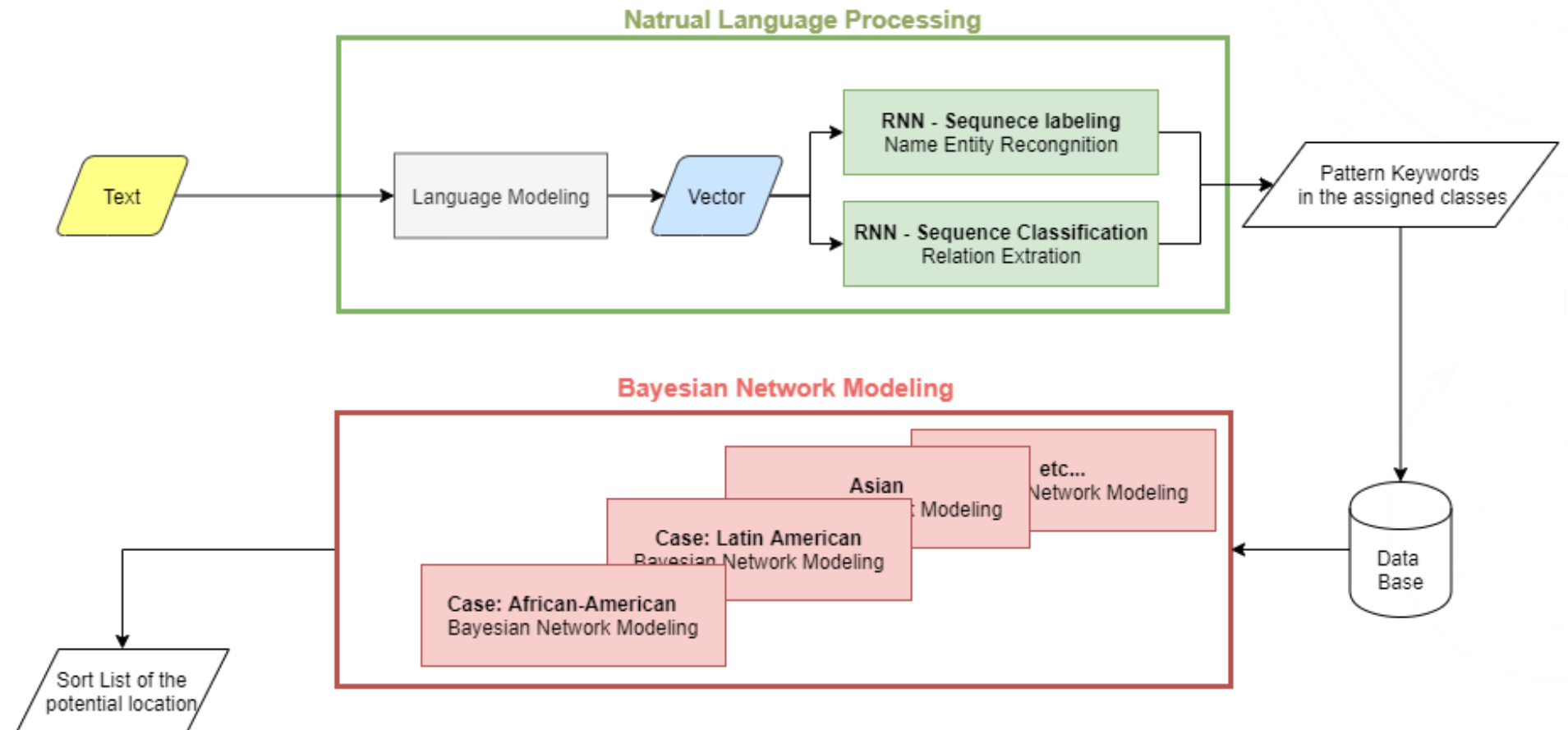


Analysis



Reference

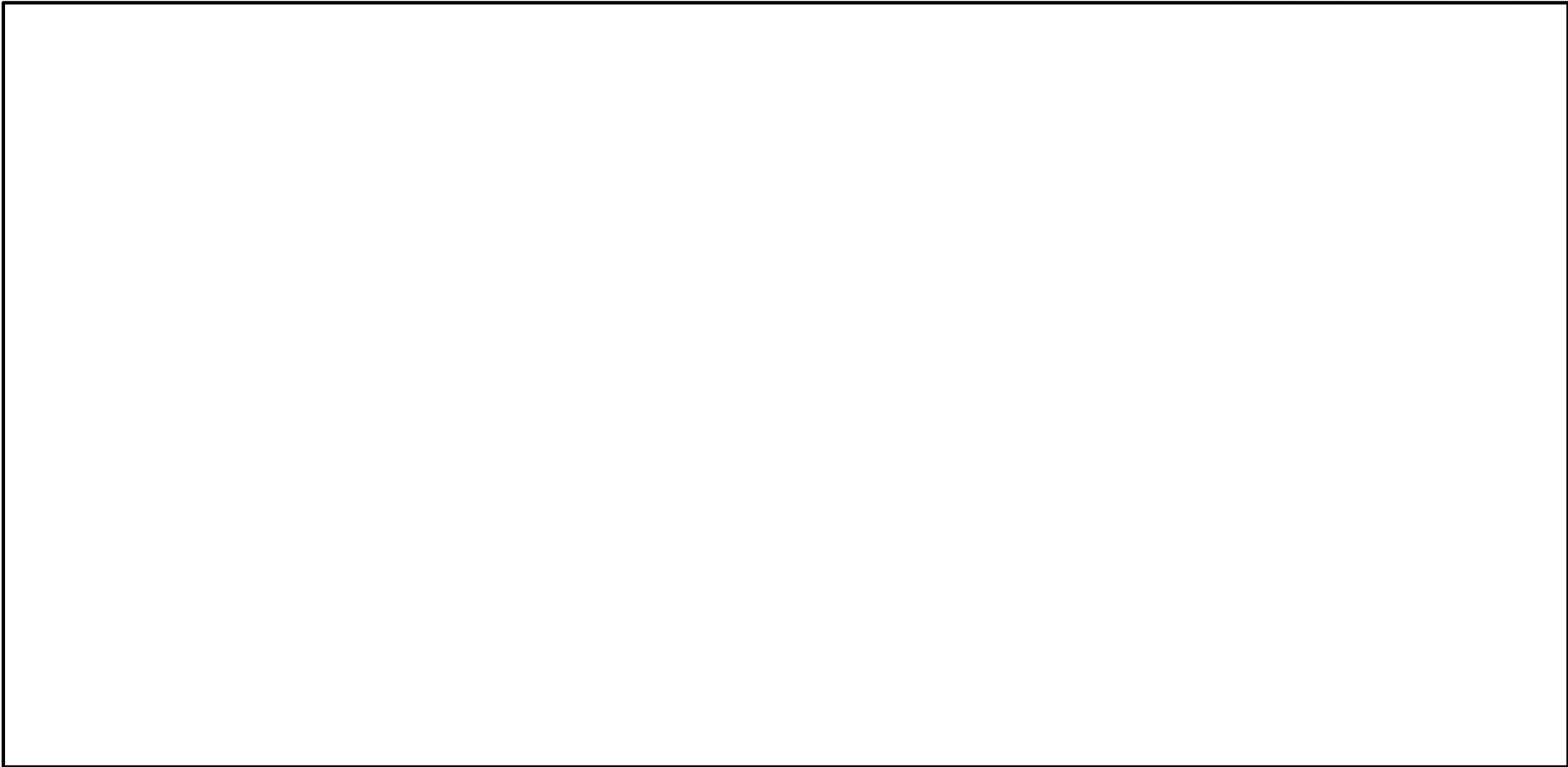
### Data Processing Frame Work





# Analysis

## Natural Language Processing

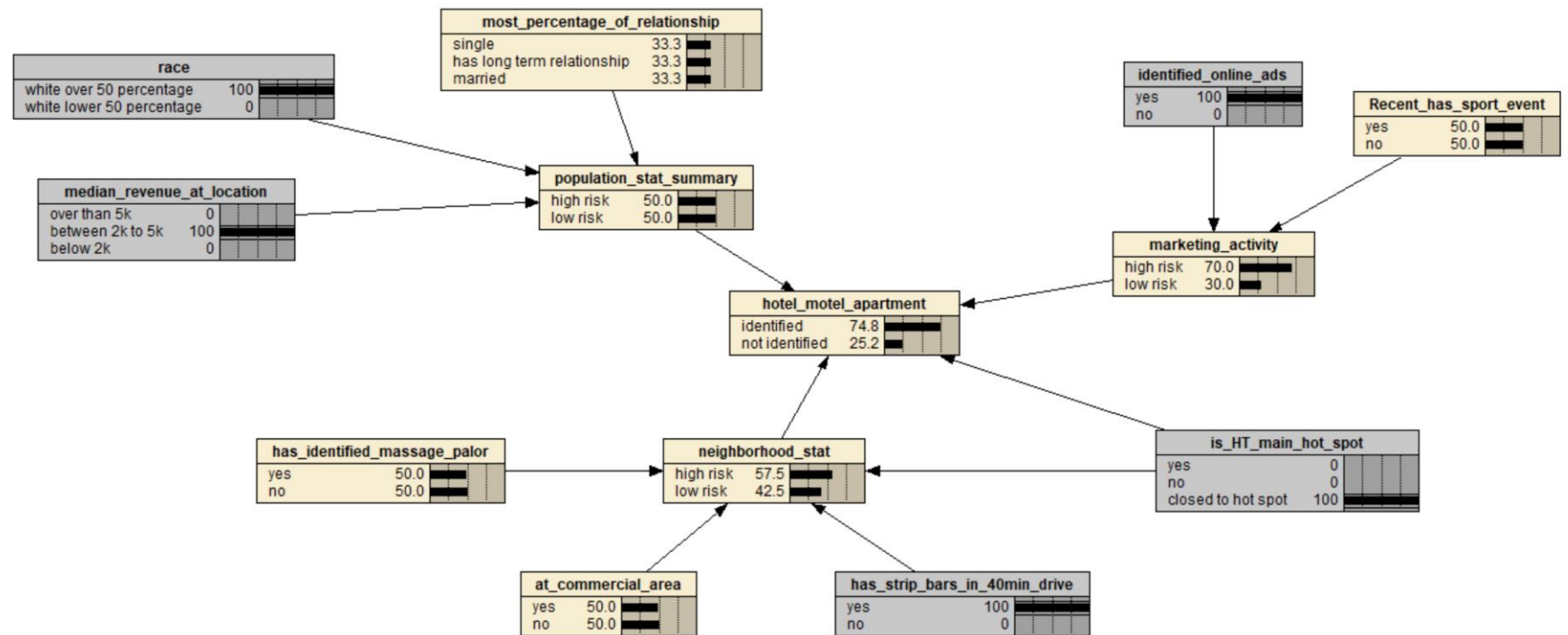






