

# Socio-economic analysis of the human sex-trafficking market

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Grad – Social Sciences

## Introduction

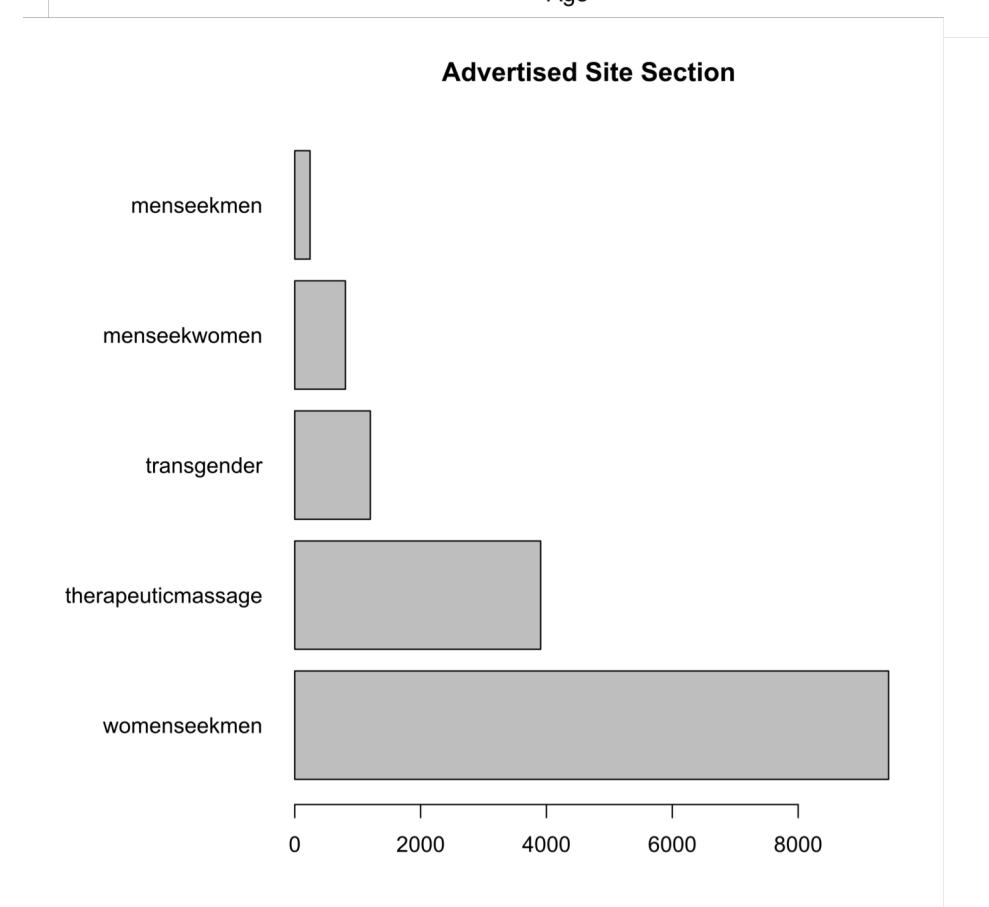
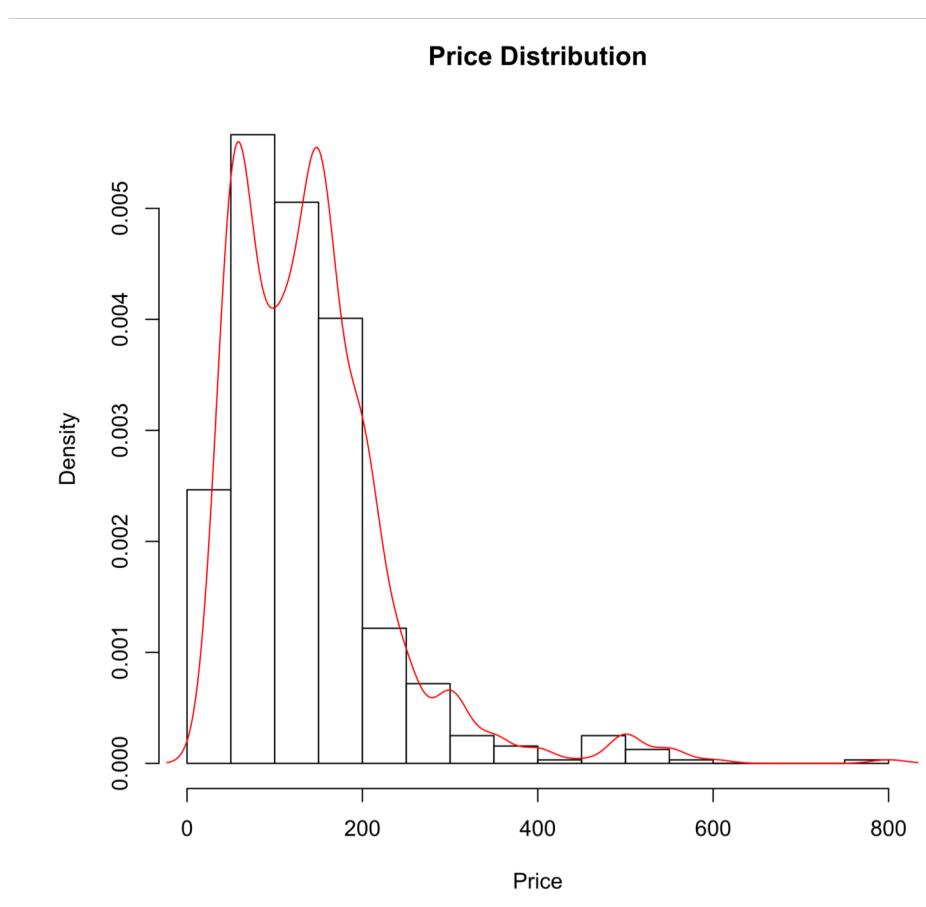
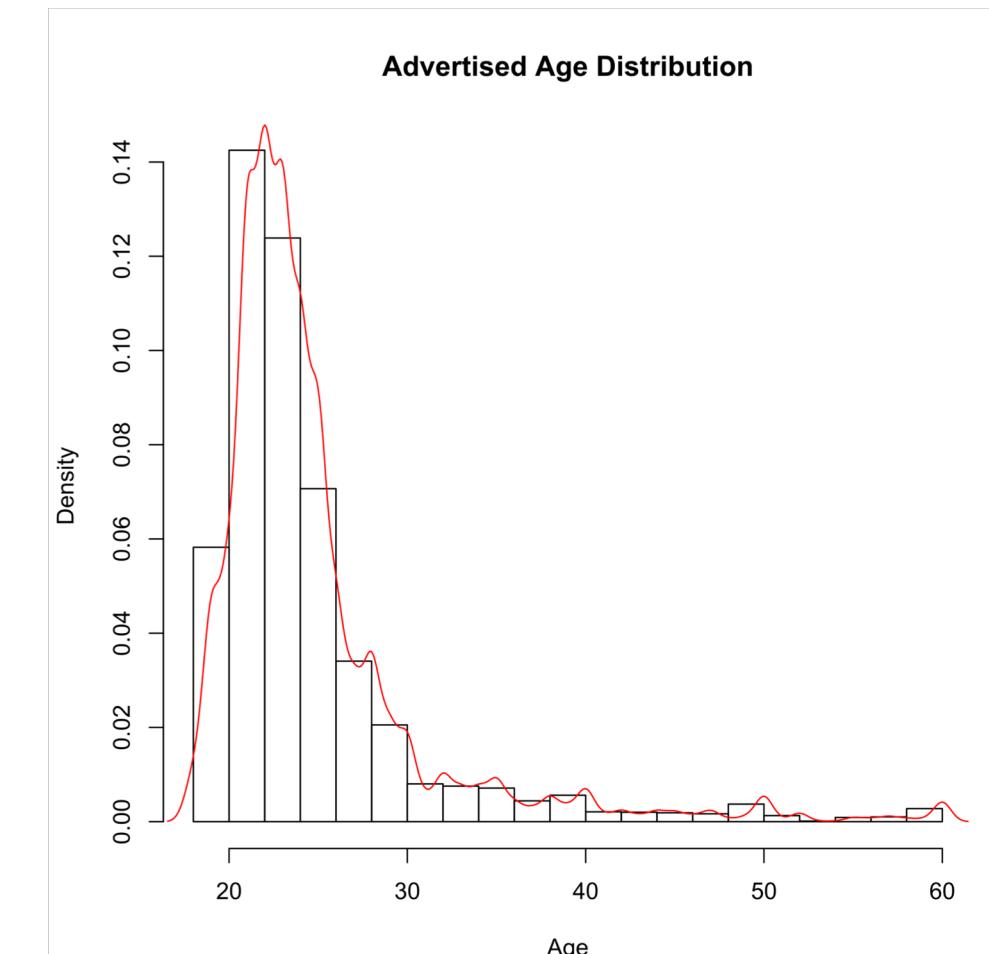
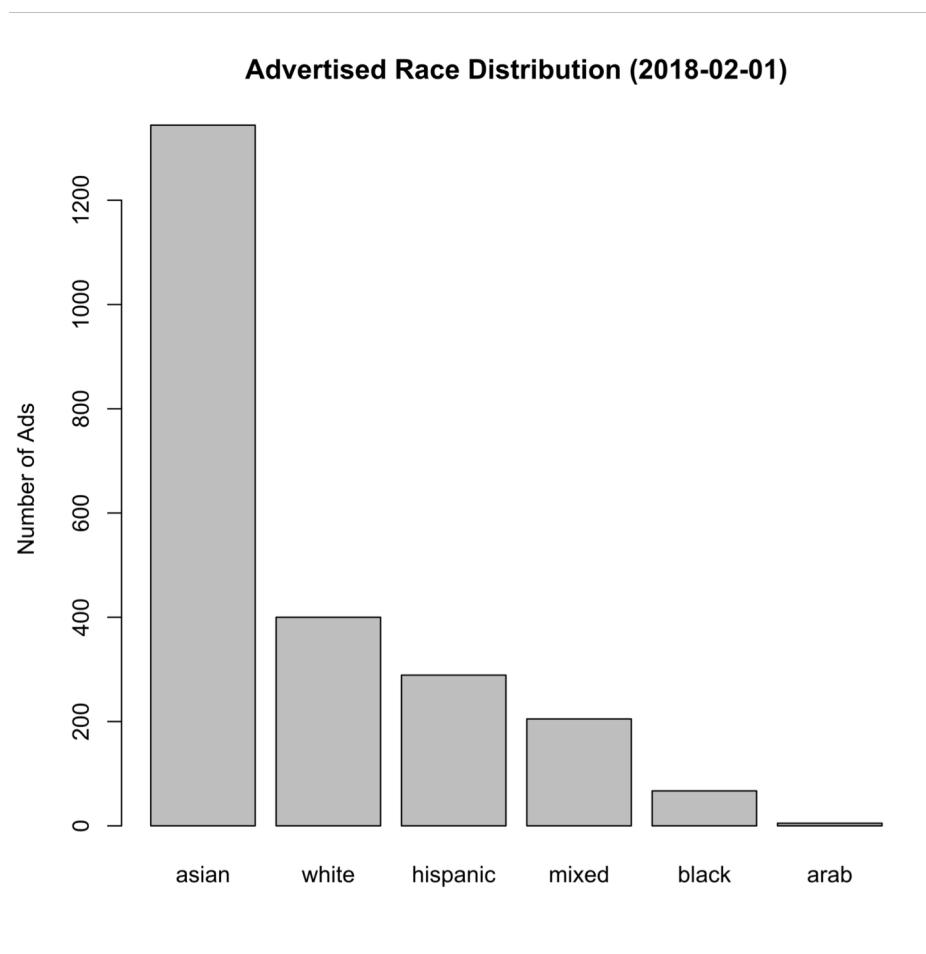
- 40.3 million people worldwide, according to a 2017 study by the International Labor Organization, are exploited in a \$150 billion-per-year criminal industry
- Human sex trafficking is an illegal activity, escort advertisements listed on classified websites provide easy access to illegal solicitation of prostitution
- Motivation:
- Analyze market characteristics of trafficking to identify attributes or patterns revealing behaviors which could enable law enforcement agents and NGO's to disrupt trafficking activities
- Understanding the market dynamics and characteristics through social correlations

