

The impact of the online marketplace on fraud: Evidence from Craigslist from its early adoption in 1995 to its wider expansion in 2006.

by

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AN ABSTRACT OF A DISSERTATION

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Department of Personal Financial Planning
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Abstract

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While minor frauds may persist and potentially go unreported, Craigslist's enduring popularity (Oravec, 2014) subjects listings to vast public scrutiny, making large-scale frauds challenging. In collaboration with U.S. law enforcement, Craigslist has introduced safety measures such as posting limitations that deter unsafe activities (Freese, 2011). On the Craigslist website, there is a section that talks about how to avoid scams on the platform (Craigslist, 2023a). Potential extrinsic factors influencing fraud arrests are numerous. Craigslist's marketplace vitality might present genuine income avenues, reducing fraud incentives. As users become adept at recognizing scams, successful frauds could decline. Additionally, as online platforms become integral in regional economies, law enforcement could foster refined online fraud identification and prosecution tools generating a deterrent effect. Practical implications are discussed and suggestions for future research are provided.

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Dedication

To my daughter and husband, my guiding parents watching over from above, to my uncle and auntie that “adopted” me recently and all the remarkable individuals I am blessed to know as family and friends. Your unconditional love and support have been my anchor. This milestone is shared with each and every one of you.

Chapter 1 - Introduction

Problem Statement and Background

The internet has fundamentally altered the way the marketplace operates. Using the internet and advanced technologies as an online marketplace has brought countless opportunities for consumers to increase their utility by decreasing the costs of searching for information (Kroft & Pope, 2014), increasing efficiency by matching consumers to suppliers of goods and services, and reducing the transaction costs associated with buying, selling and giving away used goods (Fremstad, 2017). Craigslist is an online platform that since 1995, has operated as a broad classified-advertising website that enables multiple unrelated matching markets to interact on a single consolidated online platform (Cunningham et al., 2017).

However, this evolution, like anything else in this world, did not come without some unfavorable consequences. The advent of Craigslist connected consumers in ways that were not previously possible. Consumers with good intentions are matched based on actual goals they wish to achieve by using the website - either buying or selling, renting, applying for a job, looking for a romantic partner, etc. These consumers are able to connect and meet or successfully execute mutually beneficial transactions. Consumers with bad and deceitful intentions are also connected with consumers with good intentions inclined to assume good intentions from others. This unfortunate side effect of Craigslist as an online marketplace often leads to consumers falling victims to fraudulent activities that can lead to financial loss and potential emotional damage. Online marketplaces created the potential to considerably boost the frequency of fraud offenses because deceitful individuals have easier access to a much larger pool of individuals through platforms like Craigslist. The fact that users of Craigslist can retain

their anonymity can further exacerbate this potential. This begs the question of whether the Craigslist adoption was associated with an increase of fraud arrests.

The purpose of this research is to study if the presence and adoption of the Craigslist online marketplace had an impact on fraud arrests, in those locations that adopted Craigslist compared to those that did not. Did the efficiency in searching and selling in the expanding internet environment and online marketplaces facilitate more fraud crimes that led to arrests against their users? The consumer vulnerability framework (Hill & Sharma, 2020) was used to explore how the presence of Craigslist in some metropolitan statistical areas (MSAs) affected the likelihood of fraud arrests in those areas. The sequence of Craigslist's presence in each MSA was combined with county level data from the U.S. Census Bureau for the years 1991-2006 and county-level arrests for fraud crimes data from the Uniform Crime Reporting (UCR) Program from the Federal Bureau of Investigation. The data used for the main analysis were from years 1995 to 2006. Data for years prior to 1995 starting in 1991 were used to test if the parallel pre-trends assumption holds. All county-level data was aggregated at the MSA level. Differences-in-differences models were employed to identify associations between the variables selected over time and study the differential effect of the presence of the Craigslist online marketplace in the metropolitan areas where Craigslist was available compared to the ones where Craigslist was not yet available.

Different types of online fraud have been examined by researchers (Buchanan & Whitty, 2014; Whitty & Buchanan, 2012). There is empirical support that scams are enabled through the Craigslist platform (Garg & Nilizadeh, 2013; Jones & McCoy, 2014; Park et al., 2014). To my knowledge, the current study was the first one to attempt to shed more light on the relationship between Craigslist entry and fraud arrests in different geographic areas over time.

In this research study, fraud was examined in isolation similar to other studies for several reasons. Fraud, in its many forms is a complex phenomenon. Studying it in isolation from other types of criminal offenses allowed for a more in depth delving into its aspects, nuances, and underlying mechanisms without the interference of other unrelated variables. By keeping the study focused and its objectives clearly defined, it helped improve the accuracy of the findings and the clarity of the insights derived. The methodology was more rigorous and controlled and it improved comparability with other studies isolated from other phenomena, and the comparisons were more straightforward across different studies, time periods and geographic regions.

Craigslist and its Growth

Craigslist is an American internet-based classified advertising website that is free for most consumers that use it. At its very early stage, Craig Newmark began the service in 1995 as an email distribution list to friends, featuring local events in the San Francisco Bay area (Freese, 2011). The number of subscribers and posts on Craigslist grew quickly thanks mostly to word-of-mouth advertising from its users. To Newmark's surprise, people started using Craigslist to share their non-event postings most of which were job postings for technical positions (Boulton, 2013). This led Newmark to add a new category that included job postings to the service. As user demand grew organically, additional categories were added to the site in an effort to satisfy this demand. As the service's reputation expanded and demand continued to grow, the users wanted a web interface (Boulton, 2013).

It was 1996 when the website Craigslist.org went live as it evolved into a web-based service and expanded into other classified categories (Boulton, 2013). By the end of 1997, Craigslist had 1 million page views, was visited 1 million times per month and had become one of the most popular websites using the English language globally (Freese, 2011). By the year

1999, Craigslist's popularity was increasing so rapidly that Newmark decided to create a private for-profit corporation and quit his full-time job as a software engineer to work full-time managing and operating the newly incorporated Craigslist (Boulton, 2013). In April of 2000, Craigslist had grown to employ nine people that were still working out of Newmark's apartment. Jim Buckmaster was hired at the end of 1999, beginning of 2000 as a lead programmer and Chief Technology Officer. Jim can be credited for the site's multi-city architecture, search engine, discussion forums, flagging system, self-posting process, homepage design, personal categories, and best-of-Craigslist features (Boulton, 2013; Freese, 2011). Not long after Jim developed and incorporated all these new capabilities on the website, in November of 2000, Jim was appointed as the company's Chief Executive Officer, a position that he still holds currently (Boulton, 2013; Craigslist, 2023b; Kieffer & Mottola, 2017).

In June 2000, Craigslist started operating in Boston, Massachusetts, and two months later it was operating in several major U.S. cities such as New York, Chicago, Los Angeles, Portland, Seattle, and Washington D.C.. Craigslist's first international site was launched in Vancouver, in 2001 (Freese, 2011). Over the course of the next few years, Craigslist was adopted in several cities throughout the world and by 2004 the website was available in more than 30 cities (Freese, 2011) and the company started charging a fee to post job openings in select cities for the first time in the company's history (Boulton, 2013). The cost of a job posting on the Los Angeles and New York pages was \$25. The debut of a new Craigslist section called "Gigs" also took place on that same day. In the "Gigs" section, users could post low-cost and unpaid jobs and internships free of charge (Boulton, 2013).

As of August 9, 2012, over 700 cities in 70 countries had adopted Craigslist, the website was receiving over 20 billion page views, 80 million new classified advertisements, and

2 million new job posting listings each month, facts that placed Craigslist as the number one classified ads service and one of the top job boards in the world (Boulton, 2013). To this day, Craigslist operates in all these cities and countries, and it is one of the largest websites on the internet despite its very basic and mostly text-based layout that is essentially the same as it was in the early 2000s (Johnson, 2019). Craigslist does not accept any kind of banner advertising on its website platform. Despite having no promotion, advertising or marketing, the website is consistently positioned in the top 20 websites in the U.S. outranking Netflix, Zillow, Walmart and Pinterest, and in 2019, it ranked among the top 120 websites in the world (Johnson, 2019).

One is left wondering, if Craigslist is free for a lot of people that use it and it accepts no advertisements, then how does it make money? Its main source of income used to be mainly from the paid job ads in select cities. In 2013, Craigslist collected \$75 per ad in San Francisco and \$25 per ad in New York, Los Angeles, and San Diego, Boston, Seattle, Washington, D.C., Chicago, Philadelphia, Orange Country California, and Portland, Oregon and \$10 per paid broker apartment listing ad in New York City (Boulton, 2013). The website currently in 2023 collects from \$10 to \$75 per ad for job categories in the United States (US) and parts of Canada (CA) (fees vary by area) \$5 for apartment rental postings in Boston, Chicago and New York City areas, \$5 for commercial real estate postings in the United States, from \$3 to \$5 for sale categories, \$5 for services in the US and CA and from \$3 to \$10 for gigs (Craigslist, 2023c). Even though the fees charged to some users sound modest, in 2019, Craigslist made more than \$1billion in a year while employing only 50 people (Johnson, 2019).

The gradual expansion and dominance of Craigslist in different locations at different times provided the unique opportunity for scholars to study its significant impact on specific industries like the newspapers and classified-ads industry (Djourelouva et al., 2021; Kroft & Pope,

2014; Seamans & Zhu, 2014), the housing rental market (Kroft & Pope, 2014) and the job advertising market (Brenčić, 2016). Craigslist's effect on the environment (Fremstad, 2017), on public health (Chan & Ghose, 2014; Greenwood & Agarwal, 2016), and on violence against women (Cunningham et al., 2017) has also been examined by scholars.

Online Marketplaces in the United States

An online marketplace is a business that operates solely via an online website through which the buyers can purchase products or services from different sellers. Amazon, eBay, and Etsy are different examples of online marketplaces (Kenney & Zysman, 2016). These electronic/online shops are called online marketplaces because they facilitate transactions between the buyers that visit their website and a large number of different suppliers of goods and services that display, promote and sell their goods or services on the website (Chong et al., 2018). In online marketplaces users do not only find products and services of one single brand. Instead, they can find a wide variety of items sold and services provided by a lot of different merchants. In some cases, the same products may be sold on the website from different merchants at different prices and in different conditions, new, refurbished or used. Due to this wide variety of merchants that participate in the online marketplace (DiRusso et al., 2011), these websites provide many options to their users. Ever-evolving technology and search engine capabilities are used to find the most suitable products and to compare similar products in table format to make it easier for the users to pick the best alternative. Consumers like to have many options and be able to read reviews from other users, so these capabilities of online marketplaces are what makes them attract more and more visitors and buyers. And this is one of the most significant benefits of online marketplaces, that they provide to merchants visibility and potential

access to a very large amount of consumers (Kim & Koo, 2016) at a fraction of the cost compared to an actual brick-and-mortar shop.

Crime in the Online Marketplace

As more and more people started shifting their activities and transactions from offline - shopping in person in brick-and-mortar stores, or shopping for services by walking into someone's office to online – shopping for goods and services from different websites and online marketplaces, scammers and other criminals shifted their activity from offline to online and started taking advantage of the exposure and access to a much larger pool of potential victims that online marketplaces offer. As such, a lot of illegal and criminal activities took place or were initiated in those online marketplaces.

Online marketplaces facilitate a lot of different types of illegal activity and crimes. Some examples of such activity are transaction laundering, buyer-seller collusion, and advanced fee fraud (Herndon, 2019). Transaction laundering happens when sellers use the internet to sell illegal or counterfeit goods and pretend that those are legitimate product sales (Herndon, 2019). An example is when a criminal lists a product he does not own on the online marketplace, and he shares the link to their profile with their customers. Instead of shipping the product listed, they ship illegal substances packaging them to look like the product listed on the website (Herndon, 2019). Buyer-seller collusion is when a criminal gets illegal access to credit card information and then uses that to make fake purchases in an online marketplace. An example is when the criminal creates a company in the online marketplace and uses the stolen credit card information to buy non-existent items or services making the transaction appear legitimate and pocketing the money (Herndon, 2019). Advanced fee fraud is another very common form of financial crime and it can be as simple as the fraudster taking money from an item on a marketplace which either

does not exist or is never sent to the customer. Another form of this is when partial payment is requested before the transaction takes place and then the good or services is never received by the customer (Herndon, 2019). Scammers can also use online marketplaces and make a post pretending to offer student loans or consumer loans in order to collect sensitive information from their customers. Sadly, online marketplaces such as Craigslist have also been used by criminals to arrange meetings with people to rob them or to offer them illegal services such as erotic services masked as massages or other services and in more rare cases, to kidnap or murder people (Freese, 2011). In Brooklyn, New York for example, men posted an add offering sales of iPhones in large quantities and at a good price. When the customers arrived, they were robbed of their cash and their possessions (Freese, 2011).

Theoretical Perspectives Overview

The Consumer Vulnerability Framework

The term consumer vulnerability has been widely used informally in the literature to describe difficult situations for consumers. Initial research on this concept transpired in two different paths, one that studied the relative disadvantage among subpopulations and one that focused on different marketer manipulations that influenced consumer decision-making processes. Hill and Sharma (2020) defined consumer vulnerability as: “a state in which consumers are subject to harm because their access to and control over resources are restricted in ways that significantly inhibit their ability to function in the marketplace” (p. 551) and “a state that occurs when several factors are met and integrates both the experiencer’s perspective (experienced vulnerability) and the perceiver’s perspective (observed vulnerability) into their discussion of identification” (p. 553).

Vulnerability can be experienced by the vulnerable individuals themselves or observed by third parties in a continuum. The two critical antecedents of consumer vulnerability in the Hill and Sharma framework are limited resources and lack of control over resource usage. Resources are classified as individual resources (e.g., money, native intelligence, physical and mental health), interpersonal (e.g., social capital, belonging, and social support), and structural (e.g., marketplace factors such as business practices, laws, and their enforcement, and marketplace configurations). Control over resource usage is conceptualized using the individual, interpersonal, and structural classifications. Furthermore, the phrase resource-control combination describes occasions when multiple resource and control categories are co-mingled or combined to impact consumer vulnerability. Therefore, the three classifications are dynamic and affect both the availability of consumer resources and the control that the consumers have over utilizing their available resources. See appendix F, figure 4 for a pictorial representation of the Hill and Sharma consumer vulnerability conceptual framework.

Based on this framework, the following hypothesis is proposed:

Hypothesis: Craigslist presence which is the different context under which consumers engage in online transactions is positively associated with increased arrests related to fraud as a consequence.

Summary

The Craigslist online marketplace has received a lot of attention by researchers in different fields. Its gradual expansion in different localities in the United States has provided fertile soil for academics to use it as a natural experiment. The invaluable advantages that the evolution of online marketplaces provided to the consumers did not come without any adverse consequences. While searching buying and selling suitable goods and services as well as searching for jobs or rentals became much faster and simpler for consumers that use large online

marketplaces, by participating in these marketplaces, consumers became more exposed to scammers, fraudsters, and other criminals. Criminals got access to a larger pool of victims and were able to scale their criminal activity. To my knowledge, the current study was the first one to attempt to examine the relationship between Craigslist entry and fraud arrests in different geographic areas over time. Results from this study should be of interest to policy-makers, law enforcement agencies, business organizations that operate as online marketplaces, as well as practitioners and consumers.

Chapter 2 - Review of the Relevant Literature

Summary of Purpose of Research

Did the presence and adoption of the Craigslist online marketplace impact fraud arrests? Did the efficiency in searching and selling in the expanding internet environment facilitate more fraud crimes that lead to arrests? The consumer vulnerability framework (Hill & Sharma, 2020) was used to explore how the presence of Craigslist in some metropolitan statistical areas (MSAs) affected the likelihood of fraud arrests in those areas. This chapter discusses previous research on the role of online marketplaces and how they have changed the way consumers buy and sell products and the way a lot of businesses operate. Studies that are closer to the current timeframe are presented and cited when appropriate to provide insight to the current situation and to highlight pertinent research conducted up to the present. Additionally, research studies conducted around the same time as the data collection for this study are presented and discussed. The chapter digs deeper on the history of how Craigslist was adopted in different markets and discusses previous studies on Craigslist use and their findings. It discusses how technology has affected crime commitment and execution and the efforts by law enforcement agencies to track and combat technology related crime by employing advanced technologies. A detailed discussion about fraud and technology enabled fraud follows that leads to the presentation of the relevant literature on the different definitions of the vulnerable consumer and how fraud victimization by type of fraud is affected by distinct consumer characteristics. In addition, the theoretical frameworks on which the study's conceptual framework was built upon are presented. The chapter concludes with the presentation of the study's conceptual framework, the research question, and the hypothesis.

Online marketplaces

Online marketplaces play a critical role in assisting businesses in starting and sustaining their operations in the online environment (Garcia, 2021). Online marketplaces have allowed millions of entrepreneurs to easily launch a new business (Chen et al., 2021). The responsibility of an online marketplace is to connect the appropriate merchants to the consumers that demand their products or services to achieve a growth in revenues using targeted marketing and a great user experience (Abhinav et al., 2017). Sellers of products or services gain increased access and visibility to the marketplace's users and customer base as well as their marketing tools and techniques, while the marketplace usually charges some type of commission or fee per transaction to the sellers (Garcia, 2021). Businesses can launch their operations in the online marketplace paying a fraction of the cost they would pay to do it on their own, thus escaping a significant upfront investment (Chen et al., 2021). Online marketplaces are a great choice for entrepreneurs that deliver services without pledging a large part of their own resources (Kim & Lee, 2006). While entrepreneurs establish their online presence in the marketplace, the marketplace is responsible for generating demand, maintaining the functionality of the website, dealing with the processing of payments and other logistical processes for shipping and delivering goods (Hagiu & Rothman, 2016).

Online marketplaces are also a source of trust and confidence to consumers that their transactions are safe, efficient and that in the event that something goes wrong, they will have sufficient recourse from the sellers (Garcia, 2021). Using the feedback system of the online marketplace and relying on its already established reputation and goodwill with consumers, an entrepreneur who was previously anonymous to the market, may establish a reputable online brand (Dushnitsky & Klueter, 2011). However, caution should be exercised by entrepreneurs

involved in the online marketplace, especially when starting out. The business model for any new or growing business may have weaknesses and as growth in the online marketplace could be fast and immense, growing too early or too quickly could amplify these shortcomings of the business model and could make those harder to fix (Hagiu & Rothman, 2016). Using a sample of 252 students in 3 U.S. institutions, Garcia (2021) found a significant relationship between perceived online marketplace support of an online marketplace and increased entrepreneurial intention and argued that online markets offer equal opportunity to entrepreneurs regardless of their potential lack of significant resources.

Consumer decision-making in online transactions contains a higher degree of uncertainty compare to that of offline transactions where the customer can see and feel the product and can take immediate possession of the product upon payment (Pavlou, 2003). Trust and perceived risk have been acknowledged as the two primary factors driving or reducing user engagement in online transactions by researchers (Kim & Koo, 2016). Using a sample of 747 experienced buyers in the online marketplace, and a bidirectional model in which trust and perceived risk mutually affect each other, the researchers found empirical support that trust has a direct relationship with transaction intention and found no empirical support that perceived risk is associated with transaction intention (Kim & Koo, 2016).

Craigslist Adoption

Craig Newmark founded the website “Craigslist” in 1995. The website served the Bay Area exclusively at that time. The website is an online platform that operates as a generic classified-advertising website that facilitates multiple unrelated matching markets on a single consolidated platform (Cunningham et al., 2017). Users can post advertisements mainly about jobs, housing, services, personal items, and for-sale items. In 2000, Craigslist expanded to

include other major cities such as Boston, New York, and Los Angeles, and in 2001 it entered the Denver, Atlanta, and Austin markets. Gradually Craigslist started operating in other smaller metropolitan statistical areas (MSAs) and, by 2010, covered most US cities and further expanded to include multiple markets outside of the US (Cunningham et al., 2017). Starting in 2005, Craigslist experienced remarkable growth and received more than 8 billion page views per month by the end of 2006, making it one of the top-ten-visited English websites (Kroft & Pope, 2014). Because of the enormous growth and the widespread usage of the website after 2006, the present analysis was focused on the years from Craigslist's inception in 1995 to its widespread expansion in 2006.