## Bayesian Network Modeling

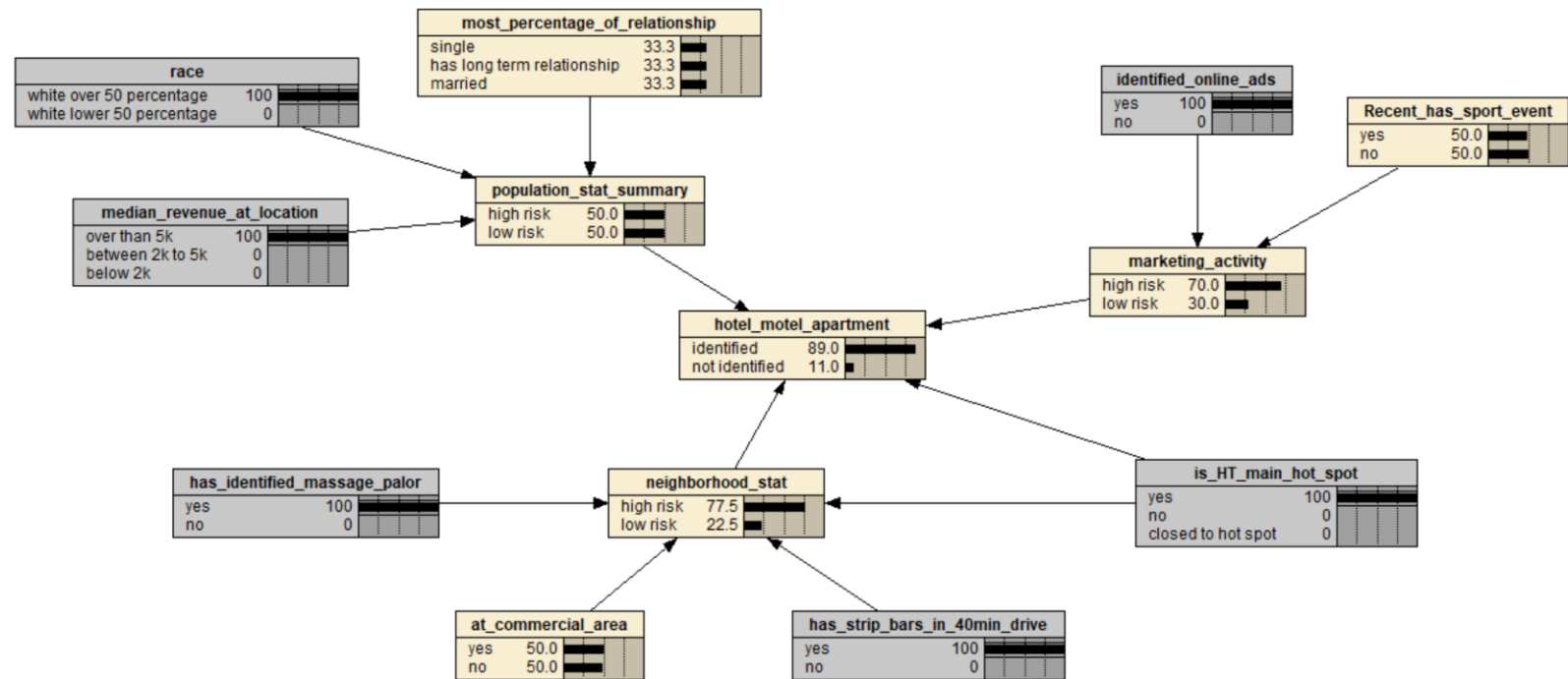
## Bayesian Network Modeling





## Bayesian Network Modeling

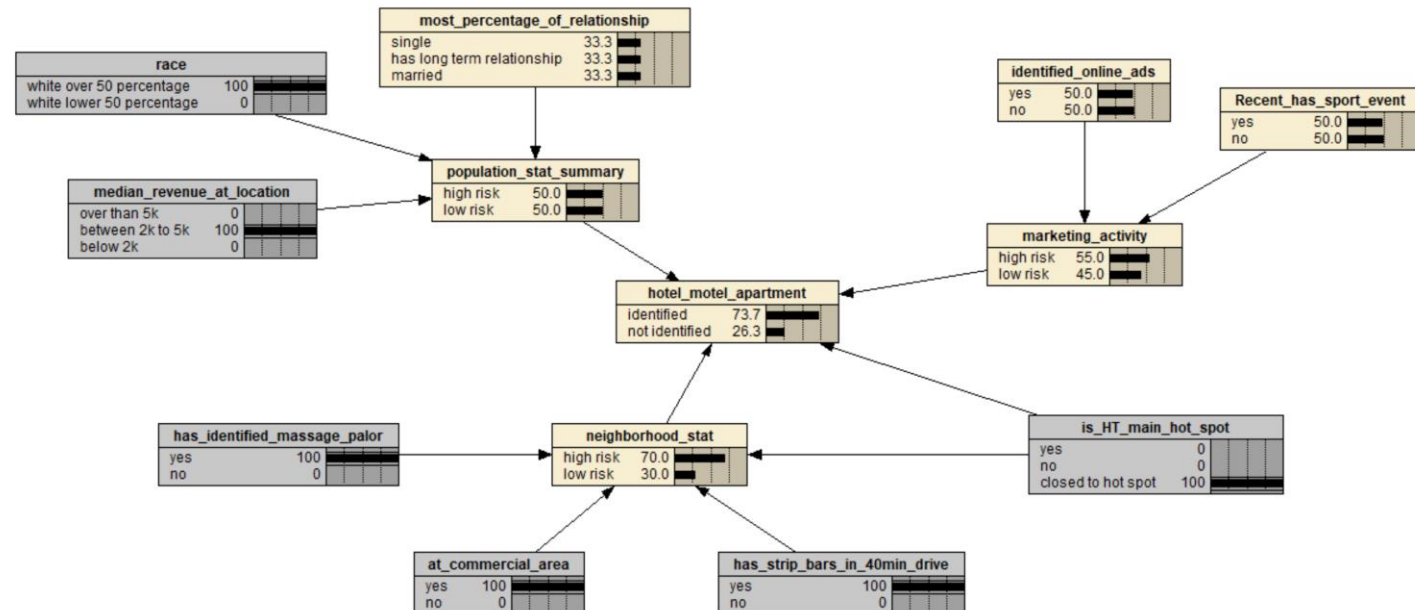