## Dataset Statistics

The dataset has been provided by/sourced by Uncharted Software, which provides a set of escort advertisements scraped from publicly available websites. Two datasets were available to us, summary of their statistics available below:

- Short term (2018-02-01 to 2018-05-03):** Daily scraped ads from 3 common advertising websites (BackPage, CityXGuide, and Skipthegames), including all features of the ad (text, images, phone number, location, ethnicity, hair color, etc.)
- Long term (2017-01-01 to 2018-08-31):** Total daily ad count, and price distributions for different locations.

Variable	Location	Phone #	Age	Ethnicity	Social Media Link	Price	Site Section	Email	Eyes	Hair	Weight	Name
%	100	96	85	11	70	5	79	1	~0	1	1	8

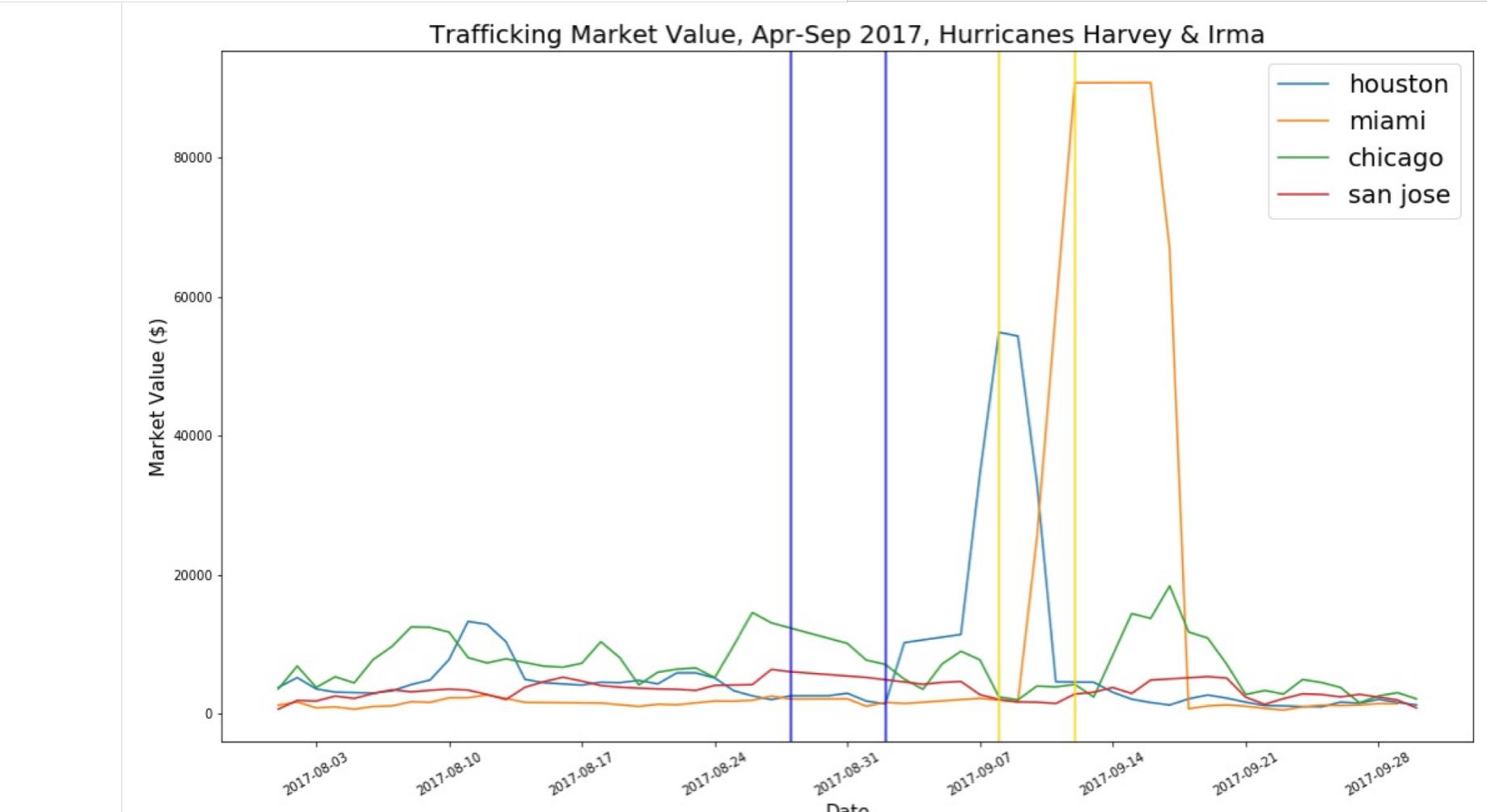
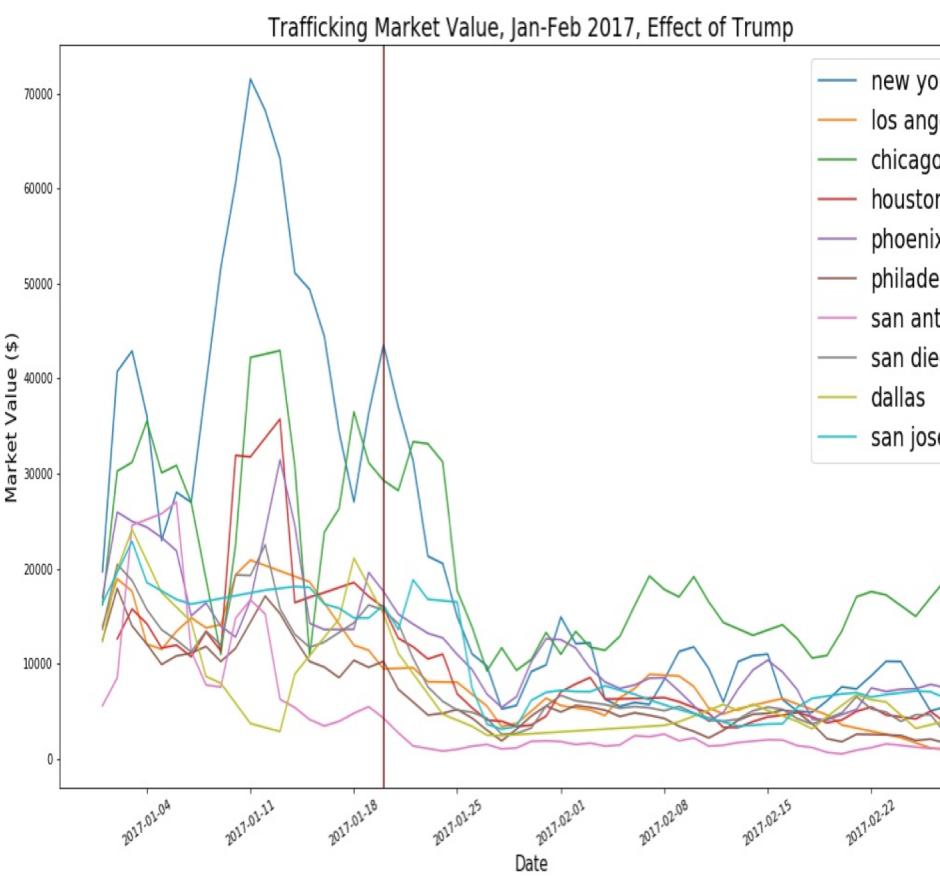
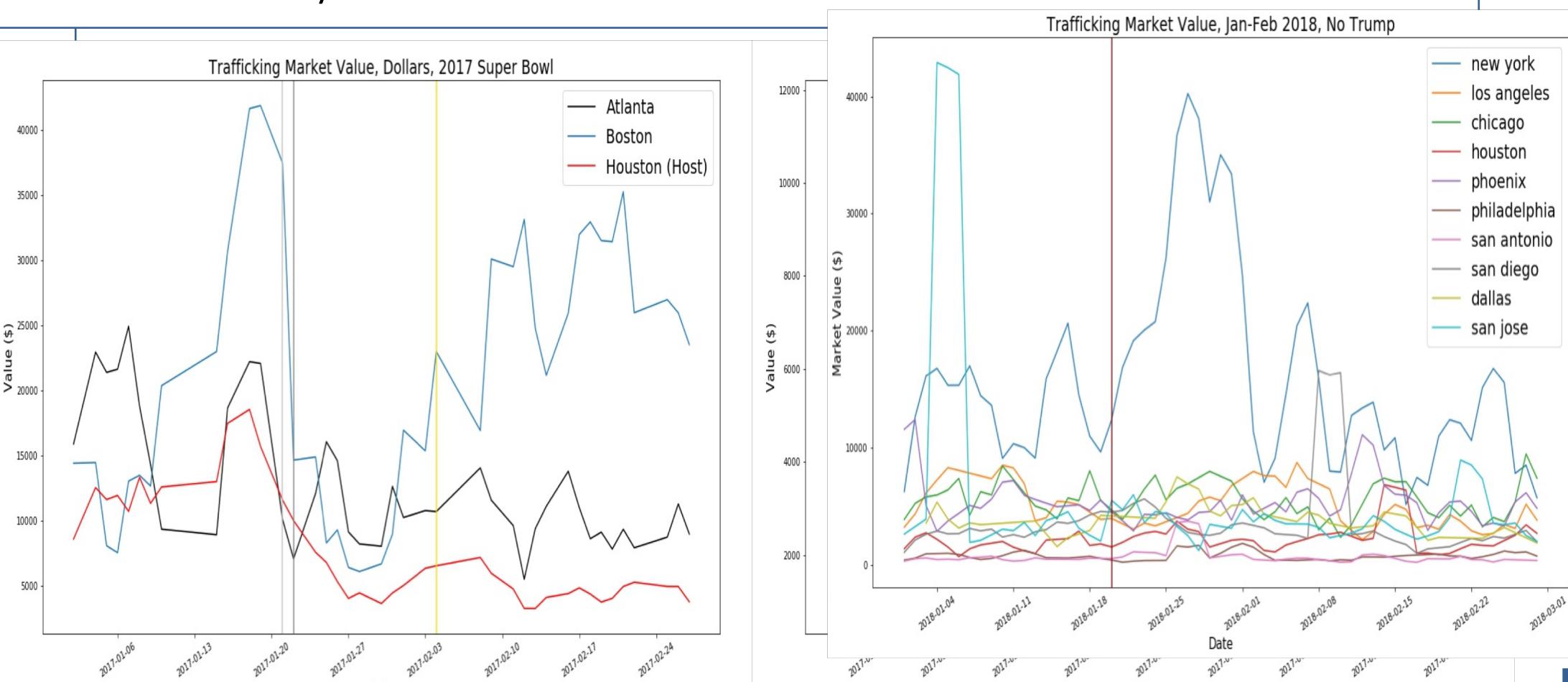