Craigslist Use

The continued popularity and dominance of Craigslist is somewhat unexpected, given that the site's appearance is still nearly as plain as it was when it was first launched and given that the site does not provide any insurance to users while permitting buyers and sellers to remain anonymous (Fremstad, 2017). Despite these facts, Craigslist has altered the way consumers buy, sell, and, most likely, the way they dispose of secondhand goods (Fremstad, 2017). Scholars have studied the effects of Craigslist in different domains and different aspects of our everyday lives. Craigslist created a new online marketplace for consumers that brought growth in online search and lowered information acquisition costs. Internet outlets like Craigslist decrease market inefficiencies by reducing search costs and lowering price dispersion (Brynjolfsson & Smith, 2000). Craigslist has a substantial impact on both online and offline markets. Craigslist's entry was linked to decreased classified advertising rates, higher subscription prices, increased differentiation from each other, reduced circulation (Seamans & Zhu, 2014), and a considerable decline in the number of newsroom and management staff, further bringing a reduction in news

coverage of politics and related corruption and a reduction in readership (Djourelova et al., 2021) in traditional print newspapers. The availability of Craigslist brought a decrease in usage and posting fees for competing online job posting websites (Brenčić, 2016), significantly reduced classified job advertisements in newspapers, and led to a considerable reduction in the apartment and housing vacancy rates but did not affect unemployment rates (Kroft & Pope, 2014). The revolution of Craigslist reduced solid waste added to landfills (Fremstad, 2017) and municipal solid waste per capita generated (Dhanorkar, 2019) and was related to a rise in the price dispersion of secondary concert ticket markets (Bennett et al., 2015). The impact of Craigslist's availability on essential issues related to public health has also been examined, and researchers found a positive relationship between Craigslist's availability and human immunodeficiency virus (HIV) occurrence rates (Chan & Ghose, 2014; Greenwood & Agarwal, 2016) and prostitution trends (Mojumder et al., 2016). Despite some debate among researchers on whether Craigslist is making the work of law enforcement officers easier or tougher, researchers found empirical support that Craigslist's erotic services were linked to a 17.4% reduction in the female homicide rate and found modest evidence that Craigslist erotic services led to a decrease in female rape offenses, results that suggest the reduction in female violence could be because prostitutes moved from the streets to indoor spaces and were connected more efficiently with safer clients (Cunningham et al., 2017). Other scholars studied national panel data from 1997 to 2008 and showed that Craigslist's entry was associated with a 14.9% rise in drug abuse treatment admissions, a 5.7% surge in drug abuse violations, and a 6.0% increase in drug overdose deaths (Liu & Bharadwaj, 2020).

Technology and Crime

Internet technologies have been migrating aspects of criminal activity once associated primarily with the physical world, into the digital domain (Jerde, 2017). Examples of crimes accelerated by internet technologies include drug trafficking, human trafficking, sexual exploitation, and money laundering (Jerde, 2017). Advanced internet technologies have also enabled sophisticated cybercrime in large scales that could threat national security and the well-being of countries, organizations, and individuals (Choo, 2011). One definition of cybercrime is when computers or computer networks and other devices in information and communications sphere are used as a means of criminal efforts as well as a way of committing crimes (Almazkyzy & Esteusizov, 2018). Malicious software has been used by criminals on computers, networks, smart devices as well as ATMs and point-of sales machines to gain access to sensitive data (Choo, 2011).

The internet is an environment that provides circumstances that enable and assist criminals to a large extend in finding suitable targets for their crimes (Van Wilsem, 2013). The reasons for the criminal opportunities on the Internet and their connection to incentives of potential offenders are summed very well on the acronym SCAREM that stands for *stealth* permitted by aliases, *challenge* to win against any applicable security measures, *anonymity*, for successful crime execution without leaving traces to the criminals, *reconnaissance* which is the easy and inexpensive access to scan vulnerable targets, the potential of *escape* without getting caught and *multiplicity* which is the capability to create new possibilities of similar crimes in the future from a single internet crime by targeting the same victims or creating databases of potential victims by hacking into online systems (Newman & Clarke, 2003).

In the current technological environment, even more advanced technologies such as artificial intelligence that has been progressing very rapidly could potentially be used by transnational criminal organizations and cybercriminals to conduct more sophisticated criminal activities with yet unknown and unforeseen circumstances (Peters, 2019). While a significant number of wrongdoers employ the dark web to support their illicit endeavors, as highlighted by Jerde (2017), it is worth noting that certain offenders exploit lawful online platforms like e-commerce marketplaces to orchestrate fraudulent activities and scams. These specific criminal behaviors will be examined in greater detail in subsequent sections.

Crime and Crime Tracking

Law enforcement agencies have been struggling to adopt to this new environment to track and crack down technology enabled crime. In his thesis, Jerde (2017) identified several challenges that law enforcement agencies face when enforcing against border-related crimes assisted by Internet technologies. An essential recommendation that Jerde (2017) suggests is to change mindsets of law enforcement agents through technology training and investigative support by technology experts. When agents are trained in these technologies, they can implement smart enforcement techniques that adapt to the dynamic environment of hybrid crime to overcome criminal affordances. Hybrid crime is defined as crime that relies on both physical and digital elements and each element has to fulfill a significant part of the activity to undertake the overall crime (Jerde, 2017).

Advanced technology tools have also been employed by police and law enforcement agencies to map and track crime. Closed Circuit Television (“CCTV”), crime mapping, databases, biometrics, predictive analytics, open-source intelligence, applications, and a large amount of other technological solutions such as multi-object detection and tracking using

machine learning (Ahn & Han-Jin, 2019) have been used for urban safe management (Gemma Galdon, 2018). Geographic Information Systems (“GIS”) can be used to map crime and to identify hot spots where crime is a severe issue while at the same time privacy-enhancing mechanisms can contribute to greater awareness and response to privacy and security risks, concerns, and the rights of the data subjects (Gemma Galdon, 2018). Combining temporal and geospatial analysis, can provide investigators, security consultants and law enforcement agencies the chance to have a better more complete picture about the commission of the crime to organize tracking and intervention strategies (Keatley, 2018).

It is crucial to understand that crimes do not take place in isolation from their surrounding actions events and locations, and in order to comprehend the full crime process from its inception to its commission, dynamic methods that employ a variety of technological tools and human experience and crime resolution ability are needed (Keatley et al., 2021). Smart policing involves the application of approaches driven by data usage and analysis by police authorities (Afzal & Panagiotopoulos, 2020). As new data-driven applications have been restructuring the landscape of smart policing, directed data intentionally captured by police officers in conjunction with automated data collected inherently by a device or existing system (like CCTVs, police body cameras, dash-board cameras, automatic number plate readers, smart phones, etc.) and crowdsourced data created through open source devices platforms or systems such as social media sites are all used by police agencies that perform various methods of analysis on those data sources to track and resolve a crime (Afzal & Panagiotopoulos, 2020). With this wide availability of data, it is likely that smart policing will evolve further to include data analysis procedures that employ artificial intelligence systems to effectively combine data sources for crime tracking and resolution.

Fraud

Millions of individuals fall victim to fraud around the world every year. According to the recent United States Federal Trade Commission (FTC) data book, individuals reported losing \$8.8 billion to scams in 2022, \$2.6 billion more compared to those reported lost in 2021 (Rayo, 2023). When seeking statistics from the years closer to the year of the study, it is noted that based on the FTC 2004 consumer fraud report by extrapolating the results of the survey, about 35.6 million individuals were victims of fraud in 2004 (Anderson, 2004). In 2006, the FTC received over 670,000 Consumer Sentinel Complaints amounting to over 1.1 billion in fraud losses, of which 36% were identity theft complaints and 64% were other types of fraud (Federal Trade Commission, 2006). Fraud can also have large nonmonetary costs to the individuals that fall victims of fraudsters such as emotional stress and psychological trauma and these nonmonetary costs are hard to quantify and likely greater than the financial losses (Lee & Soberon-Ferrer, 1997). Fraud offenses are not a novel form of crime and have dishonesty as their common denominator (Smith, 2008). Fraud comprises of a wide range of behaviors that are associated with deception or deceit with the intention it will result in some form of gain (Button et al., 2009). Fraud is an incessant element of the commercial landscape (Raval, 2021).

There are different types of fraud crimes. There is fraud by false representation and identify theft is a common form of this type of fraud. There is fraud that results from failure to disclose information and there is fraud by abuse of one's position (Button et al., 2009). One of the most detailed typologies of fraud by victim have been produced by Levi, a Professor of criminology at Cardiff University in the United Kingdom and breaks the categories down by whether the victim is in the private or public sector and includes 3 subcategories under each of the two sectors and 34 different examples of different types of fraud (Levi, 2008b). The scams

that cost the most money to consumers in 2022 in the United States according to the FTC were investment scams with reported losses of \$3.8 billion and impersonator scams with reported losses of \$2.6 billion (Rayo, 2023). The top consumer fraud issues that were identified by the 2004 FTC survey almost two decades ago, are advanced fee loan scams involving a consumer paying money to a seller before receiving a promised or guaranteed loan or credit card, being billed for a membership without having agreed to it previously, credit card insurance and credit repair services, paying money for a purchase without receiving the promised prize or the prize was not as promised, billed for internet services without agreeing, and purchasing a membership in a pyramid scheme (Anderson, 2004). Some of the most notable forms of fraud that affected individuals in the United Kingdom were mass marketing scams, investment frauds, identity fraud and fraud affecting small businesses (Button et al., 2009). Under mass marketing scams, the criminals pretend that they sell something they do not possess to take your money and never deliver the product, or they supply a product or a service of lower quality than the one promised, or they use aggressive marketing techniques to persuade consumers into buying something they do not need or they assume someone else's identity to commit fraud (Button et al., 2009). Mass marketing scams are some of the most commonplace fraud occurrences in online marketplaces.

In an attempt to access more detail on fraud data from the time of this study, we studied the Federal Trade Commission (FTC) Consumer Fraud Survey from 2004 (Anderson, 2004). The survey examined and asked consumers about several different types of fraud such as advance fee loans and credit cards, credit repair, credit card insurance, unauthorized billing for buyer's club memberships, unauthorized billing for internet-related services, unauthorized billing for information services, pyramid schemes, business opportunity offerings with false earnings claims or false offers of assistance, government job promises and prize promotions (Anderson, 2004).

Several of those types of fraud could have established the initial contact with the consumer on a Craigslist ad. The survey asked consumers if they had made any purchases from an Internet web site in the last year and 38% of respondents responded yes to this question. About 25% of respondents had made at least ten purchases on the internet the past year and four was the median number of purchases. Fraud incidents by type of product involved based on the 2004 FTC Survey of Consumer Fraud are provided in Appendix A and how victims first learned about the product or service involved in the fraud is shown in Appendix B.

Another related source of information on consumer fraud incident data during the period of the study is the Consumer Sentinel, the complaint database developed and maintained by the FTC (Federal Trade Commission, 2006). The total number of fraud complaints, the amount paid and the distribution of fraud complaints from this report is shown in Appendix C. The total number of Internet-related fraud complaints, the amount paid and the distribution of internet-related fraud complaints by amount paid is shown in Appendix D. Internet-related fraud complaints by consumer age are shown in Appendix E. The report also presents useful information on fraud consumer complaints by state and by largest metropolitan area. See the full report for more details.

Technology and Fraud

The introduction of the internet moved some fraudulent activities in the form of scams online, first in the form of spam and email and then in online classified advertisements and other websites such as dating sites (Jones & McCoy, 2014; Park et al., 2014; Park et al., 2016). Advanced technologies, such as email, online advertisements, online marketplaces, and social media platforms, have changed the landscape of fraud, both in terms of offending and victimization. They have made it possible for offenders to commit fraud on a larger scale than

before because they can now access a larger pool of potential victims. In the context of the internet and evolving technologies, fraud can be understood as a “cyber-enabled” crime often referred to as “online fraud .” However, while fraudsters use advanced technologies and the internet to facilitate fraud execution, they are not entirely dependent upon it. Even cyber-enabled crimes can be committed in two territories, online and offline, in both terrestrial and virtual environments, sometimes concurrently and sometimes not at different phases of the commission of the crime (Levi et al., 2015). Even though new methods of payment have enlarged the pool of potential fraud targets, there are also conventional communication methods such as phone calls, text messaging, and in-person conversations that continue to facilitate the realization of essential aspects of many fraud offenses and, in that sense, it may not be fitting to separate fraud into distinct categories such as online or offline fraud (Cross, 2019). Despite this critical realization, numerous researchers have studied what they call “online or cyber fraud .” The term “online fraud” refers to “the experience of an individual who has responded through the use of the internet to a dishonest invitation, request, notification or offer by providing personal information or money which has led to the suffering of a financial or non-financial loss of some kind” (Cross, 2016; Cross et al., 2014).

There are several ways that fraud can be enabled in the online marketplace. Fraudsters use different methods to persuade their victims to share their personal information and engage in behaviors such as making a payment that could result in financial harm. Current scholarly work on online fraud has examined the types and methods of these crimes, such as “get rich quick frauds” like advance-fee fraud, lottery fraud, fake prize fraud (Buchanan & Whitty, 2014), online dating romance scams (Buchanan & Whitty, 2014; Whitty & Buchanan, 2012) online auction fraud (Conradt, 2012), online consumer fraud victimization (Garg & Nilizadeh, 2013; Lee,

2021a, 2021b; Van Wilsem, 2013) and phishing (Lee, 2020; Leukfeldt, 2014). Computer scientists have also explored and developed systems and algorithms to detect fraud or scams in web-based marketing and advertisements (Bhaskar, 2015) and to both identify and fight fraud by using a mutual two-factor authentication system while also educating the consumer on the methods that fraudsters used to take over their online accounts (Kawase et al., 2019). More recent scientific efforts have led to the development of machine learning algorithms for real-time fraud detection in the online marketplace (Dong et al., 2021).

Fraud that is more specifically facilitated through the use of the Craigslist platform has been examined by researchers that have performed an empirical analysis of targeted Nigerian scams posing as buyers on Craigslist operating primarily out of Nigeria but also using services of agents in the US to facilitate the sending and receiving of payments and shipping of products and discovered that five groups are responsible for over 50% of the scam payments received (Jones & McCoy, 2014). Advanced fee fraud is a form of fraudulent activity that asks people to pay a fee upfront in anticipation of receiving something of greater value -loan, contract, money, stock, or warrants- for the deal to go through. The advance payment may be described as a fee, tax, commission, or incidental expense that will be repaid later. Advanced fee fraud on Craigslist was analyzed, and the results showed that ten groups of scammers were responsible for nearly half of the total scam attempts (Park et al., 2014). Other scams thriving on Craigslist that have been the subject of scholarly work were automobile scams targeting mostly educated white males (Garg & Nilizadeh, 2013).

Vulnerable Consumer

Consumer vulnerability is frequently defined as a state of powerlessness, which could result from an interaction of individual characteristics (e.g., age, health, cognitive capacity,

socioeconomic status); individual states (e.g., life transitions), and external circumstances (e.g. discrimination) (Baker et al., 2005). A vulnerable consumer is someone who, due to their personal circumstances, is especially susceptible to detriments (Coppack et al., 2015). Vulnerable consumers have been labeled as “at-risk” consumers with limited capability to participate in a marketplace (Hoffmann & McNair, 2019). Consumers could be vulnerable in different scopes such as demographic, economic, psychological, and social (Xiao & Porto, 2021).

In their recent study, Xiao & Porto, (2021), separated vulnerable consumers into four different categories, the young, the poor, those who lack confidence in achieving their financial goals and fraud victims. They used nationally representative U.S. data to test the contributions of the three financial capability components to financial well-being comparing the whole sample with these subsamples of vulnerable consumers and found that for the whole sample, financial behavior contributed the most to financial wellbeing with financial skill coming second and financial knowledge contributing the least. When testing vulnerable consumers, in the older group, financial skill is what contributed the most to financial wellbeing versus financial behavior that contributed the most for the younger group. For people living in or near poverty, only financial behavior contributed to their financial wellbeing and for people that are confident and very confident in their ability to achieve financial goals, all three components contributed while for the least confident group only financial behavior contributed to their wellbeing. For the fraud victims subsample what contributed most was financial behavior as well.

Hill and Sharma (2020) argue that consumers should not be labeled vulnerable based solely on their individual characteristics (e.g., children, elderly, lower-income, minorities) because it is specific difficult situations that consumers deal with that define whether they should

be considered vulnerable or not. In the most basic approach, certain thresholds or resources have been identified as vital for consumption adequacy, which is the amount of goods and services that consumers need to meet their most basic survival needs (Martin & Paul Hill, 2012). Hill and Sharma (2020) expanded this basic approach to include additional factors such as education and ability and suggested that consumption adequacy can be a threshold below which consumer vulnerability is undeniably triggered. However, it is essential to note that the fact that a consumer is, for example, wealthy and educated, does not automatically make them not vulnerable.

Wealthy and educated consumers can be vulnerable even though they have adequate resources to meet their needs because they can be targeted by deceiving marketers with asymmetric access to the most relevant information about the promoted product or service (Hill & Sharma, 2020). In addition, the consumer does not have the knowledge or experience to decipher potentially deceptive marketing practices that could be harmful (Hill & Sharma, 2020).

Factors that Affect Fraud Victimization

Research on victims of fraud specifically has brought attention to the similarities of the perception and treatment of fraud victims to those of rape victims, as at times the victims were thought by legal authorities to be partly responsible for falling victims of those crimes (Levi, 2008a; Shichor et al., 2000). Fraud has been studied widely in different contexts and researchers have used different definitions and subcategories of fraud in their studies. There are many different types of fraud, and as such the characteristics of the consumers that are susceptible to different types of fraud would also vary accordingly, so generalizing on what makes consumers susceptible to falling victims of fraud would not be prudent (Button et al., 2009). Therefore, and as it is discussed in more detail in this section, fraud is a highly complex topic that makes it

difficult to simply use demographics or other factors to identify specific populations that are vulnerable and more likely to become victims of fraud.

Button, (2009) in his research using data from consumers in the United Kingdom, presented different victim profiles like the victims by knowledge, who are then broken down to those that may never know they have fallen victims of fraud such as victims of fake lotteries or fake charity scams, those that know but do not report the scam, those that know and they report the scam to the authorities and those that may be so influenced by the scam that even though they know, they refuse to believe it like victims of investment fraud or mass marketing fraud which are likely to be chronic victims of fraud, responding to multiple requests by similar scammers. There are victims of fraud that are careless when leaving their personal information exposed to potential scammers for example, online or offline. Victims have been profiled by their degree of co-operation with the fraudsters ranging from no co-operation to some when the victim for example responded to a phishing email and provided personal information, to considerable co-operation for example when the victim actively seeks out investment schemes or working scams (Titus, 1999). Another way to categorize victims of fraud is by loss ranging from small to large sums of money or other non-monetary losses and by repeat victimization (Button et al., 2009).

A prevailing notion, frequently discussed in media discourse, suggests that older individuals are more susceptible to fraud victimization (Titus, 1999). However, counter to this belief, several studies have presented contrasting findings, asserting that younger individuals may actually be at a higher risk of falling victim to fraud (Muscat et al., 2002; Titus et al., 1995; Van Wyk & Benson, 1997). Notably, research conducted by Anderson (2004) did not identify consumers aged 65 or older as being at any greater risk of experiencing fraud victimization when compared to their younger counterparts.

Previous studies have shown that individuals with more positive attitudes towards taking financial risks were also more likely to be targeted by scammers and (Van Wyk & Benson, 1997) and individuals that exhibit lower levels of self-control were also more likely to become fraud victims by engaging in behaviors to gain instant gratification (Holtfreter et al., 2008). A study using large-scale longitudinal Dutch data, showed that people with low self-control were more likely to fall victims of consumer deception because they routinely engaged in activities that expose them to fraudsters (Van Wilsem, 2013). Results from this study also suggested that impulsive people were more likely to be victims of fraud partly because they executed more risky online activities. The study's results showed that fraud victimization was inversely related to age and positively associated with educational level, online shopping, and participation in online forums (Van Wilsem, 2013). Appendix G provides some of the statistics on fraud victims presented in Button's study (2009) using data collected in the United Kingdom. It is notably intriguing to examine the statistical data from this study concerning various fraud categories, and one notable observation is the consistent reporting of identity fraud. In contrast, it is evident that other forms of fraud, such as investment schemes and mass marketing scams, have consistently exhibited notably lower levels of reporting to the authorities among consumers in the United Kingdom.

The Bureau of Economics which is an entity within the Federal Trade Commission, in collaboration with the Federal Trade Commission issued a report (Anderson, 2019) that presented 19 different categories of fraud in the United States. The ones most commonly reported in the study were when consumers fell victims of fraudulent weight-loss products, fraudulent computer repair services, falling victims of deception that they owe money to the government when they don't, unauthorized billing for buyer's club memberships and

unauthorized billing on a mobile phone bill. About 15% of the victims responded that they had fallen victims of one or more frauds. Middle-aged consumers ranging from 35 years old to 54 years old were the group with the highest rates of fraud reported in the survey. Education was shown to be positively associated with fraud with survey participants holding a bachelor's degree less likely to report fraud victimization. Women were more likely to report being victims of fraud compared to men and those with a higher risk tolerance were also more likely to fall victims of fraud. The survey results showed empirical support that respondents that had experienced an adverse life event in the past two years such as divorce or the loss of a loved one were also more likely to report having fallen victims of fraud.