## Bayesian Network Modeling





## Bayesian Network Modeling

Motel 6 Dumfries 17133 Dumfries Rd, Dumfries, VA







ANDEN AT  
THE WOODS

Cracker Barrel  
Old Country Store



Walmart Supercenter



234

Southbridge



Massage Relaxing  
Hypnotherapy



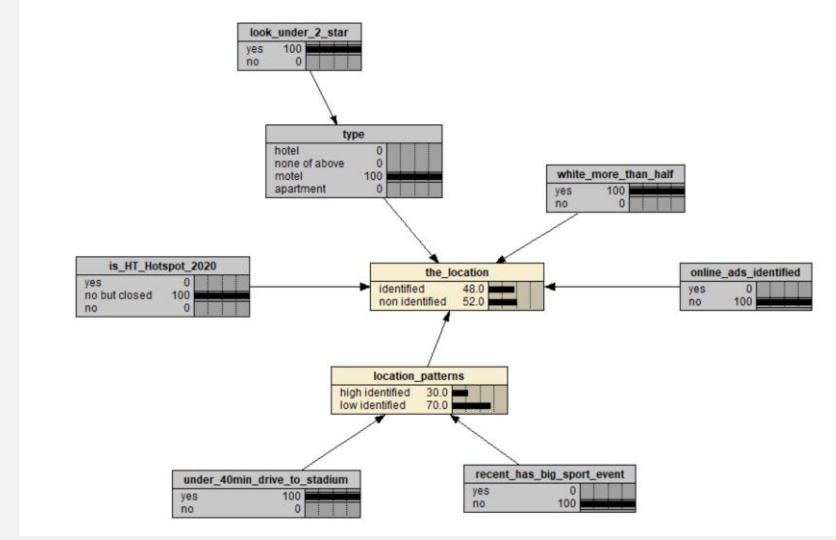
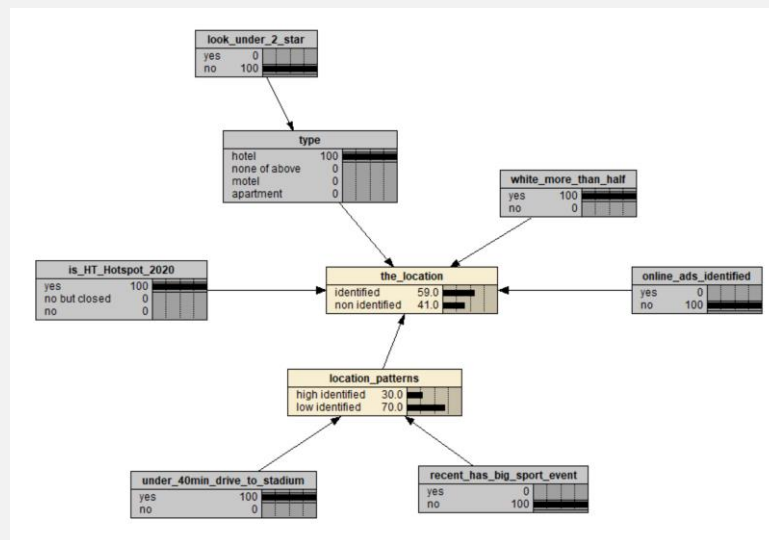
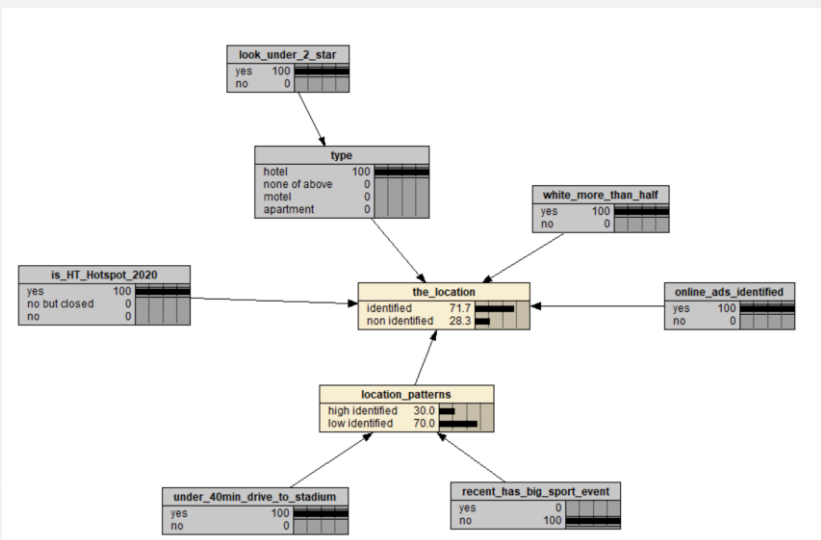
Oasis Massage Therapy