## Time Series Analysis & Event Influence

**Question:** When looking at the data as a time series, what external factors increase or decrease the size of the overall national trafficking market?

- The key difficulty is that since this is a black market, our understanding of the data is influenced heavily by the ad capture rate of scraping algorithms on a day-to-day basis.
- Goal: Look in the short run to see if critical crowd-based events influence the trafficking market.

Below are the plots for the 2017 Super Bowl and NBA Finals (for both competing cities and the host city). In both 2017 and 2018 there were spikes in both the Bay Area and Cleveland after the finals were over. Note the high volume of ads in January 2017 – we found that this was not limited to Super Bowl cities, but almost every city in the country. This happens to coincide well with the inauguration of Donald Trump (and the effect is not seen a year later). The best obvious effects were a massive spike in ads in Houston and Miami in the aftermath of Hurricanes Harvey and Irma.



## Network Analysis

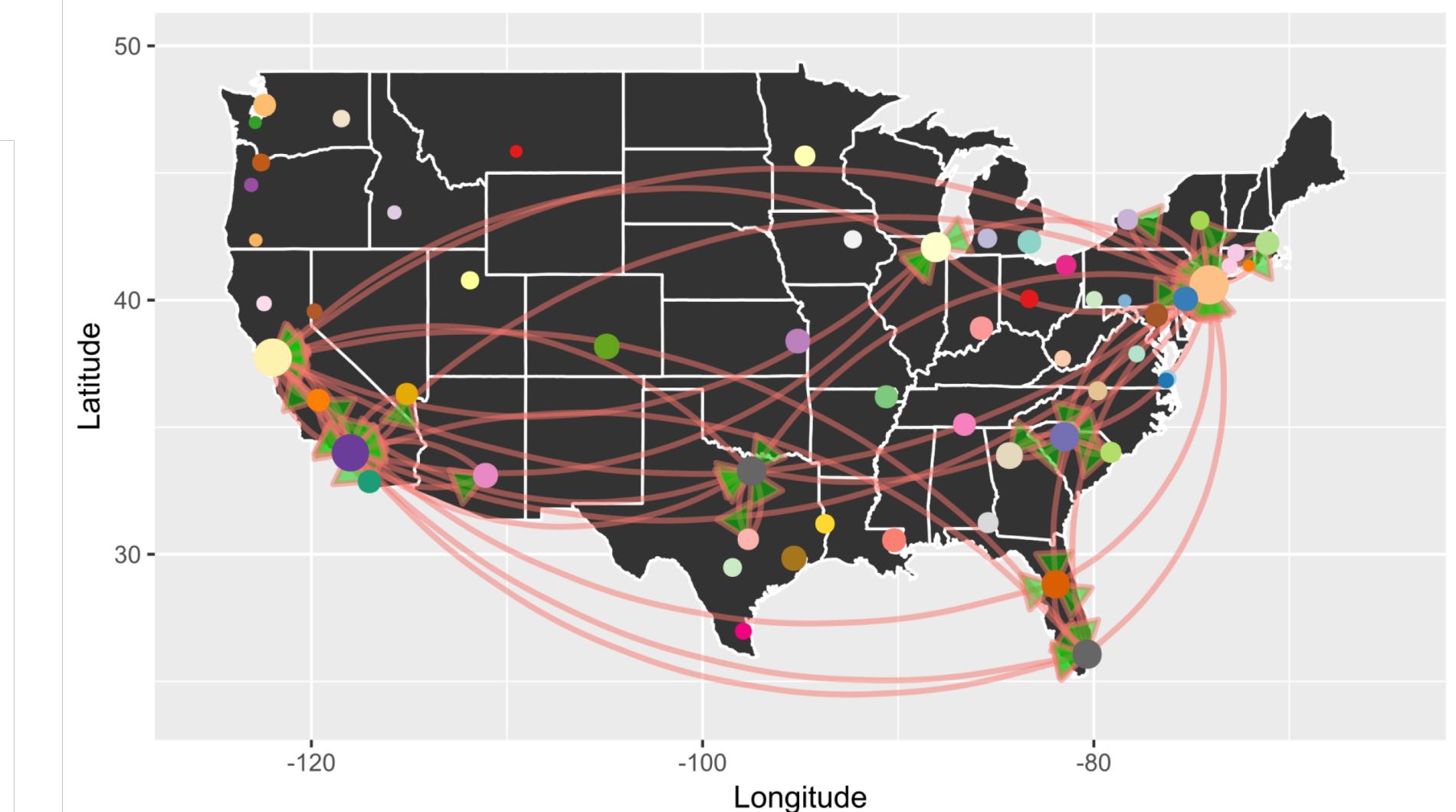
**Question:** Which cities are important for sex trafficking movement? Are certain cities sources/sinks of trafficking?

**Key:** Victims usually list their own phone #, and keep it as they move.

- Track each phone #'s location through cleaned short term data
- Create a directed graph, where nodes are loose “trafficking metro areas” (determined by k-means clustering), and edges are added for a phone #'s movement between nodes
- Measure centralities, highest traveled edges, etc.

**Findings:** LA, Bay Area, NYC, Miami, Charlotte, and Dallas are the top hubs of sex trafficking movement, and those with high indegree are also those with high outdegree.

Movement network (edgeweights > 500)