The Stanford Center on Longevity and FINRA (DeLiema et al., 2017) conducted a pilot study that separated fraud into seven distinct categories: (1) investment fraud, (2) consumer products and services fraud, (3) employment opportunity fraud, (4) prize and lottery fraud, (5) phantom debt collection fraud, (6) charity fraud, and (7) relationship and trust fraud. They used a panel of 2000 U.S. adults and found that about half of them reported having fallen victims of one or more of those categories of fraud in the past year. The study's results provided empirical support that victims were generally of younger age and came from more diverse backgrounds in race and ethnicity compared to non-victims.

Researchers have examined elderly populations as targets for different scams (Han et al., 2021; Lichtenberg et al., 2013; Raval, 2021) and a lot of the focus has been more specifically on lottery and investment fraud scams. When examining how race is related to fraud victimization, researchers showed that older black adults are less susceptible to scams compared to older white adults with similar individual characteristics (Han et al., 2021). A study with data from the Health and Retirement Study (HRS) which is a longitudinal database that surveys adults in the

United States older than 50 years old, showed that respondents who were more likely to have been fraud victims were those older adults who were relatively younger, those with higher education rates, those that were in financial need and those that were experiencing psychological difficulties (Lichtenberg et al., 2013). Another study examining available secondary datasets of victims from 23 legal cases of fraudulent activities in the United States involving payday loan applications, student debt relief applications, and business opportunity scams, used the method of matching the location information of victims with the demographic information of the community at the zip code level, and showed that communities with more Black and elderly populations and populations with higher median income, had higher rates of fraud victimization (Raval, 2021). A different study using the 1993 Survey of Consumer Behavior commissioned by the American Association of Retired Persons which is closer to the timeframe of the data used in the current study, focusing on human and social capital, showed that the elderly, the less educated and the poor respondents were more susceptible to fraud due to lower levels of cognitive ability and social interaction (Lee & Soberon-Ferrer, 1997). When studying immigrant populations in the United States from Latino backgrounds using qualitative data, researchers showed that immigrants with low-income were more likely to become fraud victims as they did not have adequate proficiency in English and sufficient familiarity with the local marketplace (Marlowe & Atilas, 2005). Another study that examined respondents in isolation from other members of their community, respondents with lower levels of financial knowledge and those who were not financially secure were also more likely to fall victims of financial scammers (DeLiema et al., 2019). In contrast to these previous studies when only studying investment specific types of fraud scams, researchers found that survey participants with higher levels of

financial literacy had higher likelihoods of fraud victimization compared to those with lower levels of financial literacy (Kieffer & Mottola, 2017).

Theoretical Research related to Fraud Victimization

The economics of information theory proposed a framework for the information search behavior of consumers (Stigler, 1961). The basic principle of this framework is the relaxation of the assumption of perfect market conditions where all purchasers would not have access to complete information about available alternatives in the marketplace. Therefore, the variance in the perceived cost of additional search and the expected benefits of this search influence consumers' behavior when searching for information, and the buyer would continue the search activity until the marginal cost of obtaining additional information equals or exceeds the marginal benefit (Stigler, 1961; Urbany, 1986). Adding Craigslist as a search tool would make search less costly over time (as it would finding buyers for sellers). Information asymmetry (Akerlof, 1978) between buyers and sellers exists primarily due to the buyer's search costs (Stigler, 1961). Among the essential variables that influence consumer search behavior based on previous research is the availability of software agents that can economically form tailored consideration sets for the user and the availability on the Web that provides what is called "infomediaries" that can easily manage the enormous information overload for the user (Hagel et al., 1999).

As the acquisition and processing of information are very different in online settings, a proposed new theoretical framework was developed to explain how the principles of the economics of information theory can be structured to adapt to the significant changes that the Web Economy brought to the marketplace and in consumer behavior – the related figure 3 is provided in Appendix F below (Biswas, 2004). In the Appendix below is a pictorial

representation of this framework in (a) the traditional economy compared with (b) the same framework in the Web Economy (Biswas, 2004). The relationship between search efficiency and amount of search follows two opposing paths in the traditional and web economy because the person with higher search efficiency engages in more search in the traditional economy expecting higher benefits (Goldman & Johansson, 1978; Ratchford & Srinivasan, 1993), compared to the fact that in the web economy search costs are low, and the main focus is on managing the enormous information overload by the user (Shapiro & Varian, 1999). Craigslist serves as an information agent that decreases the amount of search and increases efficiency in the information search process.

Partially based on the above concept of increasing efficiency in information search and reducing information asymmetry, a conceptual framework was developed to examine the impact of the Craigslist online marketplace as an information agent that changes the context under which consumers buy and sell products and services and was expected to amplify fraud arrests because fraudsters have access to a larger pool of potential victims. The consumer vulnerability framework serves that purpose well (Hill & Sharma, 2020) and a modified consumer vulnerability framework served as the main conceptual framework for this study. The term consumer vulnerability has been widely used informally in the literature to describe difficult situations for consumers. Initial research on this concept transpired in two different paths, one that studied the relative disadvantage among subpopulations and one that focused on different marketer manipulations that influenced consumer decision-making processes. Hill and Sharma (2020) defined consumer vulnerability as: “a state in which consumers are subject to harm because their access to and control over resources are restricted in ways that significantly inhibit their ability to function in the marketplace” (Hill & Sharma, 2020, p. 551) and "a state that

occurs when several factors are met and integrates both the experiencer's perspective (experienced vulnerability) and the perceiver's perspective (observed vulnerability) into their discussion of identification" (Hill & Sharma, 2020, p. 553).

Vulnerability can exist along a spectrum, where individuals who are vulnerable can either directly experience it or have it recognized by others, such as third parties in their social environment. The two critical antecedents of consumer vulnerability in the Hill and Sharma framework are limited resources and lack of control over resource usage. Resources are classified as individual resources (e.g., money, native intelligence, physical and mental health), interpersonal (e.g., social capital, belonging, and social support), and structural (e.g., marketplace factors such as business practices, laws, and their enforcement, and marketplace configurations). Control over resource usage is conceptualized using the individual, interpersonal, and structural classifications. Furthermore, the phrase resource-control combination describes occasions when multiple resource and control categories are co-mingled or combined to impact consumer vulnerability. Therefore, the three classifications are dynamic and affect both the availability of consumer resources and the control that the consumers have over utilizing their available resources. Because multiple categories of resources and control affect consumer vulnerability concurrently, the antecedents in the conceptual framework for this dissertation were considered to affect both resources and control simultaneously. Contexts in the Hill and Sharma (2020) framework are "the individual contexts in which vulnerability can be experienced or observed to be fostering or inhibiting) consumption adequacy" (p. 562).

Finally, consequences are incorporated in the Hill and Sharma (2020) framework and are divided into nondefensive and defensive mechanisms. Nondefensive mechanisms are when the consumer does not resist or react to the situation. In contrast, defensive mechanisms are present

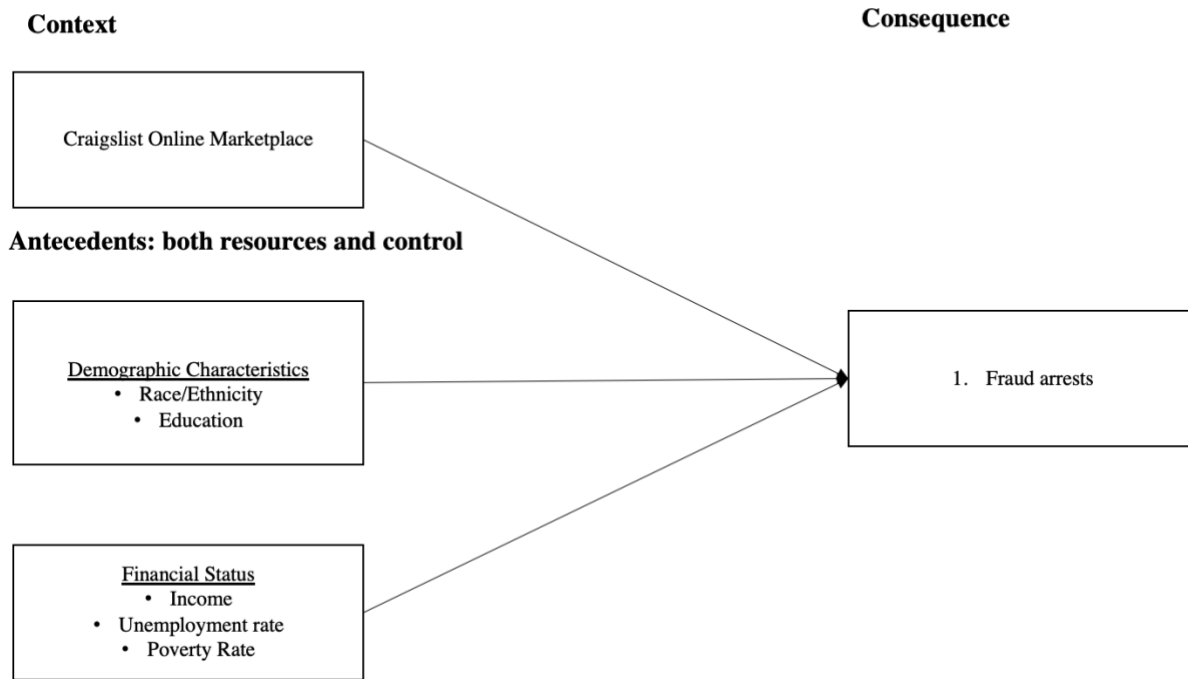
when the consumer attempts to resist and potentially create new structures to combat and change the situation. See appendix F, figure 4 for a pictorial representation of the Hill and Sharma consumer vulnerability conceptual framework.

Conceptual Framework

In the attempt to study how Craigslist affects fraud arrests, the following conceptual framework was developed, as presented in Figure 1. The key independent variable in the framework was classified as a structural resource and control, and it was whether the Craigslist online marketplace is present in an MSA or not. This distinction created the two different contexts that are the main focus of this study. Demographic variables and financial status variables all represented individual resources that also affected the level of control respondents had on using their resources. The consequences in this framework are arrests related to fraud. It was assumed that when fraud was detected, the consumers had not had effective defense mechanisms.

Figure 1

Pictorial Diagram of Modified Consumer Vulnerability Framework



Research Question

Did the presence and adoption of the Craigslist online marketplace impact fraud arrest occurrences in the localities that adopted Craigslist compared to the ones that did not?

Hypothesis

Hypothesis: Craigslist presence which is the different context under which consumers engage in online transactions is positively associated with increased arrests related to fraud as a consequence.

Summary

This chapter provided an overview of the relevant literature on online marketplaces and how they help businesses start and sustain their operations in the online environment by providing the infrastructure for the businesses to operate and the trust and confidence to the consumers that their transactions are safe, effective, and efficient. The challenges of operating in the online marketplace were also discussed. An overview of the relevant literature on the Craigslist adoption and use of the technology was provided and how its use affected different industries like the printed advertisements market, the job search, and the rental search landscape as well as how it contributed to reducing solid waste among other trends. The literature on the relationship between technology and crime was discussed in more detail as well as the literature on crime tracking. Relevant literature on fraud and how fraud was enabled and heightened by technological advances was presented. Moreover, a discussion on the characteristics and attributes of the vulnerable consumer in relevant research studies was highlighted. Lastly, the theoretical framework based on which the conceptual framework for this study was developed was explained in detail. A discussion of the seminal theoretical work was offered along with a discussion of relevant studies. Chapter 3 presents the data and methodology for this study.

Chapter 3 - Methods

Data and Sample

This study used a combination of three different sources of data. Unique data sources were used to determine Craigslist entry, fraud arrests, and county level characteristics.

Craigslist entry data were collected from the authors of the study “Does online search crowd out traditional search and improve matching efficiency? Evidence from Craigslist” (Kroft & Pope, 2014). Upon request, the authors were able to provide data associated with Craigslist entry for every MSA from 1995-2006. Craigslist entry concentration maps and Craigslist entry and volume data were provided in Appendix H.

For the fraud arrests which is the dependent variable, the Uniform Crime Reporting (UCR) dataset was used which is a city, county, and state law enforcement program that delivers a nationwide view of crime based on the submission of statistics by law enforcement agencies throughout the United States (Federal Bureau of Investigation, 1991-2006). For the study’s main analysis, data from 1995 to 2006 were used. The data starting from 1991 were used to test the parallel pre-trends assumption. The UCR Program has expanded its span, significance, and size since its inception over seven decades ago (Federal Bureau of Investigation, 2004). In 1927, the Committee of Uniform Crime Records was established by the International Association of Chiefs of Police (IACP) with the aim of devising a standard system for gathering consistent crime statistics. The committee identified the number of offences known and whether or not there was an arrest as the measure on criminality. Congress enacted legislation in 1930 that gave the authority to the attorney general to collect crime information and the Federal Bureau of Investigation (FBI) started managing the UCR program in September of 1930 (Federal Bureau of Investigation, 2004). The program began with law enforcement agencies in 400 cities from 43

states submitting crime data in January 1930, and by 2004, it involved approximately 17,000 law enforcement agencies nationwide that voluntarily provided crime statistics. Starting from 1969, state UCR programs began sending data collected by local agencies within the state to the national UCR program. One of the essential components of passing the responsibility of collecting crime data from local agencies from the Federal Bureau of Investigation (FBI) to the state was a guarantee of consistency and comparability in the data forwarded by the state program because each state program had to adhere to the national UCR program standards. In 1984, a new national data collection system started developing that would gather information about each crime incident. By 1990, the National Incident-Based Reporting System (NIBRS) was launched, which collects reported data on each incident and arrest within 22 offenses categories made up of 46 specific crimes known as group A offenses. For each incident, administrative, offense, victim, property, offender, and arrestee information is collected by law enforcement. Furthermore, data is collected for 11 Group B offenses for which only arrest data are collected. Over the years, the FBI has been encouraging law enforcement agencies to transition from the traditional Summary Reporting System (SRS) to the NIBRS. The goal was to eventually replace the SRS with NIBRS entirely. By January 2021, the FBI officially retired SRS and began collecting data solely through NIBRS (Federal Bureau of Investigation, 2023b).

The data used for this study provided county level information on the number of arrests in the county reported to the Federal Bureau of Investigation's Uniform Crime Reporting (UCR) program each year by police agencies in the United States. This dataset has been widely used by researchers in various areas of research including research on criminology and criminal justice, policing, public health, urban studies, and cybercrime. The arrest reports included data on 43 offences including fraud arrests. Because the UCR data are at the county-level, the Quarterly

Census of Employment and Wages (QCEW) county to MSA crosswalk table (U.S. Census Bureau, 2013-2022) was used to aggregate county level data at the MSA level to match the Craigslist entry data.

The sample was 384 MSAs on average multiplied by 15 years from 1991 to 2006 with the exception of year 1993, for which FBI crime data were not available for a total of 5,760 MSAs. 61 MSAs did not report crime data so the total sample was 5,699 MSAs. It is important to highlight that out of the total 5,699 MSAs, 399 reported zero fraud arrests during the analysis period, while the remaining MSAs reported arrests above zero. To ensure data quality for the UCR data, in choosing the appropriate sample, following what Anderson (2014) and Fone et al. (2023) did in their studies using UCR arrest data that included different types of sample construction, MSAs that reported unusually high fraud arrests more than two standard deviations away from the mean were dropped from the main analysis (those were 377 total out of the 5,699 MSAs in the sample for all the periods so the total sample for this study was 5,322 MSAs). This resulted in the study's arrests data having similar distributions and sample construction as other peer-reviewed articles that have used UCR arrest data (Anderson, 2014; Fone et al., 2023). This practice was undertaken due to the fact that each count of arrests represents a compilation of police agency reports, and not all agencies submit reports consistently every year (Anderson, 2014). To further safeguard against this issue, this study controls for the number of agencies reporting within an MSA for any given year. To do that, a specification was added that controls for the number of agencies that report arrest data (Anderson, 2014) and includes only those MSAs with 90% coverage or above. Coverage is the percentage of police and other enforcement agencies that reported arrests. For example, for a county with all agencies reporting 12 months of arrest data, the coverage indicator takes on the value of 100. For a county with none of the

agencies reporting arrest data for any month, the coverage indicator takes on the value of zero. The coverage indicator measure was developed by the ICPSR, which stands for the Inter-university Consortium for Political and Social Research and is a global collaboration comprising over 750 academic institutions and research entities (Inter-university Consortium for Political and Social Research, 2023). ICPSR plays a pivotal role in offering guidance and instruction related to social science research by facilitating access to data, curating datasets, and imparting expertise in research methodologies. The coverage indicator has been used by researchers as a sample criterion to assure data quality (Freedman & Owens, 2011; Thomas & Shihadeh, 2013). Anderson (2014) in their study used in their sample the counties with coverage 65% or above. In this study 90% coverage or above was used as the cut-off for one of the specifications to be more conservative. In addition, the results derived from model specifications that include the whole sample and do not incorporate these sample restrictions are showcased within the sensitivity analysis which is detailed in the corresponding sensitivity analysis section under chapter 4 and in Appendix I.

The US Census Bureau county-level data (U.S. Census Bureau, 1995-2006) was used to extract the study's control variables including median income, unemployment percentage, poverty rate, education, and racial background. The Current Population Survey (CPS) is one of the oldest, largest and most well-recognized and widely used surveys in the United States (Leslie R. Flores, 2019). The CPS is a monthly survey sponsored jointly by the U.S. Census Bureau and the U.S. Bureau of Labor Statistics (BLS). The CPS is administered by the Census Bureau using a probability-selected sample of about 60,000 eligible households. Survey data generally are collected during the calendar week that includes the nineteenth of the month. The questions inquire about activities during the prior week for those who are employed and during the prior

four weeks for those who are unemployed. Individuals eligible to participate in the CPS are those who are U.S. residents and are age 15 or over who are not in the armed forces. Labor data are published only for people that are 16 or over as those below the age of 16 have legal limitations in participating in the labor market (Leslie R. Flores, 2019). The CPS collects a wide range of information on employment and labor force participation, including data on employment status, occupation, industry, earnings, and hours worked. The survey is conducted through in-person and telephone interviews and covers a representative sample of the US population (US Census Bureau, 2021) . The data collected from the CPS is used by policymakers, researchers and businesses to understand trends in the labor market and to develop policies related to unemployment and labor force participation (US Census Bureau, 2021). The CPS is also used as the primary source of data for calculating the official unemployment rate in the United States (US Census Bureau, 2021).

Metropolitan Statistical Areas

In the context of U.S. urban demographics and the U.S. Census Bureau, an MSA refers to a region typically encompassing a large city and its surrounding communities that are closely linked by economic and social ties. MSAs are defined in terms of entire counties, and they consist of at least one urbanized area with a population of 50,000 or more, along with adjacent counties that have a high degree of economic and social integration with the urbanized core. The U.S. Office of Management and Budget (OMB) defines metropolitan statistical areas based on set criteria, using data from the Census Bureau. These areas revolve around a central population hub and nearby communities that share strong economic and social ties within this hub. The current definitions of these areas apply the 2020 criteria, which were published in the Federal Register on July 16th, 2021 (U.S. Census Bureau, 2023a).

The specific definitions have changed and evolved over the years. By 1990, the term metropolitan area (MA) was used to collectively describe MSAs, consolidated MSAs (CMSAs) and primary metropolitan statistical areas (PMSAs). After 1981, OMB has consistently been in charge of defining metropolitan areas. Changes to the criteria for these definitions were made in 1958, 1971, 1980, 1990, 2000, 2010 and 2021. Since the 1950 census, modifications to the boundaries of these statistical regions have primarily included: acknowledging new regions as they achieve the necessary urban area or city population thresholds and incorporating counties into pre-existing regions when updated commuting and urban data demonstrate their eligibility.

Occasionally, previously distinct regions have been combined, parts of a region have been shifted to another, or certain components have been removed from a region. Most of these adjustments during the study period years were made based on data from the decennial census. Due to the evolving nature of these geographic definitions over time, it's essential to exercise caution when comparing data across different time frames. Depending on the objective, it might be suitable to compare data from regions defined at specific times or to stick to consistent regional definitions for clarity. Historical boundaries for these statistical regions are accessible for select years ranging from 1950 to 2000. The term delineation refers to the specific geographic make up or components of a metropolitan statistical area at a given time. These areas are defined by OMB using established standards applied to data from the Census Bureau. These standards are reassessed and updated every decade. Typically, after each decennial census, areas are defined using the newest standards. Historical delineation files were used from the U.S. Census Bureau webpage to aggregate CPS data at the MSA level (U.S. Census Bureau, 2023b) and the data used were converted to the most recent definitions.