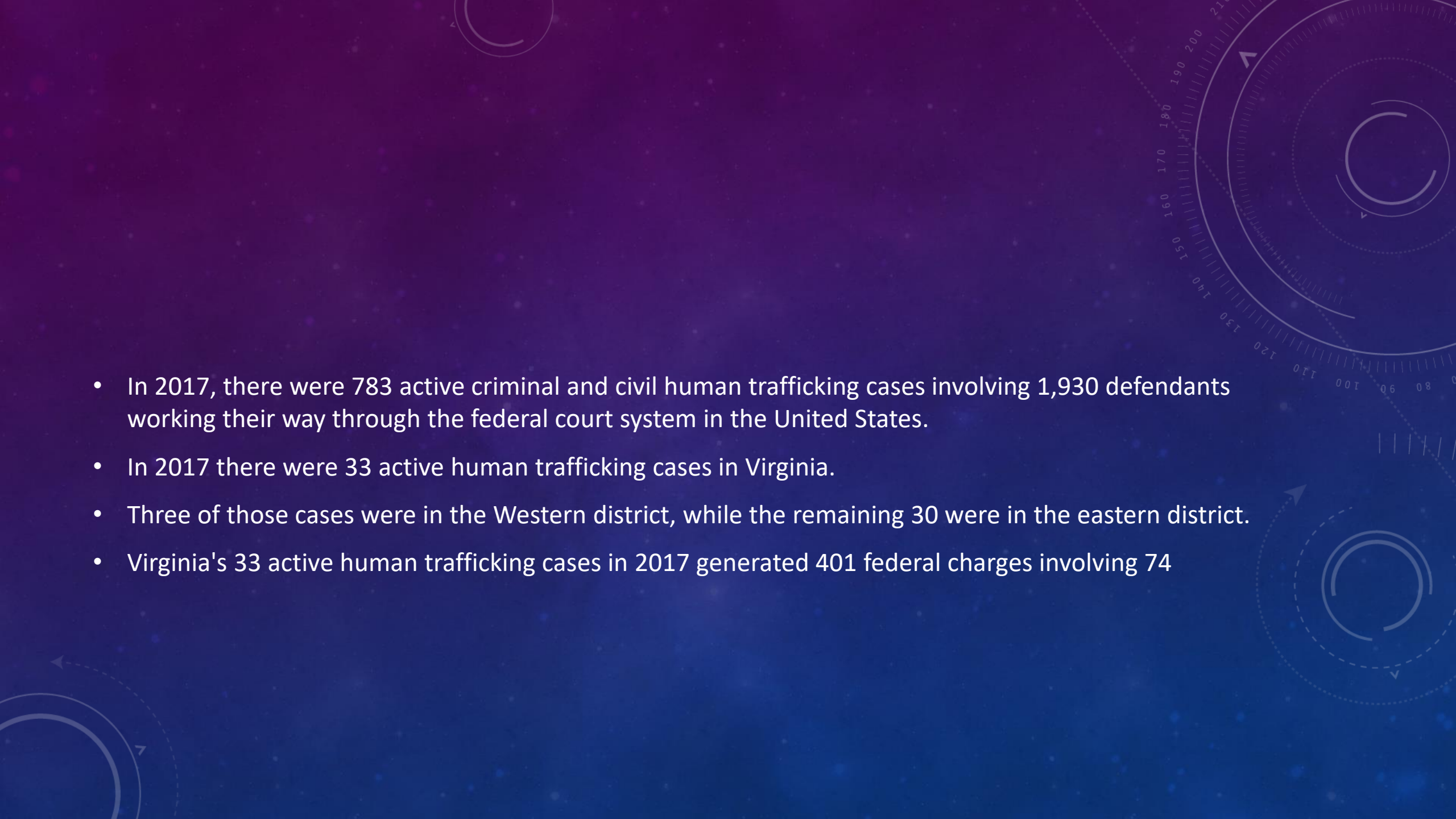


Dumfries Massage Spa  
Swedish, Thai &  
other massage styles



Dumfries



- 
- In 2017, there were 783 active criminal and civil human trafficking cases involving 1,930 defendants working their way through the federal court system in the United States.
  - In 2017 there were 33 active human trafficking cases in Virginia.
  - Three of those cases were in the Western district, while the remaining 30 were in the eastern district.
  - Virginia's 33 active human trafficking cases in 2017 generated 401 federal charges involving 74