## Most Travelled Routes

From	To
Oakland, CA	Los Angeles, CA
New York, NY	Philadelphia, PA
San Diego, CA	Los Angeles, CA
Los Angeles, CA	San Diego, CA
Oakland, CA	Fresno, CA
New York, NY	Oakland, CA

## City Centrality Measures

Total Degree	Total Strength	Eigenvector	Betweenness
Oakland, CA	New York, NY	Los Angeles, CA	New York, NY
Los Angeles, CA	Los Angeles, CA	Oakland, CA	Oakland, CA
New York, NY	Oakland, CA	New York, NY	Los Angeles, CA
Chicago, IL	Dallas, TX	Dallas, TX	Seattle, WA
Charlotte, NC	Charlotte, NC	Chicago, IL	Baltimore, MD

## Conclusions

This research does significant work in understanding the complexities of the sex trafficking industry in the United States.

- Certain events are more likely to increase the amount of trafficking that takes place in a particular region, the most likely of which is a natural disaster.
- A sporting or political event, while important to some, is not necessarily going to change the entire inherent scope of the local trafficking market, simply because fewer people are invested in it.
  - Some of these markets are already huge, even before the Super Bowl
- Natural disasters are more significant predictors of increased trafficking, perhaps due to perpetrators taking advantage of desperation or grief in the aftermath of such an event
- Perpetrators move around the country and advertise in various locations, most commonly the largest cities. They have key routes that they use to move themselves and victims.
- Current efforts to combat this crime are mostly weak & ineffective. We should view the industry as an instance of market failure, creating incentives to protect potential victims.