Variables

Dependent Variable

The study's dependent variable was fraud arrests per 10,000 people that reside in the area. The definition of fraud is the intentional perversion of the truth for the purpose of inducing another person or other entity in reliance upon it to part with something of value or to surrender a legal right (Federal Bureau of Investigation, 2004). Fraudulent conversion and obtaining of money or property by false pretenses. Confidence games and bad checks, except forgeries and counterfeiting, were included, leaving a full-service gas station without paying, credit card/automatic teller machine fraud, impersonation, welfare fraud, wire fraud were all included in this definition of fraud (Federal Bureau of Investigation, 2004). Fraud can result in either a gain or loss for the person committing the crime, and this gain or loss can take different forms. Tangible gains or losses are those that can be physically felt or measured, while intangible gains or losses are those that cannot be perceived by touch. Intangible benefits can include things like rights, privileges, promotions, or an improved reputation, while intangible detriments can include things like a damaged reputation or hurt feelings (Federal Bureau of Investigation, 2004). Fraudulent cases sometimes involve the failure to return something valuable, like a car, that was rented for a specific period. This act of retaining a rented item that rightfully belongs to the owner is considered fraud instead of larceny. The reason for this is that the offender initially had legal possession of the property, either through renting, loan, or entrusted possession, and used deception by making false promises to keep the property beyond the agreed period (Federal Bureau of Investigation, 2004).

Independent Variable

The primary predictor variable was a binary variable of whether or not Craigslist was available at the time in the metropolitan statistical area (MSA) where the respondents reside. The Craigslist variable was constructed as a binary variable coded as 0 if Craigslist was not available in a specific MSA and coded as 1 if Craigslist was available in that specific MSA for each year during the period of analysis.

Control Variables

Control variables were measured at the MSA level after aggregating individual or household county level data at the MSA level. Control variables included median income only available at the household level, poverty rate, racial composition at the respondent level measured by the percentage of White, Black-African American, Hispanic, and “Other Race.” The “Other Race” category was the reference group. In addition, employment status and education status at the respondent level were aggregated at the MSA level to be used for this study. The employment status variable in the CPS survey data is calculated as a percentage of the total labor force. The employment status categories are those who are currently employed and working, those who are currently employed but are absent from work, those who are unemployed and recently laid off, those who are unemployed and are looking for jobs, those who are not in the labor force because of a disability, those who are not in the labor force because they are retired, those who are not in the labor force for other reasons, and those who are not in the universe of the labor force. Because the CPS is designed to measure unemployment in the civilian population, the original employment status variable in the survey classifies members of the armed forces as not in the universe of the labor force (NIU) (IPUMS Current Population Survey, 1995-2006). Those who are not in the labor force for other reasons were used as the

reference group for the analysis. The education level categories were the following: “less than high school education”, “high school education”, “some college education”, and “college education or better.” The less than high school category served as the reference group.

Statistical Analyses

Differences-in-differences (DID) models using different specifications were employed to identify associations between the variables selected from the UCR data and the US Census Bureau data over time and study the differential effect of the presence of the Craigslist online marketplace in the MSAs where Craigslist was available compared to the ones where Craigslist was not available.

Equation

The model equation was as follows:

$$Y_{m,t} = \beta_0 + \beta_1 \text{Craigslist}_m * \text{time}_t + \beta_2 X_t + y_m + n_t + \varepsilon_{m,t}$$

where $Y_{m,t}$ represents fraud/10,000 people, m is the MSA, t is the year, β_0 is the intercept, $\beta_1 \text{Craigslist}$ is the coefficient of interest, y is the MSA fixed effects n is the period fixed effects and $\varepsilon_{m,t}$ is the error term.

Statistical Models

The first DID analysis included all years and all MSAs in the first specification, and added the 90% coverage restriction on the second and fourth specification. The first two specifications used unweighted data and the third and fourth used weighted data. The weights used were the county population weights provided in the UCR data for each reporting county. The second DID analysis was the same analysis with the same specifications as the first, excluding San Francisco. The third DID analysis excluded San Francisco and added controls for median household income and poverty rate. The specifications are the same as in the previous

models. The fourth DID analysis included controls from IPUMS CPS data for the unemployment rate, income, race, and education. The same specifications were used as in the other models. The parallel pre-trends analysis included all years from 1991 to 2006 (excluding year 1993 for which data was not available). The same specifications were used in this analysis as well.

Subsequently as a robustness check, a fifth DID analysis was employed to examine the lagged effects of the Craigslist entry on year 1 to years 2 and 3, by including lagged values of the outcome variable as an additional explanatory variable in the model. By including the lagged effects in the model, the short-term and long-term effects of the Craigslist entry and the duration of the effect were examined. The same DID models were employed with both weighted and unweighted data. The sixth DID analysis excluded San Francisco and added interaction terms for median household income and poverty rate, using the same four specifications as the previous models. Lastly, the Callaway and Sant'Anna 2021 method was used to run a DID analysis using a balanced panel as an additional robustness check.

Differences-in-differences (DID) is widely adopted in studies that aim to determine the causal impact of policies or interventions. This technique typically involves two timeframes and two sets of units: initially no units receive treatment, but in the subsequent period, some units are treated while others aren't. If we assume that, without the intervention, the average results for both sets of units would have been consistent over time (known as the parallel trends assumption), we can derive the average impact of the intervention for the treated group. This is done by contrasting the outcome changes observed in the treated units with those in the untreated units. Discussion on enhancing the DID approach generally revolves around this basic framework of two timeframes and two sets of units (Abadie, 2005; Athey & Imbens, 2006;

Bonhomme & Sauder, 2011; Callaway et al., 2018; De Chaisemartin & d'Haultfoeuille, 2018; Qin & Zhang, 2008; Sant'Anna & Zhao, 2020).

Many DID studies don't strictly follow the traditional two-time period design instead have varied treatment timings across multiple periods. Callaway and Sant'Anna (2021) offer an integrated approach for understanding average treatment effects in these more complex DID scenarios. In this study, the DID framework proposed by Callaway and Sant'Anna (2021) was used as an alternative DID set up such that once units are treated, they remain treated in the following periods consistent with the Craigslist adoption, to check if the results of the study hold.

Callaway and Sant'Anna focus on a specific causal parameter, termed the group-time average treatment effect. This represents the average impact for a particular group during a specific time, where a "group" is categorized by the initial treatment time for the units. In the standard DID model with two timeframes and two groups, this parameter becomes the average treatment effect for the treated subpopulation (ATT), usually the main focus in that context. A significant advantage of the group-time average treatment effect is its flexibility; it doesn't rigidly define variations based on observed factors, initial treatment timing, or how treatment impacts evolve. As a result, these parameters are straightforward to understand and can be used to gain insights into variations in treatment effects.

The above statistical analyses were used to answer the research question on whether Craigslist adoption had a positive association with increased number of arrests related to fraud in the MSAs that adopted Craigslist overtime compared to the MSAs that had not yet adopted Craigslist that serve as the control group. The following Hypothesis identified the expected relationships between the independent variable and the dependent variable.

Hypothesis: Craigslist presence which is the different context under which consumers engage in online transactions is positively associated with increased arrests related to fraud as a consequence.

Data Processing

Initially, the FBI crime data was downloaded by year from the Institute for Social Research at the University of Michigan Uniform Crime Reporting Data Series website (Federal Bureau of Investigation, 1991-2006). The data was then merged to include all years except for year 1993 that was not available for downloading. Subsequently, FBI crime data was linked to the various MSAs by mapping the county-level data to the corresponding MSAs using a county-to-MSA crosswalk. This mapping was conducted in accordance with the Quarterly Census of Employment and Wages (QCEW) county-to-MSA crosswalk table to ensure consistency (U.S. Census Bureau, 2013-2022). Once the county-level data was aggregated at the MSA level, it was merged with the Craigslist entry data. It should be noted here that the main analysis used data from 1995 to 2005. Data prior to 1991 were used for the leads and lags analysis to test for the parallel pre-trends assumption. The size of the total dataset included approximately 1880 observations for each county for each year for 15 years from 1991 to 2006 (without the year 1993) for a total of approximately 28,200 matches. There were no issues or reservations regarding the alignment of county level data with the appropriate MSAs during this process for the MSAs that had reported data and were included in the analysis.

CPS data for each month from 1995 to 2006 were downloaded from the IPUMS-CPS repository (Flood et al., 2023). The CPS data utilized were sourced at the respondent (individual) level for all control variables, except for the median household income, and poverty rate for which only household level data was accessible. This data was then grouped at the MSA level using the Bureau of Labor Statistics delineation files (U.S. Census Bureau, 2023a). For each

coded survey response, an additional variable was created for the descriptive value. For example, a respondent's level of education was coded as "39". This coded variable was retained, but a new variable was created containing the descriptive value provided by the Census Bureau. In this case, "39" represents "High school Grad-Diploma or Equiv (GED)". The raw data was then aggregated at the MSA level, for each month in the time series. A new variable was added to represent the number of respondents in each MSA who gave each response. For example, in January 1994, 99 respondents in Birmingham, AL had a high-school diploma as their highest level of education. A variable was created to represent all respondents in each MSA for each month. For example, there were a total of 414 respondents in Birmingham, AL, for January 1994. A final variable was created to represent the proportion of respondents in each MSA who gave a particular response. For January 1994 in Birmingham, AL, 99 was divided by the total of 414 and resulted in 23.9% of respondents having a high school diploma. The resulting dataset contained the coded response, descriptive response, number of respondents, and proportion of respondents who gave that response for each of the control variables of interest.

In the aggregated dataset some MSAs lacked recorded data. This absence was likely primarily due to the fact that no individuals from that MSA were surveyed during a particular time period. Additionally, the renaming or restructuring of some MSAs over time may also have contributed to the lack of data for some MSAs (further elaborated in the MSA section above). MSAs without data for the control variables were excluded from the supplementary model used for robustness checks, which incorporated the CPS data as controls.

Chapter 4 - Results

Data Summary

Table 1

Summary Statistics for Craigslist with UCR and IPUMS CPS Data

Variable	Mean	Standard Deviation	N
Craigslist	0.071	0.258	5,322
Fraud Arrests/10Kp	10.488	11.228	5,322
Median Household Income	47,363.474	9,715.377	4,292
Poverty Rate	12.805	4.521	4,292
Unemployment Rate	0.028	0.011	3,019
Income under 50K	0.525	0.132	3,022
50K-100K income	0.191	0.072	3,020
% African/American	0.114	0.107	2,902
Less than high-school	0.175	0.085	3,022
High-school	0.234	0.075	3,022
Some College	0.209	0.043	3,022

Table 1 above, provides insights into the statistics related to Craigslist, fraud related crime arrests, economic conditions and demographics based on UCR and IPUMS CPS data sources. The mean number of fraud arrests per 10,000 people was 10.488 with a standard deviation of 11.228. The average median household income was \$47,363 with a standard deviation of \$9,715. The average poverty rate was 12.8 with a standard deviation of 4.52. The average unemployment rate was 2.8% with a standard deviation of 1.1%. On average, 52.5% of observations had an income under \$50,000 with a standard deviation of 13.2%. About 19.1% of observations fell within the \$50,000-\$100,000 income range, with a standard deviation of 7.2%.

The proportion of African Americans in the data was, on average, 11.4 with a standard deviation of 10.7%. On average, 17.5% of observations represented individuals with less than high school education, with a standard deviation of 8.5%. About 23.4% had completed high school as their highest level of education, with a standard deviation of 7.5%. An average of 20.9% had attended some college with a standard deviation of 4.3%. It should be noted that as discussed in more details in previous sections in Chapter 3 herein, the total number of observations dropped when looking at aggregated CPS data by MSA as not all MSAs had reported data.

Results

Table 2

Differences in differences analysis with all years and coverage restrictions and weights

	All MSAs		Coverage >90%		Weighted		Weighted >90%	
	(1)		(2)		(3)		(4)	
	B	SE B	B	SE B	B	SE B	B	SE B
Craigslist	-.709***	0.294	-.994***	-1.117	1.127**	0.586	-2.445***	0.792
Obs.	5,322		3,624		5,322		3,624	
e (e2-a)	0.75		0.775		0.789		0.807	
e (df-a)	377		370		377		370	

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included all MSAs with no weights. The second specification included MSAs with 90% or above coverage and no weights. The third specification included all MSAs with weights. The fourth specification included MSAs with 90% coverage or above with weights. Coverage is the percentage of police and other enforcement agencies that reported arrests. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in separate columns.

Table 2 presents the results of the DID analysis using the full sample (1), a coverage of 90 or more (2), the full sample using MSA population as weight (3), and a coverage of 90% or more using the MSA population as the weight to account for the different size of each MSA. Some MSAs can be a few hundred thousand and some MSAs can be in the millions. Coverage is the percentage of police and other enforcement agencies that reported arrests at their respective jurisdictions. Results in table two indicated that fraud arrests decreased after Craigslist (CL) entry. Given that the mean fraud arrests per 10,000 people was 10.48, the estimate in column one indicated that after Craigslist entry, the fraud arrests decreased by 0.709 or about 7% compared to the control group. The results in column (2) where only MSAs with a 90% coverage or more were included painted a similar picture, showing that fraud arrests decreased by about 10% after Craigslist entered an MSA. The last two columns (3) and (4) where population weights were used produced very similar results. In fact, when accounting for the population weights, the coefficients showed a decrease of 11% and 23% for the full sample and the one with 90% or more coverage, respectively. It should be noted that the results were generally robust to other specifications using other coverage levels.

Table 3*Differences in differences analysis without San Francisco*

	All MSAs		Coverage >90%		Weighted		Weighted>90%	
	(1)		(2)		(3)		(4)	
	B	SE B	B	SE B	B	SE B	B	SE B
Craigslist	-.714**	0.297	-1.001***	0.378	-1.192**	0.605	-2.529***	0.832
Obs.	5,307		3,609		5,307		3,609	
e (e2-a)	0.749		0.774		0.788		0.805	
e (df-a)	376		369		376		369	

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included all MSAs with no weights. The second specification included MSAs with 90% or above coverage and no weights. The third specification included all MSAs with weights. The fourth specification included MSAs with 90% coverage or above with weights. Coverage is the percentage of police and other enforcement agencies that reported arrests. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in separate columns.

Table 3 employed the same DID analysis as Table 2, with the exclusion of the San Francisco area from the sample. This exclusion served two primary purposes. Firstly, it aimed to investigate whether the outcomes were influenced by San Francisco, being the initial MSA where Craigslist was introduced. Secondly, it facilitated an examination of the results after the incorporation of controls for median household income and poverty levels at the MSA level that were available dating back to 1995, coinciding with Craigslist's introduction to San Francisco, which was carried out in Table 4. The findings in Table 3 closely mirrored those in Table 2,

demonstrating a comparable reduction (both in terms of magnitude and statistical significance) in the number of fraud arrests following the advent of Craigslist. Moreover, they indicated that the primary outcomes were not contingent on the presence of San Francisco in the analysis.

Table 4

Differences in differences analysis without San Francisco with controls

	All MSAs		Coverage >90%		Weighted		Weighted>90%	
	(1)		(2)		(3)		(4)	
	B	SE B	B	SE B	B	SE B	B	SE B
Craigslist	-.482*	0.289	-.652*	0.365	-.971	0.627	-2.085***	0.779
Median	0.00004	0.000	0.000	0.000	-.0002	0.000	-.0002*	0.000
Income								
Poverty	0.044	0.078	-.111	0.09	-.219*	0.127	-.611***	0.176
Obs.	4,280		2,705		4,280		2,705	
e (e2-a)	0.799		0.834		0.81		0.835	
e (df-a)	376		325		376		325	

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included all MSAs except San Francisco with no weights. The second specification included MSAs with 90% or above coverage except San Francisco without weights. The third specification included all MSAs except San Francisco with weights. The fourth specification included MSAs with 90% coverage or above except San Francisco with weights. Coverage is the percentage of police and other enforcement agencies that reported arrests. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in separate columns.

As previously mentioned, Table 4 mirrors Table 3 with the notable addition of median income and poverty as control variables. The results exhibited a striking similarity in both magnitude and direction to those observed in Table 3. Specifically, the estimates within the first two specifications were statistically significant at the 10% level, while the estimate in Column (3) showed a negative trend that was not statistically significant. However, it is worth noting that the estimate in Column (4), which focused on MSAs with a 90% or higher Craigslist coverage rate, revealed a more pronounced negative effect that was statistically significant at the 1% level. This provides further compelling evidence of the reduction in fraud arrests following the introduction of Craigslist.

The influence of median household income on the outcome remained generally minimal across various specifications, with coefficients approximating zero. Significant effects were only observed at the 5% level within the weighted MSAs with coverage exceeding 90%, while excluding San Francisco from the analysis. In contrast, the impact of poverty yielded more noteworthy results. In the weighted MSAs (excluding San Francisco), poverty displayed a negative effect ($B = -0.219$), achieving statistical significance at the 5% level. This negative relationship was most pronounced in the weighted MSAs with coverage rates surpassing 90%, where the coefficient exhibited a higher negative value ($B = -0.611$) and statistical significance at the 1% level.

To further bolster the robustness of our analysis and incorporate additional control variables, we accessed CPS data spanning from 1995 to 2006 via IPUMS CPS (Flood et al., 2023). Control variables were subsequently generated at the MSA level by aggregating the data utilizing Bureau of Labor Statistics delineation files (U.S. Census Bureau, 2023b). It is important to note that due to limitations in the availability of observations, some MSAs lacked control

variables for the 1995-2006 period. The results, as presented in Table 5, remained consistent with the primary findings. Notably, they demonstrated that the incidence of fraud arrests declined in MSAs featuring Craigslist, even after controlling for unemployment, income, race, and education. This provides further empirical support that Craigslist's entry had a tangible impact on reducing fraud arrests within the studied MSAs.

Table 5

Differences in differences analysis with all years and IPUMS CPS controls

	All MSAs		Coverage >90%		Weighted		Weighted >90%	
	(1)		(2)		(3)		(4)	
	B	SE B	B	SE B	B	SE B	B	SE B
Craigslist	-.624*	0.361	-1.628***	0.484	-1.006	0.616	-2.27***	0.84
Unempl. Rate	5.547	13.34	-.242	16.25	44.606*	24.57	37.068	27.869
Inc.<50K	0.184	2.162	-1.508	2.948	1.742	3.367	-1.292	4.384
50K-<100K	-3.908	2.938	-5.203	3.894	-.223	3.569	1.669	4.160
Black	-2.792	4.980	-11.328*	6.578	16.51**	7.963	23.235**	11.503
Less than High-school	5.933	5.250	9.169	6.585	28.19***	8.581	44.48***	10.771
High-school	1.848	4.413	3.302	5.763	6.805	6.979	13.319	8.657
Some college	6.398	4.067	8.669*	4.746	13.339**	6.170	19.843***	7.242
Obs.	2,898		1,851		2,898		1,851	

	All MSAs		Coverage >90%		Weighted		Weighted>90%	
	(1)		(2)		(3)		(4)	
	B	SE B	B	SE B	B	SE B	B	SE B
e (e2-a)	0.786		0.81		0.798		0.816	
e (df-a)	266		250		266		250	

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included all MSAs with no weights. The second specification included MSAs with 90% or above coverage and no weights. The third specification included all MSAs with weights. The fourth specification included MSAs with 90% coverage or above with weights. Coverage is the percentage of police and other enforcement agencies that reported arrests. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in separate columns.

In the initial specification that included all MSAs without applying any weights, Craigslist was found to have a statistically significant negative effect. This negative effect intensified in the second specification, where only MSAs with coverage 90% and above were considered, showing a coefficient of (B=-1.628). The fourth specification which weighted MSAs with 90% coverage or more, also revealed a significantly negative association. A statistically significant positive effect of unemployment on fraud arrests was noted only in the third specification, with all MSAs being weighted. There was no significant association between the outcome and the income categories across all specifications. There was a significant negative effect of identifying as Black/African American when considering MSAs with more than 90% coverage without weights. Positive effects emerged in the third and fourth specifications with weights. Those with less than a high-school education showed a significant positive effect in the

third and fourth specifications. For those who have attended some college, significant positive effects were noted in the third and fourth specifications.

Pre-trends Analysis

The validity of the DID analysis relies on the presence of parallel pre-trends. Table 6 illustrates the results of the pre-trend analysis. The specifications were consistent with those in table 2, but it introduced leads and lags to determine if there were any differences between the MSAs where Craigslist was introduced (treatment group) and those where it was never present (control group) before the platform's introduction. The focus was on the years leading up to the Craigslist introduction. The findings showed no significant differences between the treatment and control groups during these pre-Craigslist years, affirming the existence of parallel pre-trends. The reference point in this assessment was the year Craigslist was introduced, which was set to zero. Specifically, up to three periods before the platform's introduction for unweighted data, and five periods for weighted data, the deviation from the year prior to introduction were statistically on par with changes in control MSAs indicating no evident pre-trends. For the weighted data, there was an observed decrease in fraud arrests linked to Craigslist in the second, fourth- and fifth-years post-introduction across all MSAs, and every year post-introduction for MSAs with 90% coverage or above.