Dashboard

Shipments

Quotes

Orders

Bookings

Products

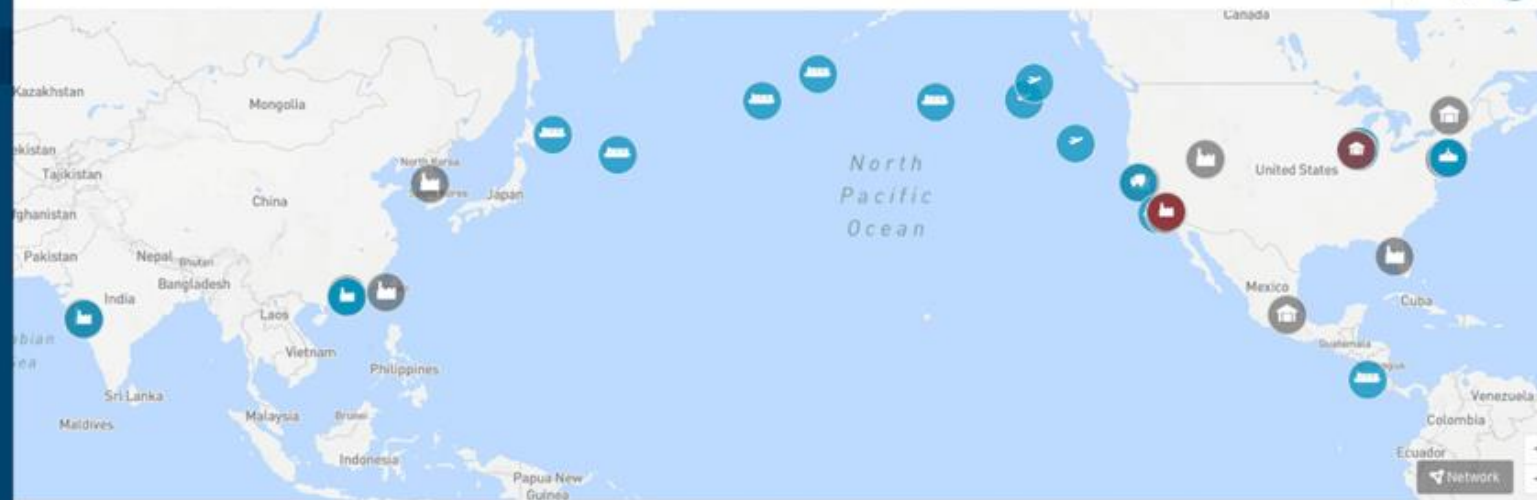
Network

Billing

Reports

Help

Settings



## Active Shipments

FLEX-46986 - VND-33005-22079

Arrival Port

Undergoing Customs exam

FLEX-48740 - VND-44097-11111

Arrival Port

Undergoing Customs exam

FLEX-47088 - VND-23555-10416

Departure Port

Planned Transit Changed

FLEX-50000 - VND-33005-22006

Departure Port

Arrived at BOM

FLEX-49998 - VND-86612-44444

Seller's Location

Document Uploaded

[View All](#)

## Active Bookings

FLEX-56307 VND-5642-4634

Waiting for buyer

FLEX-54219 VND-0999-1234

Waiting for buyer

FLEX-50440 VND-0602-1986

Waiting for buyer

FLEX-50441 VND-2986-2854

Waiting for buyer

FLEX-51670 VND-23875-03

Waiting for buyer

[View All](#)

## Active Quotes

PO5555

FLEX-48974

3 quotes ready for review

PO10391

FLEX-48666

3 quotes ready for review

Test

FLEX-64367

No quotes ready for review

PO123

FLEX-58504

No quotes ready for review

VND-86612-75400

FLEX-49999

No quotes ready for review

[View All](#)

## Outstanding Invoices

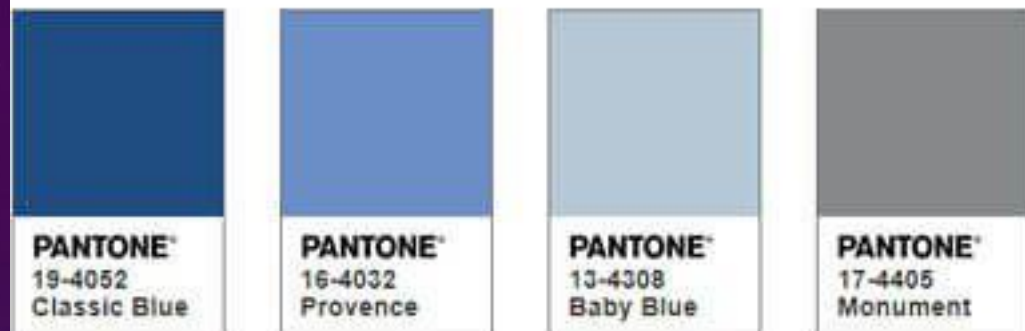
FLEX-47042 - VND-41601-10416

Invoice Overdue

Jan 16, 2017

[View All](#)

## PONDER



## DESERT TWILIGHT



## SNORKEL



## EXOTIC TASTES





## JUDGES



**Bill Woolf**

*Director of Human  
Trafficking Programs*  
US Department of Justice



**Anna Fraser**

*Senior Public Affairs  
Specialist*  
Office to Monitor and  
Combat Trafficking in  
Persons  
US Department of State