Table 6*Leads and Lags*

	All MSAs		Coverage >90%		Weighted		Weighted>90%	
	(1)		(2)		(3)		(4)	
	B	SE B	B	SE B	B	SE B	B	SE B
5 periods pr	-0.799**	0.357	-0.865**	0.386	-0.410	0.722	0.137	1.005
4 periods pr	-0.715**	0.35	-0.722**	0.436	-0.274	0.57	-0.099	0.78
3 periods pr	0.561	0.345	-0.203	0.432	0.245	0.891	0.654	1.150
2 periods pr	-0.110	0.335	0.168	0.459	0.493	0.57	0.606	0.843
1 period pr	-0.442	0.364	-0.507	0.488	0.508	0.68	-0.545	0.54
1 year after	-0.732	0.463	-0.805*	0.469	-0.152	0.574	-1.033***	0.61
2 years after	-0.893*	0.503	-1.286*	0.704	-1.925*	1.170	-3.228**	1.517
3 years after	-0.731	0.587	-1.060	0.858	-1.851	1.378	-3.187*	1.839
4 years after	-1.157	0.794	-1.376	1.014	-2.931*	1.765	-4.263*	2.177
5 years or more after	-0.995	0.742	-1.253	0.901	-3.262**	1.502	-4.725**	1.858
Obs.	5,322		3,624		5,322		3,624	
e (e2-a)	0.749		0.774		0.793		0.812	
e (df-a)	377		370		377		370	

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included all MSAs with no weights. The second specification included MSAs with 90% or above coverage and no weights. The third specification included all MSAs with weights. The fourth specification included MSAs with 90% coverage or above with weights. Coverage is the percentage of police and other enforcement agencies that

reported arrests. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in separate columns.

Robustness Checks

In table 7 in the next page a series of robustness checks were conducted to examine the lagged effects of Craigslist entry on fraud arrests. These checks aimed to investigate whether the introduction of Craigslist in prior years had any significant influence on subsequent fraud arrest rates. The table provides results for different time lags, ranging from one to three years, and incorporates controls for lagged outcome variables. More specifically column (1) used fraud arrests forwarded by one year regressed on Craigslist entry using the full sample results. For example, instead of using fraud arrests in year 2000 I used fraud arrests in year 2001 instead. Column (2) used fraud arrests forwarded by 2 years and column 3 used fraud arrests forwarded by 3 years. The estimates in all three columns were negative and significant indicating that Craigslist entry in prior years had a negative impact on fraud arrests. Columns 4, 5 and 6 added additional controls for the lagged outcome variable. For example, column 4 added an additional control for the fraud arrests in a prior year (i.e., if the dependent variable was fraud arrests in 2000, the lagged variable was fraud arrests in 1999). The estimates remained negative and significant in these columns, except for the last column where the significance was not observed. This indicates that even after accounting for prior-year fraud arrest rates, the negative impact of Craigslist entry in prior years on future fraud arrests persisted in most cases.

Table 7*Robustness check with lagged effects*

	Post lag 1		Post lag 2		Post lag 3	
	(1)	(2)	(3)	(4)	(5)	(6)
Craigslist	-1.858***	-2.594***	-1.985**	-1.149**	-1.292**	-.220
(SE)	(0.707)	(0.788)	(0.788)	(0.547)	(0.553)	(0.519)
Fraud Arrests				0.602*		
(SE)				(0.037)		
Post Lag 1					0.701***	
(SE)					(0.046)	
Post Lag 2						0.68***
(SE)						(0.04)
Post Lag 3						
Obs.	5,321	5,320	5,319	5,321	5,320	5,319
e (e2-a)	0.665	0.573	0.518	0.737	0.729	0.715
e (df-a)	377	377	377	377	377	377

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included fraud arrests

forwarded by 1 year regressed on Craigslist entry using the full sample results. The second specification used fraud arrests forwarded by 2 years and the third specification 3 years respectively. In the fourth, fifth and sixth specifications additional controls were added for the fraud arrests in a prior year. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in brackets in separate rows.

Table 8

Robustness check without San Francisco and interaction term for Median Income and Poverty unweighted data

	M.I. All MSAs		M.I. Coverage >90%		Poverty All MSAs		Poverty Coverage>90%	
	(1)		(2)		(3)		(4)	
	B	SE	B	SE	B	SE	B	SE
Craigslist	-0.0002	0.00	-.00004	0.000				
*Income								
Craigslist					0.065*	0.04	0.132***	0.039
*Poverty								
Craigslist	0.42	1.39	1.386	1.671	-1.281**	0.54	-2.345***	0.62
Income	.00004	0.00	.00002	0.00	.00004	0.00	1.00e-05	0.00
Poverty	0.046	0.08	-.105	0.09	0.045	0.08	-.107	0.09
Obs.	4,280		2,705		4,280		2,705	
e (e2-a)	0.799		0.834		0.799		0.834	
e (df-a)	376		325		376		325	

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included the interaction term with median household income for all MSAs except San Francisco without weights. The second specification included the interaction term with median household income for MSAs with 90% or above coverage except San Francisco without weights. The third specification included the interaction term with poverty rate for all MSAs except San Francisco without weights. The fourth specification included the interaction term with poverty rate for all MSAs with 90% coverage or above except San Francisco without weights. Coverage is the percentage of police and other enforcement agencies that reported

arrests. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in separate columns.

Table 9

Robustness check without San Francisco and interaction term for Median Income and Poverty with weighted data

	M.I. All MSAs		M.I. Coverage >90%		Poverty All MSAs		Poverty Coverage>90%	
	(1)		(2)		(3)		(4)	
	B	SE	B	SE	B	SE	B	SE
Craigslist	-0.0002***	0.00	-.0003***	0.00				
*Income								
Craigslist					0.186**	0.09	0.438***	0.106
*Poverty								
Craigslist	10.476***	3.23	16.146***	3.99	-2.964**	1.33	-7.068***	1.721
Income	0.0000	0.00	0.00007	0.00	-.0001	0.00	-.0001	0.00
Poverty	-0.106	0.12	-.454***	0.15	-.184	0.12	-.519***	0.162
Obs.	4,280		2,705		4,280		2,705	
e (e2-a)	0.815		0.848		0.81		0.839	
e (df-a)	376		325		376		325	

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included the interaction term with median household income for all MSAs except San Francisco with weights. The second specification included the interaction term with median household income for MSAs with 90% or above

coverage except San Francisco with weights. The third specification included the interaction term with poverty rate for all MSAs except San Francisco with weights. The fourth specification included the interaction term with poverty rate for all MSAs with 90% coverage or above except San Francisco with weights. Coverage is the percentage of police and other enforcement agencies that reported arrests. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in separate columns.

In Tables 8 and 9, interaction terms were introduced to examine the relationship between Craigslist and two socioeconomic variables, namely poverty rate and median household income. The primary focus of interest within these tables was on the interaction terms involving Craigslist and these socioeconomic indicators. The interaction term involving Craigslist and median household income provided insights into how the effect of median household income differs between Metropolitan Statistical Areas (MSAs) with Craigslist and those without Craigslist entry. The analysis revealed that as median household income increases, the number of fraud arrests decreases, particularly in MSAs with Craigslist, when weights were applied. This implies that the presence of Craigslist appears to attenuate the impact of rising median household income on reducing fraud arrests.

Specifically, the results presented in Tables 8 and 9, for both unweighted and weighted specifications, indicated that as the poverty rate increases, the number of fraud arrests also increases to a greater extent in MSAs that adopted Craigslist compared to those that did not have Craigslist. This suggests that Craigslist's entry into an MSA may be associated with an amplified effect of rising poverty rates on fraud arrests.

Additional Robustness Checks

Staggered Differences in Differences Analysis

In the general DID set up used in this study, when there are more than two treatment periods, earlier treatment units are used as controls for later treated units and the method is not robust to heterogeneous treatment effects (Callaway & Sant'Anna, 2021). For this purpose, the model using the new proposed method by Callaway and Sant'Anna (2021) which uses group-time average treatment effects was estimated, and avoided using earlier treated units as controls for later treated units making the results robust to heterogeneous treatment effects. Figure 2 below shows the point estimates along with the 95% confidence interval using the Callaway and Sant'Anna (2021) method and controls for poverty and household median income. The results from this staggered analysis were very similar to the results from the general DID method used, indicated no pre-trends 6 years before the treatment, and provided further support for the validity of the main findings. Since the Callaway and Sant'Anna estimator requires a balanced panel, the DID models were estimated using only the balanced panel and the results shown below in table 10 without controls and table 11 with controls did not change when compared to the results of the main analysis. The coefficients for Craigslist indicated a statistically significant reduction in fraud arrests. It is essential to clarify that having a balanced panel means to have the same MSAs for each year during the analysis period. As such, MSAs that did not have data for some years were dropped from the analysis.

Figure 2

Staggered DID event plot with controls (Callaway and Sant'Anna 2021 method).

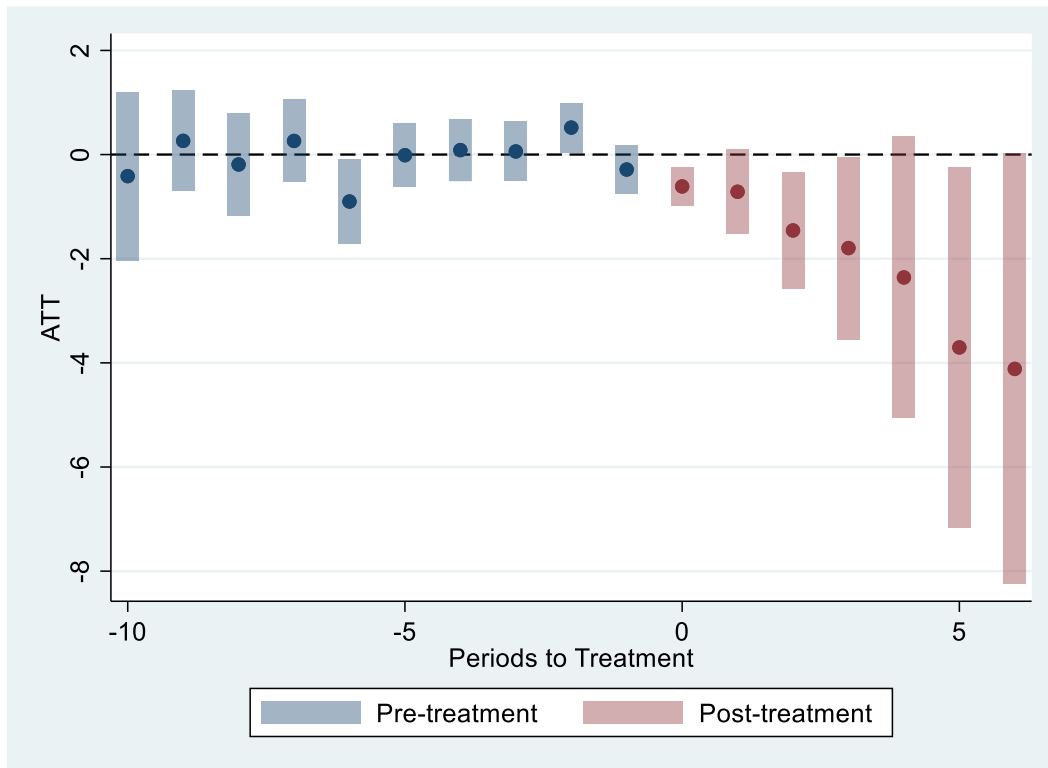


Table 10

Differences in differences estimates using the same balanced panel used for the Callaway and Sant'Anna estimator.

	B	SE B	95% CI	
Craigslist	-.678**	-2.605	-1.189	-.168
Obs.	4,260			
e (e2-a)	0.644			
e (df-a)	308			

* $p < .05$; ** $p < .01$; *** $p < .0001$. The estimates include MSA fixed effects and time fixed effects. Robust standard errors are provided in a separate column.

Table 11

Differences in differences estimates using the same balanced panel used for the Callaway and Sant'Anna estimator with controls.

	B	SE B	95% CI	
Craigslist	-.513*	-2.534	-1.0098	-.0162
Median	0.0000005	0.00048	-.00009	0.00010
Income				
Poverty	-.0189	0.0715	-.1591	0.1213
Obs.	3,696			
e (e2-a)	0.7365			
e (df-a)	308			

* $p < .05$; ** $p < .01$; *** $p < .0001$. The estimates include MSA fixed effects and time fixed effects.

Robust standard errors are provided in a separate column.

Sensitivity Analysis

Sensitivity analysis plays a pivotal role in evaluating the research methodology's robustness and the reliability of the models' outcomes. It involves scrutinizing the underlying assumptions upon which the model specifications are based. In this section, we present and discuss the results obtained from additional model specifications that diverge from the sample restrictions used in the main analysis. The detailed results for these specifications are available in Appendix I.

Table 12 showcases the outcomes of five different specifications employing distinct sample constructions. The initial specification encompassed the entire sample without excluding any observations. The results from this specification indicated a modest positive association between fraud arrests and the presence of Craigslist in a Metropolitan Statistical Area (MSA) at a 10% significance level. In the second specification, we excluded observations with a coverage rate of less than 65%, aligning the approach with methodologies used in prior studies employing Uniform Crime Reporting (UCR) data (Anderson, 2014; Fone et al., 2023). This second specification did not reveal any statistically significant relationship between fraud arrests and Craigslist adoption.

The third specification concentrated on observations with unusually high fraud arrest rates, exceeding twice the standard deviation of the overall sample. These observations were excluded from the primary analysis, yet this specification also yielded results that did not support a significant association between fraud arrests and the Craigslist adoption. The fourth specification took a different approach by excluding observations related to San Francisco while simultaneously introducing control variables for the remaining data points. Similar to the other

specifications, this one also failed to demonstrate any significant association between the variables under examination. Finally, the fifth specification excluded both San Francisco-related observations and those with a coverage rate of 65% or less. Despite these additional changes in the sample, the results did not provide evidence of a significant association between the main variables examined. These multiple specifications collectively suggest that the relationship between fraud arrests and the Craigslist adoption did not exhibit statistical significance within the parameters of this sensitivity analysis, even when considering areas with unusually high rates of reported fraud arrests.

To further assess the robustness of the findings, additional sensitivity tests were conducted aimed at exploring the impact of areas characterized by exceptionally high rates of fraud arrests compared to the rest of the sample. These results are presented in Table 13 in Appendix I. The first specification, which included the entire sample without data exclusions, revealed a weak positive and statistically significant association at the 10% significance level. In the second specification, observations exhibiting an exceptionally high incidence of fraud arrests, defined as more than 300 arrests per 10,000 people (which exceeded 10 times the standard deviation of the sample, standing at 26.6 fraud arrests per 10,000 people), were excluded. Only one such observation met this criterion, and the results maintained a weak positive and statistically significant association between the variables examined.

The third specification adopted a more conservative approach by excluding observations with more than 200 fraud arrests per 10,000 people. This exclusion represented a small fraction (11 observations or 0.19 percent) of the sample, and while the coefficient remained positive, it was not statistically significant. The fourth specification extended the criteria to observations with 150 fraud arrests per 10,000 people, corresponding to more than five times the standard

deviation of the sample. This resulted in the removal of 46 observations, constituting 0.8 percent of the sample. Despite these changes in the exclusion criteria, the results remained statistically not significant. The fifth specification further refined the analysis by excluding observations with more than 100 fraud arrests per 10,000 people, approximately four times the standard deviation of the sample. In this specification, the coefficient changed to negative and became statistically significant at the 1 percent level. This suggests that the positive results observed in the initial specification that includes all observations were primarily driven by those areas with unusually very high incidents of fraud arrests, encompassing less than 0.2% of the sample. Lastly, the sixth specification removed observations with more than 75 fraud arrests per 10,000 people, and the results remained consistent with the main findings of the study.

It is important to note that fraud arrests in the UCR data are reported on a voluntary basis by law enforcement agencies across the country, and there are no repercussions for agencies that do not report or erroneously report data. Therefore, while these unusually high fraud arrest counts in certain areas may represent correctly reported data, it is also possible that some law enforcement agencies have made mistakes in reporting. Additionally, 69 of the MSAs that reported unusually high incidents of fraud arrests did not have a coverage indicator, further raising doubts about the accuracy and reliability of the data. Notably, the one MSA with more than 300 fraud arrests in 1992 and 284 fraud arrests in 1991 was Elizabethtown-Fort Knox in Kentucky, with a population of 127,445 in 1992. The 11 MSAs that reported very unusually high incidents of fraud arrests (more than 200 per 10,000) were located in smaller MSAs in Tennessee, Kentucky, Arkansas-Missouri, North Carolina, and South Carolina, with populations ranging from 108,743 to 224,675 people. Only two of these MSAs had a coverage indicator greater than 33 percent, and five had no coverage indicator. To investigate whether there were

any reported fraud cases in the news for these areas during the years with unusually very high fraud arrests, I conducted a search and found no evidence in the news, further justifying the decision to exclude these observations from the analysis due to data quality concerns.

The remaining MSAs with high incidents of fraud arrests, more than two standard deviations from the mean and excluded from the main analysis, are situated in various states, including Alabama, Arkansas, Missouri, Oklahoma, Colorado, Delaware, Georgia, Indiana, Kentucky, Mississippi, North Carolina, North Dakota, South Carolina, Pennsylvania, Virginia, and West Virginia. Most of these MSAs, 249 in total, are smaller with populations of less than 250,000 people, while 128 have populations exceeding 250,000. Only 7 MSAs had populations exceeding 1 million people, and from those, only 1 had a coverage indicator above 60%. Notably, the majority of the MSAs with a high fraud arrest count had not adopted Craigslist during the years of the analysis. Only 5 of these MSAs with a high incidence of fraud arrests had adopted Craigslist in the final year of the analysis in 2006.

In conclusion, this sensitivity analysis enriches and strengthens the results of the main analysis and the specifications utilized in the primary models. It underscores the complexity of the relationship between fraud arrests and the Craigslist adoption, emphasizing the importance of carefully considering data quality in empirical research.

Chapter 5 - Discussion and Implications

Discussion of Results

Summary

The study's purpose was to examine if the presence and adoption of the Craigslist online marketplace had an impact on fraud arrests and if the efficiency in searching and selling in the expanding online marketplace environment facilitated more fraud crime arrests. The consumer vulnerability framework (Hill & Sharma, 2020) was used to explore how the presence of Craigslist in some metropolitan statistical areas (MSAs) affected the likelihood of fraud arrests in those areas. This chapter discusses the results of this study as presented above and offers plausible explanations for these findings. It also discusses the study's implications and limitations and concludes with suggestions for future potential research paths.

For this analysis different DID statistical models were used to test the hypothesis derived from the modified consumer vulnerability framework, that Craigslist presence which is the different context under which consumers engage in online transactions would be positively associated with increased arrests related to fraud as a consequence.

The pre-trends analysis that is necessary for the validity of the DID models showed no parallel pre-trends for the periods before the Craigslist adoption. The first model was a DID analysis with all years and all MSAs and 90% coverage restrictions using weighted and unweighted data for both coverage specifications. The results from this first model showed that fraud arrests decreased by 7% and 10% in the unweighted specifications and 11% and 23% in the weighted specifications. The findings from this model did not support the study's hypothesis that fraud arrests would increase in the areas that Craigslist was adopted compared to the ones that did not adopt Craigslist.

The second model used was a DID analysis excluding the San Francisco MSA that was the early adopter. Results were very similar in magnitude and significance with the main model and did not support the hypothesis. The third model was a DID analysis excluding San Francisco with median household income and poverty rates as controls for the two different coverage specifications. Results from this model were similar as the ones from the previous model without the controls and for the weighted data the results were even more negative and significant and did not support the study's hypothesis. The fourth model was a DID analysis with all years and IPUMS CPS controls for the two different coverage specifications. Again, no empirical evidence that supported the hypothesis was found in this analysis. Unemployment showed a positive effect on fraud arrests in the weighted data when all MSAs were used in the analysis.

The fifth model that was used to check the robustness of the results was a DID analysis with lagged effects. This model used fraud arrests forwarded by one year, two years and three years regressed on Craigslist entry for the full sample results and specifications controlling for fraud arrests in a prior year were added in the third, fourth, and fifth specifications. Again, the findings did not support the hypothesis and showed a negative and significant effect on the outcome variable. The sixth test was a DID model that excluded San Francisco and added interaction terms for median household income and poverty rate with both unweighted and weighted data. Differential effects were noted with the interaction terms. As median income increased fraud arrests decreased by less in the MSAs with Craigslist compared to the ones that did not have Craigslist. While there is still a negative effect that does not support the hypothesis, this effect is weaker when median household is higher. In the interaction with poverty rate, as poverty rate increased, the number of fraud arrests increased by more after Craigslist entry for those areas compared to the areas in the control group. This result was consistent with a

secondary hypothesis that poverty rate would interact with the independent variable and affect the relationship between the main variables.

The next test used was the staggered DID analysis from the Callaway and Sant'Anna 2021 method and its results as shown in the event plot are very similar to the results from the general DID method used, further supporting the decrease in fraud arrests found in the general DID analysis. The staggered DID model was also employed using a balanced panel showing a reduction in fraud arrests that also did not support the study's main hypothesis. Overall, the results from the different models and different specifications used in this study are consistent and did not support the main hypothesis of this study.

Main Variables

Deception has existed since the dawn of human society. Fraud can be committed online and offline and there is a portion of online fraud that is facilitated in person (Levi et al., 2015). Previous literature has highlighted various techniques scammers employ in online transactions (Buchanan & Whitty, 2014; Conradt, 2012; Garg & Nilizadeh, 2013; Lee, 2021a, 2021b; Van Wilsem, 2013; Whitty & Buchanan, 2012).

Several reasons drove the hypothesis that the introduction of Craigslist in certain geographic areas would correlate with a rise in fraud arrests. Increased anonymity could be exploited by scammers that run their operations without revealing their true identities. The increased volume of transactions can lead to a higher absolute number of scams even if the proportion of scams to legitimate transactions remains relatively small. The ease of scaling scams by replicating them across multiple categories of transactions or multiple regions as scammers could post multiple fake listings, spam users, or conduct phishing operations with the same scheme in various areas. Some users may have been unfamiliar with online transactions

and the associated risks, and their lack of experience could have made them more vulnerable to scams when Craigslist entered a new area. Because Craigslist sections its listings by city or region, users might have misplaced trust that they are dealing with local individuals, reducing their guard against potential scams. In areas and times where and when digital literacy was low residents might have been less aware of online scams or how to identify suspicious behavior.

It's essential to note that while risk of fraud exists on online platforms like Craigslist, millions of legitimate, problem-free transactions occur as well. Users can minimize risks by familiarizing themselves with common scam techniques, meeting in public places for transactions, and following safety guidelines recommended by the platform. While the introduction of online platforms like Craigslist can sometimes be associated with an increase in certain types of fraudulent activities, there are also reasons to believe that they might decrease or shift the nature of fraudulent activities and other unwanted activities in specific contexts.

Craigslist and other similar online platforms, by providing a platform for direct communication between buyers and sellers, can reduce asymmetry, making harder for traditional fraudsters to operate. For example, users would need to post pictures and detailed descriptions of the products they are selling in order to attract buyers and the buyers in many of those transactions would be able to see the product and assess its quality in person before making a payment. By connecting buyers directly with sellers, middlemen who might have historically played dubious roles could be eliminated.

The results of this study indicating that the entry of Craigslist in an area was associated with a decrease in fraud arrests might seem counterintuitive at first, especially given that online platforms can sometimes be breeding grounds for scams. However, there are several plausible explanations for this. First, Craigslist and other similar online platforms offer a platform where

buyers and sellers can engage in peer-to-peer transactions. The transparency of the platforms with product descriptions, images, and direct communications between parties, can deter some fraudulent behaviors. Even though transactions are informal and anonymous, there is still a digital trail, such as email communication, listings, or IP addresses, which can deter some would-be fraudsters from operating due to the increased risk of getting caught by law enforcement authorities. As online platforms like Craigslist became prevalent, the platforms themselves or their users, often produced guidelines and resources to educate users about potential scams, thereby raising awareness and reducing successful fraud attempts. In addition, the Craigslist community as well as communities created by users of other online platforms, often act as self-policing entities. Users are asked to flag suspicious ads such as those that offer deals too good to be true way below their actual value and to report them to customer service; for example, when an ad has been flagged multiple times on Craigslist, Newmark and his group review it and often delete it (Freese, 2011). As users report criminal activity or known scams, that could lead to a decrease in successful fraudulent transactions and can also deter fraudsters from using the platform in the first place. This creates an environment that discourages overtly fraudulent activities. Self-policing in online communities and applications has been shown by researchers to be effective in reducing crime. For example, a recent study that tested the impact of Airbnb's self-regulations that reduce the number of listings was linked to a reduction in crime such as assault, robbery, and burglary (Han et al., 2022).

While small-scale frauds, like false listings, might persist and go unreported (especially if they have not caused any substantial financial or emotional loss for the victims) the introduction of a public and popular platform might reduce larger-scale fraud schemes through enhanced public scrutiny. Unlike numerous other online endeavors, Craigslist has maintained its

significant popularity for over twenty years (Oravec, 2014). As such, when posted on a popular platform like Craigslist, listings receive significant attention from the public. Larger-scale fraud schemes may find it challenging to operate under such scrutiny without being flagged or reported by multiple users. In-person interactions, often recommended for exchanges of goods, can reduce the anonymity that some larger fraud schemes rely upon. Furthermore, Newmark and his colleagues at Craigslist have collaborated with law enforcement agencies throughout the United States (Freese, 2011). The platform has placed limitations on postings that might lure people into unsafe or illegal situations (Freese, 2011).

Some empirical studies have suggested that the introduction of Craigslist led to a decrease in certain types of offline crimes by shifting transactions from less public spaces to more public and digital ones. For example, on the one hand, the introduction of the “erotic services” section on Craigslist, was linked to a reduction of violent crimes like female homicide rates, suggesting that the platform contributed to making sex-work safer by moving it off the streets and allowing workers to better screen clients (Cunningham et al., 2023). On the other hand, with the rise of online marketplaces like Craigslist, some fraudulent activities might shift from offline avenues (where they might have led to arrests) to online avenues (where they might be resolved through platform moderation, without involving law enforcement).

It’s also possible that any observed decrease in fraud arrests following Craigslist’s entry into an area is due to other factors. It could be the case that even some of the more serious fraud cases go unreported to the police because the fraud victims feel guilty or ashamed to admit they have fallen victims of fraud or because they do not believe that police can catch the fraudsters due to the anonymity of the transactions.

By facilitating trade and transactions, online marketplaces such as Craigslist can increase economic activity in an area. Online marketplaces significantly bolster the economy by providing platforms for buyers and sellers to transact more effectively and cost efficiently. Web platforms like Craigslist enhance market efficiency by minimizing search expenses and narrowing price variations (Brynjolfsson & Smith, 2000). A bustling marketplace can offer legitimate opportunities for income, possibly reducing the incentive for economic-driven fraud related crimes. As users become more familiar with online marketplaces, they can also become savvier about identifying and avoiding potential scams. With time, this could lead to a decline in successful frauds and as online marketplaces become integrated into an area's economy, local law enforcement agencies might develop better tools and strategies for identifying, tracking, and prosecuting online fraud, leading to a deterrent effect.

Impact of other factors in additional model with Median Household Income and Poverty Rate (Table 4)

The results suggested a consistent negative relationship between the presence of Craigslist and the outcome across the MSA sample populations used in the analysis for the different specifications with and without coverage restrictions and with and without population weights. This negative relationship implied that as Craigslist became more prevalent, fraud arrests decreased. The weighting by population in each MSA amplified the magnitude of the effect. Across the specifications, median household income seemed to have a minor influence on fraud arrests. In the third and fourth specifications (weighted analyses), a slight negative relationship was observed, but its effect was significant only in the weighted MSAs with coverage greater than 90%. This suggested that, in areas with higher median household income there may have been a slight decrease in reported fraud arrests. Higher incomes might correlate

with better awareness about fraud leading to fewer instances of fraud arrests. The reported relationship between poverty and reported fraud arrests was mixed. When looking at the areas with more than 90% coverage in fraud arrests reporting, this relationship turned negative and became significant, especially in the weighted model. This could mean that in regions with a strong Craigslist presence, increasing poverty levels might be associated with fewer fraud arrests. It's possible that in these areas, fraud might manifest in ways that are less detectable or reportable, or that the community nature of Craigslist provides alternative avenues for disputes to be resolved without resulting in arrests.

Impact of other factors in additional model with IPUMS CPS controls (Table 5)

It is also worth noting that when looking at the results of the additional models that incorporated control variables, a consistent negative association between the presence of Craigslist and the dependent variable across multiple specifications was evident. This suggested that Craigslist, or factors related to its usage, might have played a role in reducing the outcome variable, especially in areas with higher coverage more than 90%. The mechanism behind this association warrants further exploration, but it's plausible that the platform's features or user behaviors associated with it, could have been influential. The unemployment rate's significant positive effect in the third specification indicated that areas with higher unemployment might have had greater fraud arrests when all MSAs are weighted. This may point towards severe economic stress from lack of employment as a possible factor influencing the dependent variable. Prior research that has explored the impact of unemployment on criminal activity has primarily investigated other crime categories such as burglary, larceny, and robbery, with the results showing no substantial connections (Fallahi & Rodríguez, 2014). Interestingly, only motor-vehicle theft displayed a notable inverse correlation with unemployment, indicating a

tendency for an increase in such thefts during economic expansions (Fallahi & Rodríguez, 2014). Among the different crime effects studied, the most robust and consistent relationships are observed in the context of three property crimes: burglary, larceny, and motor vehicle theft, as highlighted by Phillips and Land (2012).

Income levels didn't show significant effects which could suggest that while unemployment was a factor, general income levels weren't as influential in affecting the outcome variable. The racial composition, specifically the proportion of Black Residents, presented mixed results. While a negative effect was observed in MSAS with more than 90% coverage without weights, positive effects appeared when all MSAs were considered and weighted, and when only those with 90% or more coverage were weighted. This nuanced finding might indicate that racial dynamics played a complex role in influencing fraud arrests. The positive associations between the outcome and those with less than high-school education, particularly in weighted specifications, hinted that areas with larger population of individuals with lower education attainment might have had a heightened number of fraud arrests. This discovery highlights the significance of educational policies and resource allocation as potential factors in mitigating this outcome, aligning with existing research that establishes a link between education and a decrease in criminal activity (Buonanno & Leonida, 2009; Groot & van den Brink, 2010; Lochner, 2020). Groot & van den Brink (2010) demonstrated a decline in the likelihood of engaging in offenses such as shoplifting, vandalism, threats, assault, and injury as individuals attain higher levels of education. However, their study also revealed a corresponding increase in the likelihood of engaging in tax fraud as individuals acquire more years of education.

Additionally, our analysis reveals that individuals with higher educational attainment tend to exhibit more lenient attitudes and social norms towards criminal conduct. In contrast, the “some college” category, also indicated a significant positive association in the third and fourth specifications. This raised the intriguing question about the middle ground of educational attainment and its distinct influence on fraud arrests as opposed to having a high-school diploma or not.

Discussion of model with lagged effects (Table 7)

The results presented in Table 7 offer valuable insights into the relationship between Craigslist entry and fraud arrests, considering various time lags and controlling for lagged outcome variables. These findings provide a more nuanced understanding of how Craigslist adoption in prior years may impact subsequent fraud arrest rates.

The consistent negative and significant estimates across columns 1, 2, and 3 suggest a robust pattern: when Craigslist was introduced in earlier years, it was associated with a subsequent decrease in fraud arrests. This finding aligns with the notion that online platforms like Craigslist may have influenced the dynamics of fraud activities. It is possible that the availability of online marketplaces altered the strategies employed by fraudsters, leading to a reduction in fraud-related arrests over time.

Moreover, when additional controls for lagged outcome variables (fraud arrests in prior years) were introduced in columns 4, 5, and 6, the negative impact of Craigslist entry in prior years on future fraud arrests persisted in most cases. This persistence underscores the potential influence of Craigslist on fraud arrest rates, even after accounting for prior-year arrest levels. However, it's important to interpret these results cautiously as other unmeasured factors, such as changes in law enforcement practices, public awareness campaigns, or technological

advancements, may also contribute to the observed trends. Furthermore, the specific mechanisms through which Craigslist affects fraud arrest rates require further exploration. For instance, it would be valuable to investigate whether increased online transaction activity on platforms like Craigslist leads to greater awareness of potential fraud, prompting individuals to report suspicious activities and thereby reducing fraud arrests. In summary, the results indicate a negative statistical association between Craigslist adoption in prior years and future fraud arrest rates. This suggests that areas with earlier Craigslist adoption tend to experience lower fraud arrests.

Discussion of additional model with interactions (Tables 8 and 9)

The interaction term between Craigslist and median household income was designed to capture the differential effect of income on fraud arrests in MSAs with and without Craigslist entry. In table 8b presenting weighted data, the interaction effect was both negative and significant, especially in MSAs with more than 90% coverage. This indicated that when data is weighted, areas with Craigslist's presence saw a more pronounced reduction in fraud arrests with an increase in median household income compared to those without Craigslist. This suggested that Craigslist might have had a magnifying or catalytic effect in more affluent areas, potentially leading to fewer fraud arrests. This could have been due to increased awareness, better transaction practices, higher digital literacy, or improved reporting and community-monitoring mechanisms in such areas. The interaction effect between Craigslist and the poverty rate was positive and significant especially in areas with more than 90% coverage and in the weighted models. This could suggest that while Craigslist offered many advantages, it could also become a platform for fraudulent activities in areas facing higher poverty levels. The ease of online

transactions might have provided new avenues for fraudulent activities in regions where economic desperation was higher and the need for alternative sources of income was greater.

These findings highlight the nuanced relationship between Craigslist entry, socioeconomic factors, and fraud arrests. It suggests that the presence of Craigslist may modify the dynamics between poverty, income, and fraud arrest rates in MSAs. Further research could delve deeper into the underlying mechanisms driving these interactions, shedding more light on the complex relationship between online platforms, socioeconomic variables, and crime trends.

Discussion of results from the Callaway and Sant'Anna method (Figure 2 and Tables 10 and 11)

In analyzing the influence on fraud arrests, the application of the DID methodology offered an essential tool for identifying the relationships between the variables under examination. However, when dealing with multiple treatment periods, the traditional DID method can pose challenges, particularly when earlier treated units are used as controls for later ones, potentially leading to concerns about heterogeneous treatment effects. The approach outlined by Callaway and Sant'Anna (2021) addresses these challenges by leveraging group-time average treatment effects. This method offers a more robust way to estimate treatment effects, ensuring that early treated units aren't inappropriately utilized as controls for later treated ones. The distinction is crucial in ensuring that the observed effects are not artifacts of the methodology but instead more reflective of real-world influences.

The event plot visualized in Figure 2 provided compelling insights. Through the Callaway and Sant'Anna method, the point estimates and their corresponding 95% confidence intervals provided further support to the findings of the general DID method. Crucially, the absence of pre-trends six years before the treatment bolstered the credibility of the primary

results. This consistency in results between the staggered and general DID methods further strengthened the study's inferences. Delving into the results of tables 10 and 11, which were based on a balanced panel, a significant negative effect of Craigslist on fraud arrests was observed. These results aligned with the broader narrative presented by the study. It's important to highlight the benefits of a balanced panel, which ensures that the same MSAs are consistently represented across the years under consideration. This uniformity can help mitigate potential biases from fluctuating sizes or missing data points. The fact that findings remained consistent even after refining the data to a balanced panel, (as required by the Callaway and Sant'Anna estimator) and after applying the more nuanced staggered DID approach underscored the robustness of the study's primary results.

Implications

The study's findings might suggest that the digital transition of certain transactions from offline to online platforms can have a net positive effect on reducing certain types of crime or leading to fewer arrests for those crimes. The decrease in fraud arrests does not necessarily mean a decrease in fraud occurrence, however. It could imply a shift in how fraud is detected and reported, with more incidents being resolved through the platform's mechanisms or private settlements rather than official law enforcement channels. Craigslist and similar platforms usually provide guidelines and resources about scams. The decrease in fraud arrests might indicate that such educational measures help in making the public more vigilant and less susceptible to fraud. Online communities often engage in self-policing. Users report suspicious listings and activity, and platforms can act faster than traditional law enforcement agencies to remove potentially fraudulent postings. This could lead to preemptive action against fraud before it escalates to an arrest.

Digital traceability of online platforms could potentially serve in decreasing the fraud activity in these platforms if criminals perceive those platforms as riskier due to the digital trails like IP addresses and email correspondence needed with users for communicating to complete the transactions and this may deter large-scale or organized fraud activities. It is possible that online platforms like Craigslist may contribute to the shifting of the nature of fraud. While large-scale frauds might decrease due to scrutiny of digital trails smaller scale frauds that go undetected may still continue. The nature of fraud might change rather than its occurrence. If this is the case, financial losses for consumers due to fraud could decrease in absolute numbers assuming that smaller scale frauds involve smaller transactions and smaller monetary losses. As new technologies were incorporated to create online marketplaces for consumers, more scrutiny would be placed on data privacy, security measures and the legal and ethical implication of e-commerce practices.

Another implication that online platforms like Craigslist can have, is the potential of stimulating local economies by offering an avenue for people to sell and buy used and other goods using a free or low-cost medium for trading. As such, economic benefits and opportunities might indirectly contribute to reducing economic-driven crimes. Such findings can guide policymakers when considering regulations for online marketplaces. Recognizing the potential benefits of these platforms in reducing certain crimes might lead to more supportive policies.

Implications for Consumers

The findings of this study can help instill more confidence for consumers to transact on online platforms like Craigslist believing that they are less likely to encounter fraud activities. Aware of the platform's impact consumers might become more proactive in educating themselves about safer online transactions, utilizing platform guidelines correctly and best

practices to avoid scams. Consumers may prefer online platforms over traditional methods for buying and selling items anticipating a safer and more transparent experience. With increased trust in online platforms, there might be more transactions leading to potential economic savings and better deals for consumers. They might access a broader range of products or services that were not locally available before.

While the study showed a decrease in fraud arrests, it didn't suggest that there is absence of fraud in online transactions. Consumers should still exercise caution and understand that fraud that goes undetected or unreported in these platforms likely still exists. Consumers can use the information from the study to make knowledgeable decisions about where and how they interact with sellers, potentially choosing platforms with perceived lower risks of fraud. Knowing that community efforts on platforms like Craigslist can deter fraud, consumers might become more engaged and may be more likely to report suspicious activity resulting to a more vigilant and effective self-policing online community. There may be a shift in risk perception about online versus offline transactions and consumers may perceive online transactions as safer than before when the right measures are taken. With the awareness of the platform's effect in reducing fraud arrests, consumers may demand more robust safety measures, fraud detection mechanisms and educational resources from similar online platforms that are more prevalent today like Amazon, eBay and others. Consumers might generalize the findings to other online marketplaces and platforms, expecting them to have similar effects on fraud detection and arrests. This could influence their behavior on those other platforms as well. In essence, while the results might positively influence consumers' beliefs and behaviors when using online platforms, it's crucial to understand the differences between online platforms, to remain informed of current

developments, and to be vigilant and proactive in safeguarding themselves against potential risks.

Implications for Financial Professionals

The findings indicating a decrease in fraud arrests in areas where Craigslist was adopted have significant implications for financial professionals, particularly in the field of financial planning. Professionals may need to adapt their risk assessment strategies to address evolving fraud risks. Understanding how online platforms like Craigslist impact local fraud rates can inform risk evaluations for clients engaging in online transactions, helping them make informed decisions regarding purchases, savings, and investments.

Financial planners can delve into consumer behavior, as Craigslist adoption may influence how individuals shop and interact with products and services in online marketplaces. By understanding consumer preferences, financial professionals can offer more tailored advice and strategies to optimize clients' financial decisions. Financial planning often includes budgeting, and Craigslist's influence on shopping habits and product choices may affect clients' budgeting needs. Professionals can assist clients in analyzing their spending patterns, and optimizing budgets for maximum financial well-being.

With insights into consumers' use of online platforms like Craigslist, financial professionals can provide guidance on purchasing, saving and investment strategies. Clients may have opportunities to benefit from cost-effective purchasing methods or identify potential investment opportunities linked to evolving consumer trends. Additionally, financial planners can play a role in educating clients about online transaction risks, including security and scams, promoting informed choices when engaging in online activities.

Overall, these findings expand the scope of financial planning beyond traditional financial aspects to encompass digital consumer behavior. By addressing the implications of Craigslist adoption on fraud arrest rates and consumer choices, financial professionals can offer more comprehensive guidance, helping clients navigate the evolving financial landscape effectively. Financial professionals should be aware that a decrease in fraud arrests may suggest a shift in fraud tactics towards online platforms, potentially making financial crimes more sophisticated and harder to detect. This may necessitate an increased focus on cybersecurity measures, including advanced security technologies, robust authentication processes, and employee and client education on online security risks. Despite decreasing fraud arrests, financial professionals should maintain rigorous due diligence procedures, especially in areas with prevalent online marketplaces. Collaboration with platforms like Craigslist for sharing information and best practices on fraud prevention can enhance risk mitigation efforts. Investing in data analysis and monitoring tools to detect unusual transaction patterns is essential, even in environments where fraud arrests are decreasing. Financial professionals must acknowledge the ever-evolving nature of fraud and continuously adapt, develop new strategies, and invest in emerging technologies to stay ahead.