**Karen Buckley**

*Executive Director*  
Just Ask



**Sean Mattiello**

*International Justice  
Mission*



**Crysta Price**

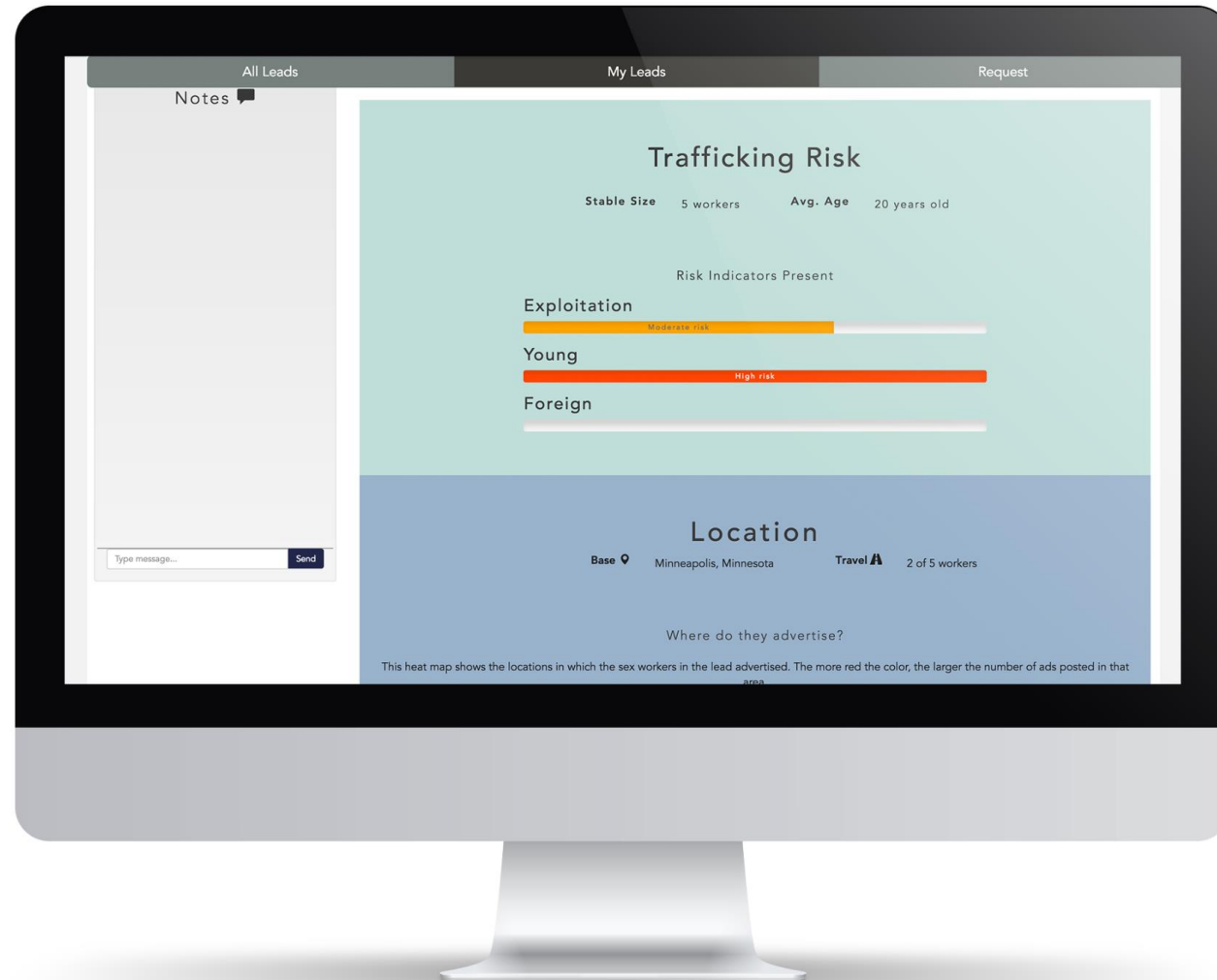
*Founder & CEO*  
HTI Labs

### Modern slavery

*International Justice*

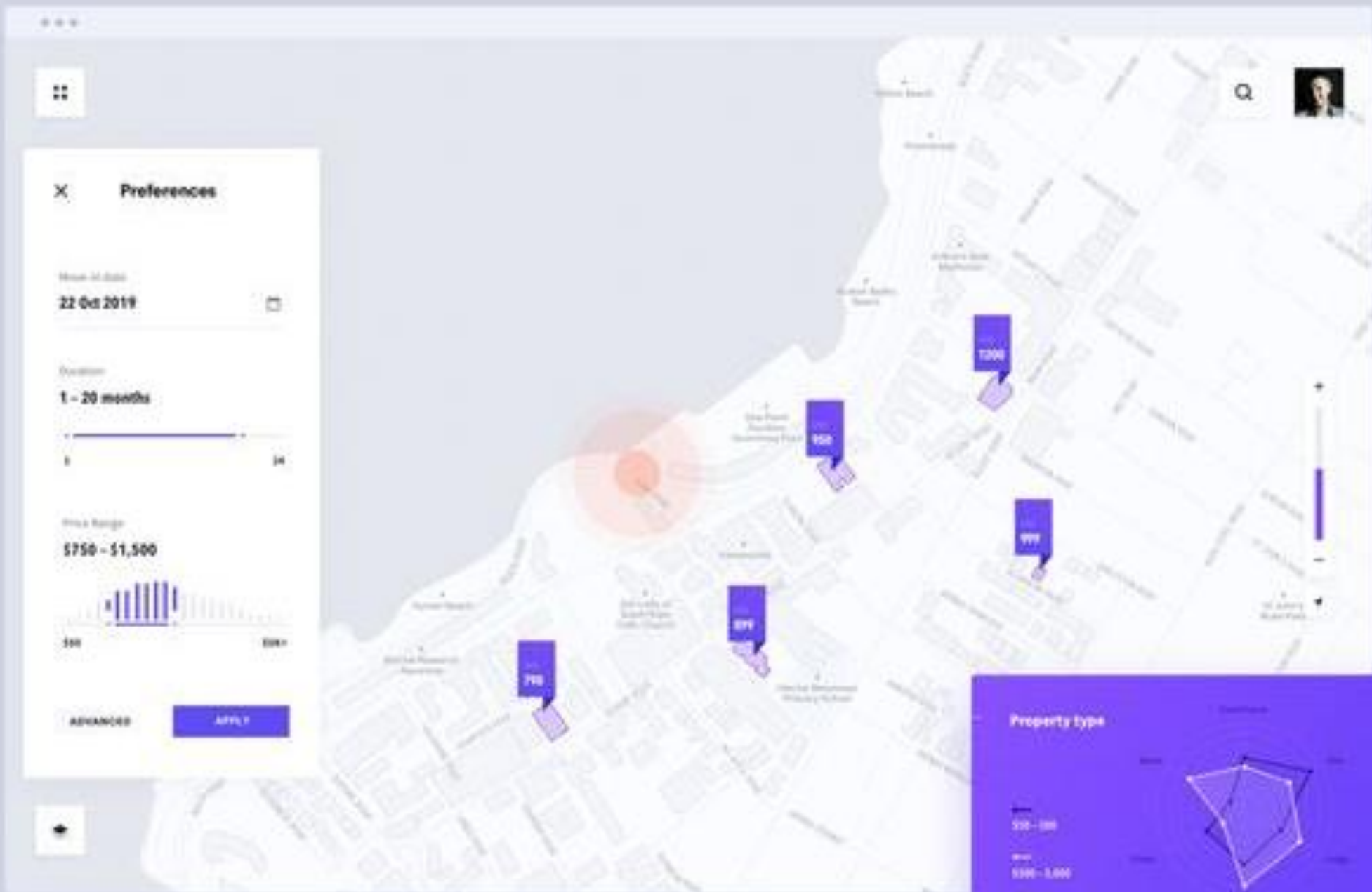
**Mission work with  
local justice officials,  
community partners,  
advocates and  
people like you to  
end it for good.**