Financial professionals can gain insights into how the introduction of online platforms affects consumers' trust levels in digital transactions, guiding advice on online investments. Advisors can adjust risk profiles for clients engaged in frequent online transactions based on the study's findings. For clients involved in buying or selling items online as a side business or investment, advisors can make informed recommendations about using online platforms based on empirical evidence.

A reduction in fraud can have broader economic implications, influencing consumer confidence and spending patterns. Advisors can use such insights to gauge economic health in specific regions or sectors. With changing landscapes in online transactions, advisors may need to stay updated on the implications of online platforms for digital assets like cryptocurrencies. Remaining informed about technological trends impacting financial markets ensures the relevance of their advice in a digitizing world. While the study primarily focuses on the direct impact of Craigslist on fraud arrests, its broader implications provide valuable insights into digital trust, risk assessment, and the evolving nature of online transactions. Financial professionals should remain vigilant, adapt to the changing landscape, and prioritize fraud prevention and risk management efforts to protect their organizations and clients effectively.

Implications for Law Enforcement Agencies

The study's findings could serve as a catalyst for law enforcement agencies to adapt their strategies, resources, and training to the evolving digital landscape and the unique challenges and opportunities it presents. Law enforcement agencies might reconsider how they allocate resources. If fraud arrests decreased in areas with Craigslist, resources previously devoted to such investigations might be reallocated to other pressing concerns or areas of crime. Law enforcement could use the findings to guide public awareness campaigns, educating the public about safe online transactions, and how to report suspicious online activities. They may create new tools to make it easier for consumers to report those activities, to decrease the likelihood of underreporting fraudulent online activities. The study might underscore the importance of digital traces in investigations. Law enforcement agencies could develop protocols to collect and analyze digital evidence from platforms like Craigslist.

Another very important topic that may need to be addressed is the evaluation of reporting mechanisms. Law enforcement might evaluate whether a decrease in arrests is due to a genuine reduction in fraud or because of underreporting. If the latter, they could work not only on improving mechanisms for victims to report fraud but also on their own reporting mechanisms of fraud arrest data in UCR. For example, the reporting could become more granular and detailed to help future research endeavors better understand the nature and potential causes of fraud crimes.

With platforms like Craigslist often having self-policing communities, law enforcement might collaborate with these communities, offering training or resources to help them more effectively identify and flag suspicious activities. Law enforcement and future research endeavors should consider whether the decrease in fraud arrests in one area might correlate with an increase in another type of crime in the same area or in neighboring regions without Craigslist. This would give insights into crime displacement. Emphasizing the digital nature of many transactions there might be a need for an investment in forensic tools and technologies that aid and improve tracking, reporting, and analyzing of online fraudulent activities.

Implications for Policymakers

Policymakers might see the potential of promoting and supporting online platforms like Craigslist as a tool for reducing certain types of crime arrests, leading to policies that encourage growth and development of similar platforms. There could be an incentive to establish or refine regulatory frameworks that ensure online platforms operate transparently, provide user education, and collaborate with law enforcement. The findings might encourage policymakers to promote partnerships between online platforms and public entities to jointly tackle fraud and other crimes. Policy makers might revisit consumer protection laws to ensure they adequately cover transactions on digital platforms, ensuring both buyers and sellers are safeguarded.

Policymakers could advocate for better digital infrastructure, ensuring that more regions have access to reliable internet. This can facilitate the broader use of online platforms like Craigslist and potentially replicate the observed benefits in other areas. Recognizing the importance of accurate crime reporting in the digital age, there might be a push to modernize and streamline how online fraud and other digital crimes are reported and recorded. Understanding that platforms like Craigslist can impact the local economy, policymakers might consider how these platforms fit into broader economic policies, job markets, and local business ecosystems. While the study focuses on fraud, policymakers might be interested in exploring the broader impacts of such platforms on various societal aspects from employment to housing, guiding comprehensive policies. Given that online platforms often operate beyond local or even national boundaries, there might be a push for better cross-jurisdictional collaboration to address crimes and disputes that span multiple regions. Lastly, policymakers might consider funding the FBI specifically with the goal to improve data collection and reporting on various crimes such as fraud to better understand its drivers and consequences.

Limitations

The Uniform Crime Reporting (UCR) program, which is managed by the Federal Bureau of Investigation (FBI), is one of the primary sources of crime statistics in the United States and its data has been used by many researchers in the past. However, there are several limitations to the UCR data. Not all crimes are reported to the police, and not all crimes reported to the police are included in the UCR. The UCR primarily focuses on major crime categories, so some frequent or minor crimes might be excluded. There could be underreporting of crime data as the UCR relies on crimes reported by local law enforcement agencies. Many crimes, especially certain types of property crimes or victimless crimes might go underreported by victims or

witnesses. Fraud crimes that are the subject of our study, are categorized as a part II offenses in UCR. For Part II offenses only arrest data are available. Fraud incident reports are not available. If fraud incidents were available in the UCR data, it could have significantly added to the richness of this analysis.

There could also be heterogeneity in reporting, different jurisdictions might have different standards or practices for reporting crimes, leading to potential inconsistencies in the data. If multiple crimes occur in a single incident the UCR typically only counts the most serious offence. This can lead to undercounting of certain types of crimes. No detailed information is available as UCR often does not collect data on the circumstances of the crime, the relationship between the victim and offender or other specific details about the offender. Participation in the UCR program has historically been voluntary and remains voluntary currently for local law enforcement agencies (Federal Bureau of Investigation, 2023a; Maltz, 1999). While most jurisdictions report their data, there are some that do not, which can lead to gaps in the data. The UCR's optional participation, can impact the reliability and thoroughness of the data. While the FBI emphasizes data quality, it cannot force agencies to submit timely data or even any data. Due to this, the FBI often encounters issues with delayed or absent data. To address these gaps, the FBI estimates or imputes data, which could affect the precision of the crime statistics reported (Maltz, 1999). Definitions of certain crimes can vary from state to state. For instance, what one state may classify as a certain type of assault, another state might classify differently. A state might define offenses in ways that don't match UCR standards, causing the data they provide to be rejected (Maltz, 1999). There are concerns that some jurisdictions might underreport crimes to present a better image of their area, or that reporting might be influenced by political or administrative pressures (Maltz, 1999). The 1993 county-level UCR data were

made unavailable due to problems that were discovered with the data. As such, the analysis excluded the 1993 year from the pre-trends analysis and included the rest of the years for a total of five periods prior to the first Craigslist entry for reach area, when available. Unfortunately, the UCR does not provide detailed data on the specific types of fraud arrests, so it is not possible to distinguish whether the fraud crimes that lead to the arrests were initiated and implemented online through an online marketplace or other online resource or offline through more traditional transaction methods. While there is some available data on fraud complaints from 2004 based on the FTC survey during that time, those are provided in the Appendix for informational purposes as there was no way to directly link the complaint data to the UCR fraud arrest data used in this study.

The Current Population Survey (CPS) is a monthly survey of U.S. households conducted by the U.S. Census Bureau for the Bureau of Labor Statistics. IPUMS CPS provides harmonized versions of the data collected from the CPS (Flood et al., 2020). While the CPS is a valuable resource for understanding labor force characteristics and other related topics in the U.S. there are limitations that are worth noting. CPS is a sample survey, so its results are subject to sampling error. While it's designed to be nationally representative, there can be limitations in capturing data from smaller subpopulations or rare events. Not every selected household or individual participates in the CPS leading to potential non-response bias. The CPS relies on the respondent's ability to recall past events accurately, which can lead to inaccuracies, especially when asking about past employment experiences or income. For variables with very high values (like income), the CPS sometimes replaces the actual value with a maximum threshold value to maintain confidentiality. This practice that is called top coding, can limit the analysis of income inequality at the highest levels. While the CPS does have some panels that can be followed over

time (such as rotation groups) it's primarily a cross-sectional dataset. Over time, the definitions, and categorizations of certain variables may have changed in the CPS leading to potential inconsistencies when looking at long-term trends. This has been particularly time consuming and challenging for this study, while aggregating the data at the MSA level for the analysis. This is the most likely explanation of why some MSAs do not have recorded data for all the years that resulted in a decreased sample used in the DID model with control variables from IPUMS CPS data. IPUMS CPS harmonizes variables to make them consistent over time between datasets. While this facilitates longitudinal analysis, some detailed information might be lost or generalized in the harmonization process. Proper analysis of CPS data requires the use of weights, which can be complex and vary depending on the specific research question or month of data (Minnesota Population Center., 2023). Certain types of income or employment might be underreported in the CPS, either due to stigmatization or simple oversight. While the CPS aims to be nationally representative, certain populations like homeless individuals or those in institutions might not be adequately covered. The CPS's complex design, which includes stratification, clustering, and multiple stages of selection, requires specialized software and techniques for variance estimation. Lastly, due to the nature of the Craigslist entry and staggered rollout in the various MSAs combined with the nature of the quasi-experimental approach of the DID statistical analysis used in this study, the examination was limited to the years from 1995 to 2006.

Concluding Remarks

In the context of online marketplaces and their broader societal implications, the research presented has delved into their potential influence on fraud arrests. Utilizing both the traditional DID analysis and the staggered DID approach, the findings consistently indicate the correlation

of Craigslist entry and a decrease in fraud arrests across various MSAs. This correlation observed through multiple statistical tests, suggests the potential benefits or shifts introduced by Craigslist's presence in these regions. Nevertheless, it is crucial to highlight that a decrease in fraud arrests doesn't automatically imply a decline in the overall instances of fraud. Overall, this research illuminates the nuanced impacts of online marketplaces like Craigslist on societal metrics such as fraud arrests. The findings underscore the need for continued exploration in this domain, ensuring that the implications of these platforms are understood in their entirety.

Future Research

The study opens avenues for further research. For instance, researchers might explore the types of fraud that decreased, investigate long-term trends beyond the initial introduction of Craigslist, or examine the impacts of other popular online platforms on local crime rates. If more detailed fraud arrest data are available in the future, it could be enlightening to disaggregate the fraud data further, investigating the specific types of fraud that have been most affected by Craigslist's presence. This could help isolate the types of frauds that online platforms deter most effectively versus those they might inadvertently foster. Investigating how different online platforms, whether they are like Craigslist or not, affect fraud rates can give a deeper insight into how platform designs, usage rules and user interactions drive criminal actions. A deep dive into user behavior, exploring how users' proficiency in recognizing and reporting scams has evolved over time, can provide insights into the organic mechanisms that deter fraud on online platforms.

As highlighted, law enforcement's strategies might have evolved with the rise of online platforms. Investigating the nuances of these strategies, their efficacy, and their influence in the overall decrease in fraud arrests can be an area of interest for future research. The study can be expanded globally, analyzing how different cultural, regulatory, and technological contexts

might influence the relationship between online platform adoption and fraud rates. A specific exploration of the importance of digital trails in prosecuting fraud cases can shed light on the technological advancements needed in law enforcement to leverage such data optimally.

In summary, while the study's findings provide valuable insights, they also highlight the complexity of the relationship between online platforms and local fraud crime rates. This study sets the stage for a plethora of future inquiries. Delving into these areas can provide a holistic understanding on the digital economy's intersection with crime and fraud, guiding policymakers, businesses, and consumers in this evolving landscape.

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Appendix A - Fraud Incidents by Type of Product Involved

Consumer Fraud in the United States: An FTC Survey

Table 3-4: Fraud Incidents by Type of Product Involved^a

Product	Number of Incidents (millions) ^b
Advance fee loans or credit cards	6.50 (4.55 - 8.55)
Buyers' clubs	4.95 (3.60 - 6.30)
Credit card insurance	4.60 (3.10 - 6.15)
Telephone and Internet services (not including information services provided over the Internet or pay-per-call telephone)	3.15 (2.05 - 4.20)
Pyramid scheme	2.55 (1.20 - 3.85)
Credit repair	2.45 (1.35 - 3.55)
Prizes	2.40 (1.35 - 3.45)
Household and kitchen items	1.20 (0.40 - 2.00)
Business opportunities	0.95 (0.15 - 1.70)
Government job offers	0.65 (0.10 - 1.20)
Magazines	0.65 ((x) ^c - 1.50)
Clothing and apparel	0.55 ((x) - 1.10)
Computers: hardware and software	0.45 ((x) - 1.00)
Cars and automobile accessories	0.45 ((x) - 1.00)
Information services provided over the telephone	0.45 ((x) - 0.95)
Health care products	0.40 ((x) - 0.85)
Travel services (including vacations)	0.30 ((x) - 0.65)
CDs, video tapes, or DVDs	0.25 ((x) - 0.70)
Information services provided via the Internet	0.15 ((x) - 0.45)
Real estate (including timeshares)	0.05 ((x) - 0.20)

Notes.

a Projections are based on U.S. population of 217.76 million adults aged 18 and over as of July 1, 2003. (See U.S. Census Bureau, Population Division, Table ST-EST2003-01res: Annual Estimates of the Resident Population by Selected Age Groups of the United States and States: July 1, 2003 and April 1, 2000.)

The sum of the estimates in the table are less than the total number of incidents shown in Table 3-2, because some incidents could not be assigned to any of the product categories.

b Numbers are rounded to the nearest 0.05 million. Numbers in parentheses are 95 percent confidence intervals.

c (x) denotes a value of less than 0.05.

Appendix B - How Victims First Learned About the Product or Service Involved in Frauds

Consumer Fraud in the United States: An FTC Survey

Table 3-5: How Victims First Learned About the Product or Service Involved in Frauds^a

Media	Number of Incidents (millions) ^b	Percent ^b
Total, All Fraud Incidents (Specific and More General)	35.45	100%
Print advertising ^c	11.65 (9.05 - 14.60)	33.0% (26.0% - 39.9%)
Telemarketing	5.95 (3.90 - 8.20)	16.8% (11.2% - 22.3%)
Internet and Email ^d	4.90 (3.10 - 6.85)	14.0% (8.8% - 19.1%)
Television or radio advertising ^e	3.70 (2.10 - 5.50)	10.6% (6.1% - 15.2%)
Only realized being charged when received a bill	2.55 (1.25 - 4.05)	7.3% (3.4% - 11.1%)
Other media	6.50 (4.50 - 8.75)	18.4% (12.7% - 24.2%)

Notes.

a Numbers are rounded to the nearest 0.05 million and percentages to the nearest 0.1 percent. Estimates for individual categories may not add to totals due to rounding.

b Numbers in parentheses are 95 percent confidence intervals.

c Includes newspaper and magazine advertising, direct mail advertising including catalogs, and posters.

d Includes Internet auction sites as well as other Internet sites.

e Includes television infomercials.

Appendix C - Number of Fraud Complaints and Amount Paid

Total Number of Fraud Complaints & Amount Paid Calendar Years 2004 through 2006

CY	Total No. of Complaints	Complaints Reporting Amount Paid	Percentage of Complaints Reporting Amount Paid	Amount Paid Reported	Average Amount Paid ¹	Median Amount Paid ²
2004	410,709	310,299	76%	\$568,702,566	\$1,833	\$262
2005	437,906	285,255	65%	\$683,484,366	\$2,396	\$349
2006	428,319	364,500	85%	\$1,187,305,506	\$3,257	\$500

¹Average is based on the total number of consumers who reported amount paid for each calendar year: CY-2004 = 310,299; CY-2005 = 285,255 ; and CY-2006 = 364,500. One hundred eighty-four consumers reported an amount paid of \$1 million or more during CY-2006; 42 and 49 consumers for CY-2004 and CY-2005, respectively.

²Median is the middle number in a set of numbers so that half the numbers have values that are greater than the median and half have values that are less. Calculation of the median excludes complaints with amount paid reported as \$0.

Distribution of Fraud Complaints by Reported Amount Paid Calendar Years 2004 through 2006

Amount Paid	CY - 2004		CY - 2005		CY - 2006	
	Complaints	Percentages ³	Complaints	Percentages ³	Complaints	Percentages ³
\$0	93,913	30%	91,028	32%	154,157	42%
\$1 - 25	21,529	7%	17,053	6%	15,133	4%
\$26 - 50	21,602	7%	17,635	6%	15,845	4%
\$51 - 75	13,539	4%	9,816	3%	9,128	3%
\$76 - 100	12,185	4%	9,453	3%	9,222	3%
\$101 - 250	37,811	12%	30,383	11%	28,633	8%
\$251 - 500	34,488	11%	27,443	10%	28,382	8%
\$501 - 1,000	25,232	8%	23,420	8%	29,591	8%
\$1,001 - 5,000	38,860	13%	45,109	16%	58,253	16%
More than \$5,000	11,140	4%	13,915	5%	16,156	4%

³Percentages are based on the total number of consumers who reported amount paid for each calendar year: CY-2004 = 310,299; CY-2005 = 285,255; and CY-2006 = 364,500.

Appendix D - Number of Internet-Related Fraud Complaints and Amount Paid

Total Number of Internet-Related Fraud Complaints & Amount Paid *Calendar Years 2004 through 2006*

CY	Total No. of Complaints	Complaints Reporting Amount Paid	Percentage of Complaints Reporting Amount Paid	Amount Paid Reported	Average Amount Paid ¹	Median Amount Paid ²
2004	210,850	188,757	90%	\$271,345,207	\$1,438	\$215
2005	197,084	160,574	81%	\$336,559,907	\$2,096	\$342
2006	204,881	176,847	86%	\$590,310,461	\$3,338	\$500

¹Average is based on the total number of consumers who reported amount paid for each calendar year: CY-2004 = 188,757; CY-2005 = 160,574; and CY-2006 = 176,847. Eighty-five consumers reported an amount paid of \$1 million or more during CY-2006; 15 and 24 consumers for CY-2004 and CY-2005, respectively.

²Median is the middle number in a set of numbers so that half the numbers have values that are greater than the median and half have values that are less. Calculation of the median excludes complaints with amount paid reported as \$0.

Distribution of Internet-Related Fraud Complaints by Reported Amount Paid *Calendar Years 2004 through 2006*

Amount Paid	CY - 2004		CY - 2005		CY - 2006	
	Complaints	Percentages ³	Complaints	Percentages ³	Complaints	Percentages ³
\$0	45,402	24%	35,969	22%	75,558	43%
\$1 - 25	15,374	8%	10,241	6%	6,711	4%
\$26 - 50	15,297	8%	11,344	7%	7,186	4%
\$51 - 75	10,192	5%	6,844	4%	4,500	3%
\$76 - 100	8,540	5%	6,311	4%	4,544	3%
\$101 - 250	26,922	14%	20,245	13%	14,077	8%
\$251 - 500	20,915	11%	17,596	11%	14,015	8%
\$501 - 1,000	17,231	9%	16,487	10%	15,714	9%
\$1,001 - 5,000	23,457	12%	28,189	18%	26,854	15%
More than \$5,000	5,427	3%	7,348	5%	7,688	4%

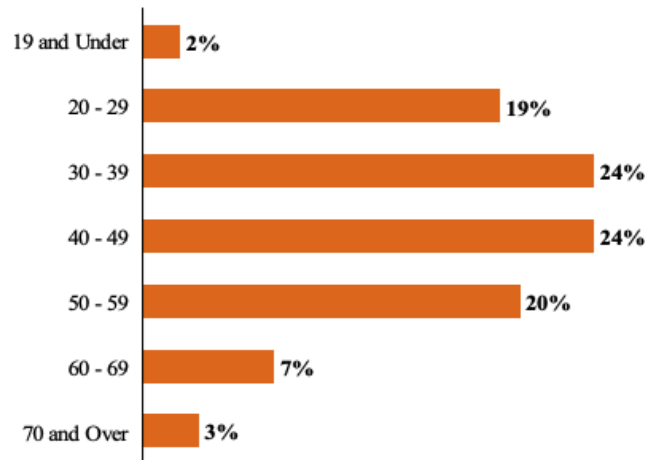
³Percentages are based on the total number of consumers who reported amount paid for each calendar year: CY-2004 = 188,757; CY-2005 = 160,574; and CY-2006 = 176,847.

Appendix E - Internet-Related Fraud Complaints by Consumer Age

Definition of "Internet-related": A fraud complaint is "Internet-related" if it concerns an Internet product or service, the company initially contacts the consumer via the Internet, or the consumer responds via the Internet.