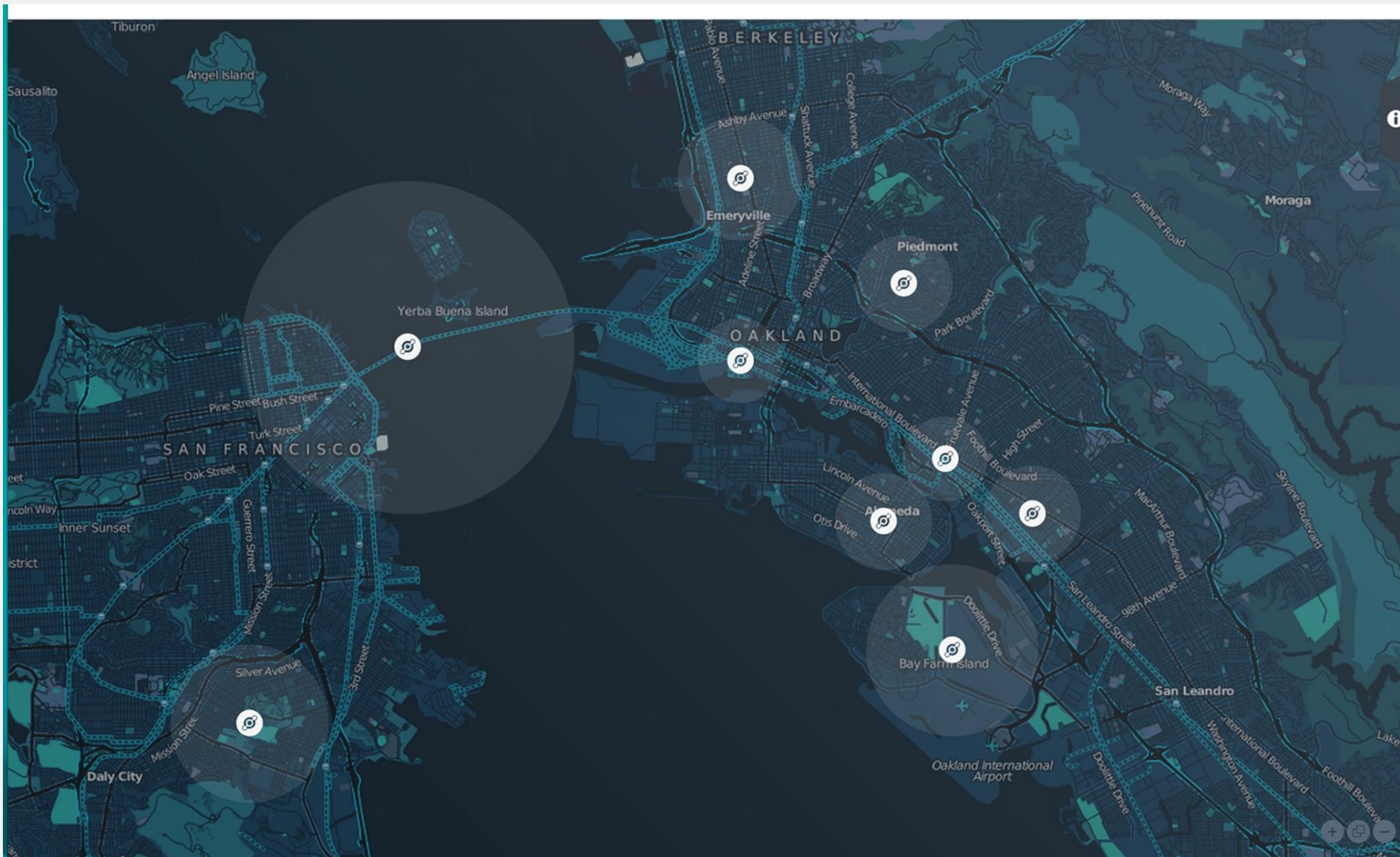
**Sex Trafficking  
Statistical & CS  
Data is most powerful  
when it's linked. By  
creating software and  
other tools, we help  
organizations connect  
their data, creating  
meaningful insights.**




Example Data Dashboard







 ID HE09099878674 – Phoebe

**LATEST SIGNAL (dB)** 16.4   
**CALLBACKS** 202c0daf.dfd3f2

**Location**  
**DYNAMIC**  Last known 51°49'32' | 23°19'29'

### Device message filter

**FROM DATE** Enter date  
**TO DATE** Enter date  
**DELAY** Enter delay

### Events

**LATEST PAYLOAD** 768df6g8d6f6s8765d646  
54dsf4sd64fs64sd6f46d5  
4f65s46f4s654fs65d464s  
65f65s465465ds3453sf74  
sd675s7

ASCII: Hello World, my name is  
Helium

2014-08-24 19:18:34

[View All](#)