Internet-Related Fraud Complaints by Consumer Age¹ January 1 - December 31, 2006



Internet-Related Fraud Complaints by Consumer Age Calendar Years 2004 through 2006

Consumer Age Range	CY - 2004		CY - 2005		CY - 2006	
	Complaints	Percentages ¹	Complaints	Percentages ¹	Complaints	Percentages ¹
19 and Under	6,325	4%	5,503	3%	1,498	2%
20-29	42,232	24%	40,043	25%	11,904	19%
30-39	45,230	26%	39,804	25%	14,418	24%
40-49	42,182	24%	37,573	24%	14,966	24%
50-59	27,605	16%	25,838	16%	12,043	20%
60-69	8,992	5%	8,462	5%	4,537	7%
70 and Over	2,602	1%	2,590	2%	1,802	3%
<i>Total Reporting Age</i>	<i>175,168</i>		<i>159,813</i>		<i>61,168</i>	

¹Percentages are based on the total number of consumers reporting their age in Internet-related fraud complaints for each calendar year: CY-2004 = 175,168; CY-2005 = 159,813; and CY-2006 = 61,168. 30% of consumers reported this information during CY-2006, 83% and 81% for CY-2004 and CY-2005, respectively.

Appendix F - Figures 3 and 4

Figure 3

Search efficiency and amount of search (Biswas, 2004).

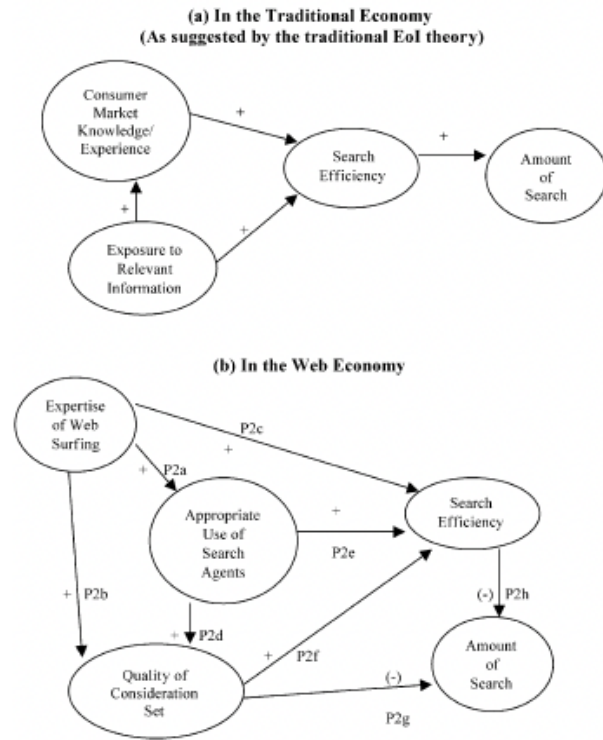


Figure 4

Consumer Vulnerability Conceptual Framework (Hill & Sharma, 2020).

562 Hill and Sharma

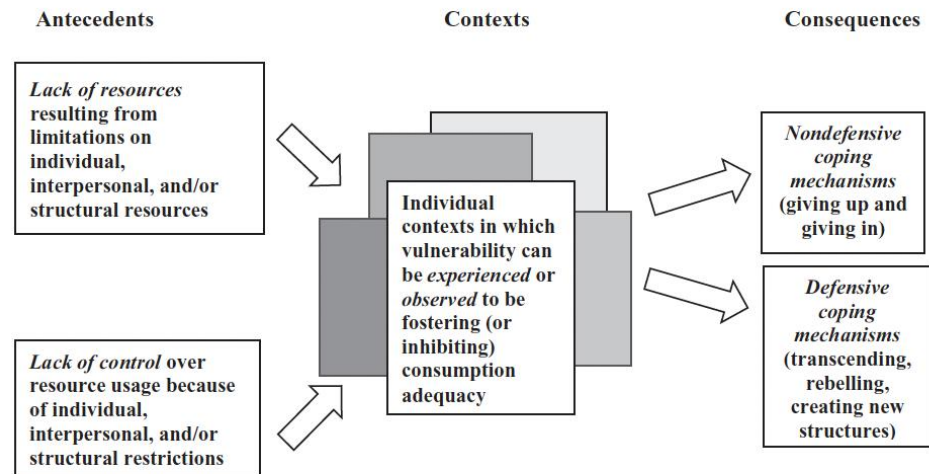


Figure 1. Conceptual framework of consumer vulnerability—experienced or observed.

Appendix G - Victim Profiles - Data from the U.K.

Victim profiles

Type of scam	Victim profile	Report	Number of victims	Financial impact individual	Total financial impact annually
Gambling					
Prizedraw and sweepstake scams	Female (57%) 35-64 (66%)	Low reporting to police (2%)	380,000	£33 median	£60 million
Foreign lottery scams	Male (53%) 35-64 (58%) 65+ (24%)	Low reporting to police (3%) or to local authority (2%)	140,000	£42 median	£260 million
Bogus tipsters					£5 million
Money making					
Work at home and business opportunity scams	Female (53%) 35-64 (61%) under 34 (29%)	Low reporting to OFT/ local authority (2%) or to police (1%)	330,000	£43 median	£70 million
Internet matrix scams	Female (61%) 35-64 (70%)	No reports to authorities	70,000	£53 median	£10 million
Bogus products and services					
Miracle health and slimming cure scams	Female (78%) 35-64 (70%)	Low reporting to any statutory body (1%)	200,000	£46 median	£20 million
Premium rate and telephone prize scams	Male (53%) 35-64 (68%)	Low reporting to BT (2%) and police (1%)	1.08 million	£14 median	£80 million
Clairvoyant and psychic mailing scams	Female (70%) 34 and younger (31%)	Low reporting to statutory agency (1%)	170,000	£36 median	£40 million
Career opportunity scams	Female (65%) 35-64 (65%) under 34 (26%)	No reporting to authorities	70,000	£155 median	£30 million
Loan scams	Female (53%) 35-64 (66%) 65+ (18%)	Low reporting to police (3%), CAB (3%), Bank (2%) and DTI (1%)	110,000	£376 median	£190 million
Illicit scams					
African advanced fee frauds/foreign making scams	Male (64%) 35-64 (69%)	Low reporting, but higher than average to police (9%)	70,000	£2858 median	£340 million
Investment frauds					
High risk	Male (71%) 65+ (34%)	Medium 9% to police and 5% to OFT	90,000	£2751 median	£490 million
Property investment	Male (65%) 35-64 (76%) London (25%)	Very low 4% to police	40,000	£251 median (but 4,240 mean)	£160 million
Identity					
Identity fraud	Male 26-45 Professional director	Very high	100,000	£1303	£1.2 billion

Source: OFT (2006), Pascoe et al (2006), Experian (2008), Identity Fraud Steering Group (2008)

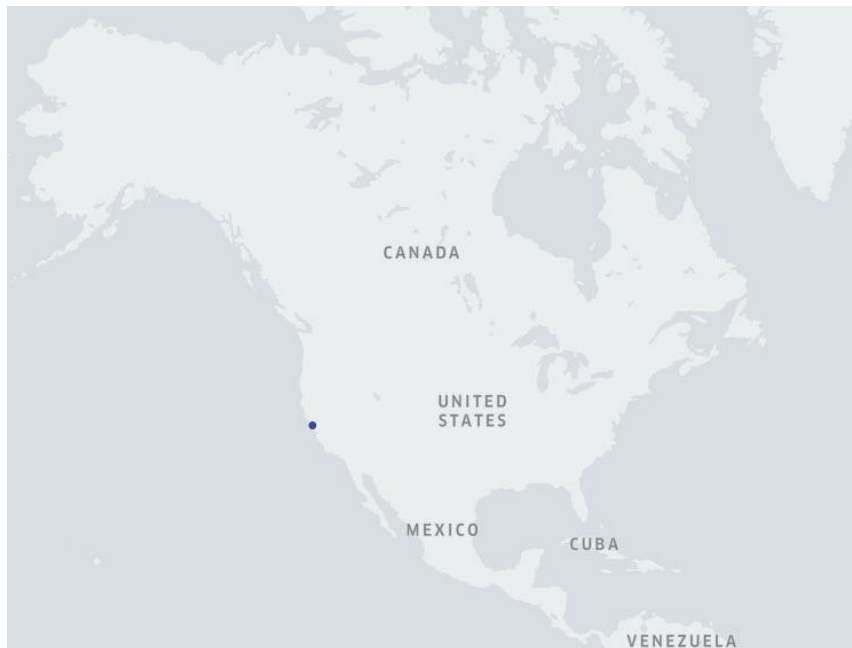
Note: Where there are gaps, there was no information available of sufficient quality to enter.

Appendix H - Craigslist Entry Concentration Maps

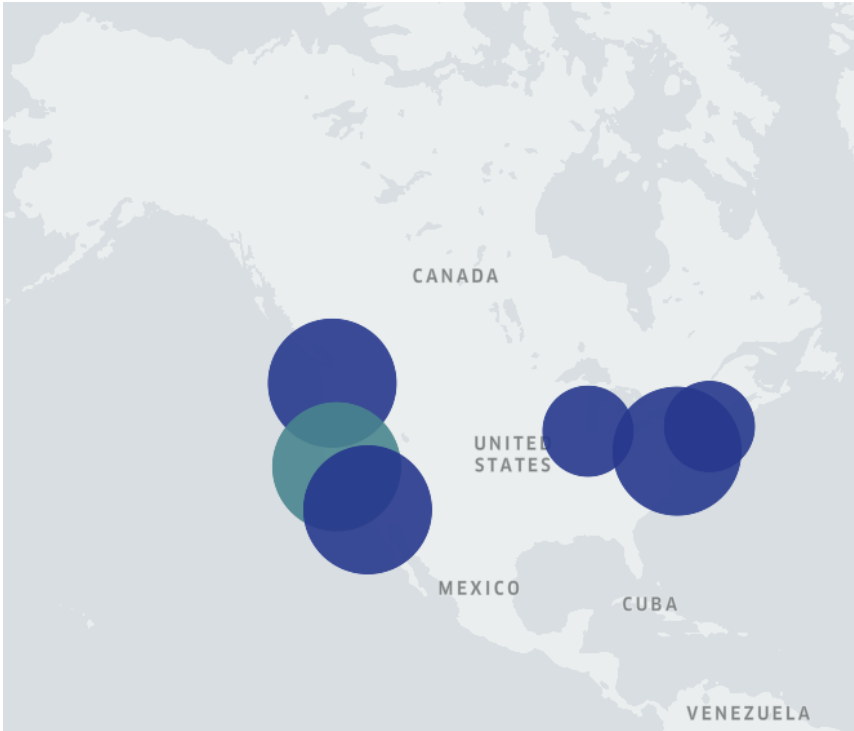
1995-1999 Craigslist Concentration Map with Clusters



1995-1999 Craigslist Concentration Map with Points



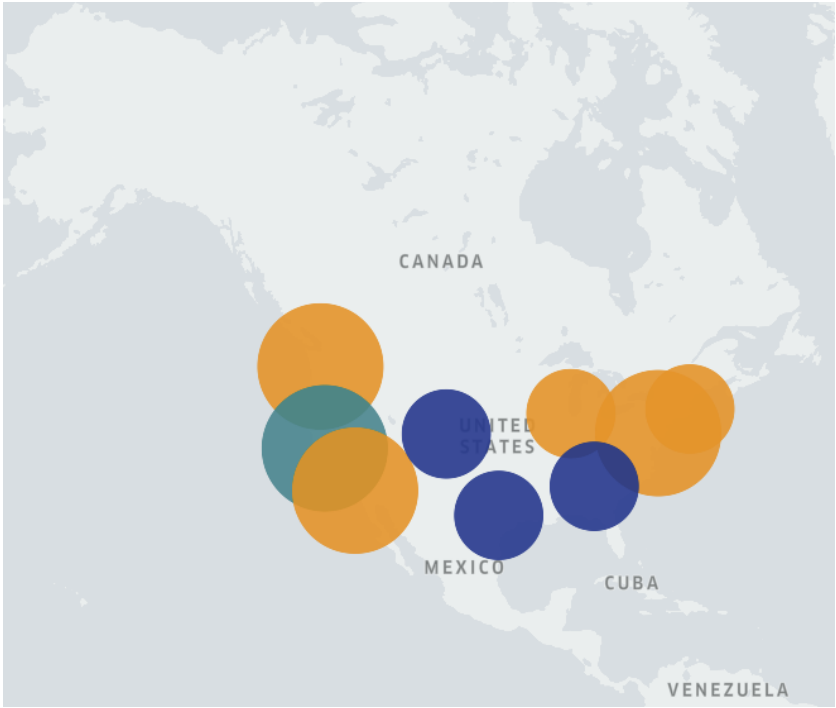
2000 Craigslist Concentration Map with Clusters



2000 Craigslist Concentration Map with Points



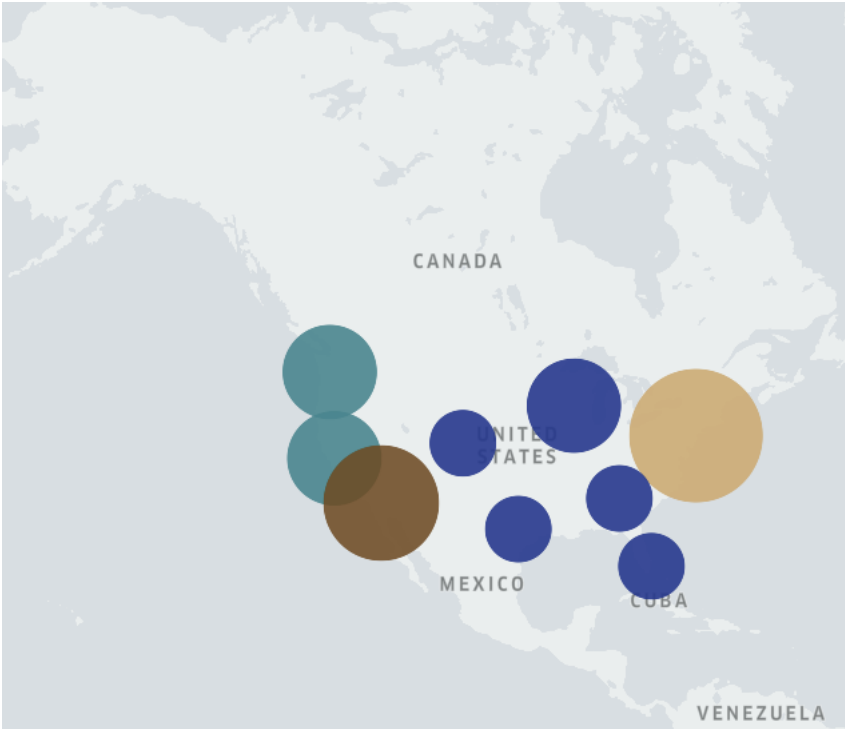
2001 Craigslist Concentration Map with Clusters



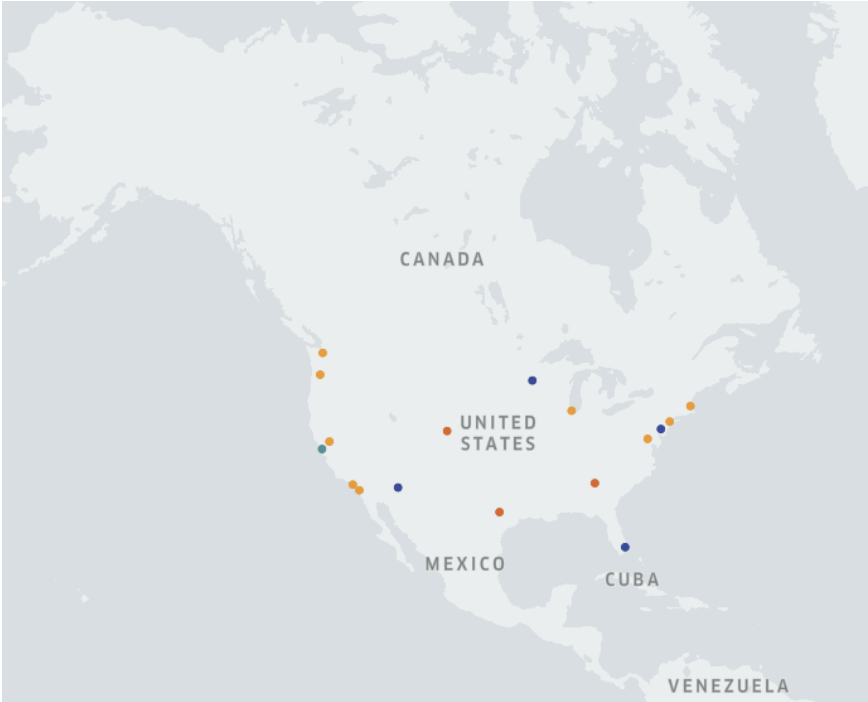
2001 Craigslist Concentration Map with Points



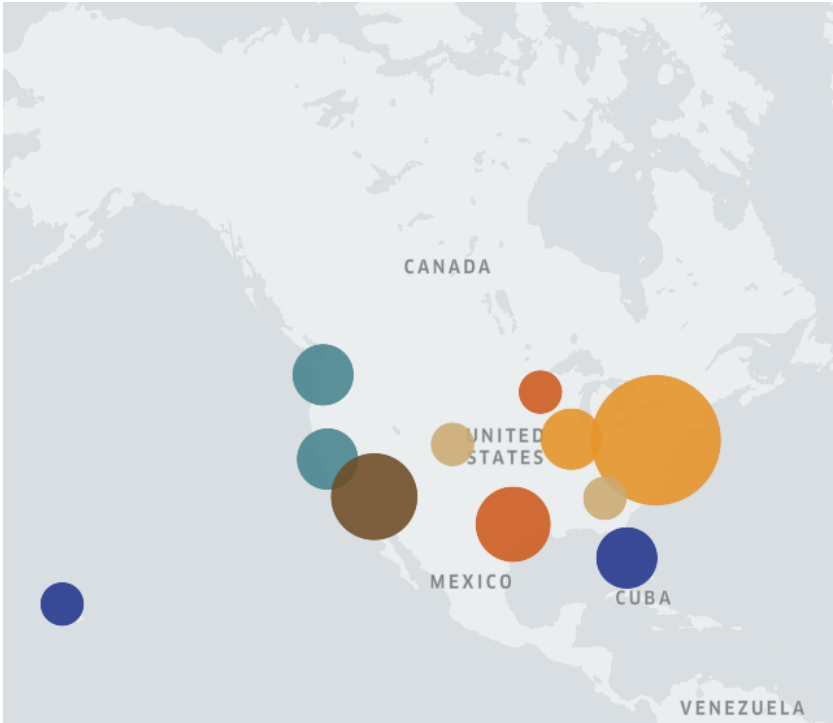
2002 Craigslist Concentration Map with Clusters



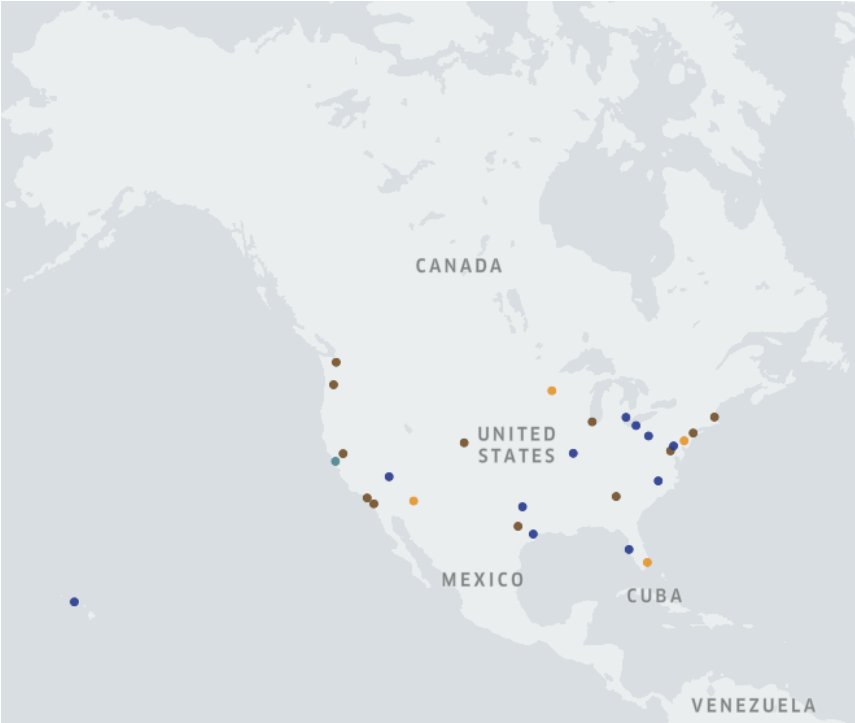
2002 Craigslist Concentration Map with Points



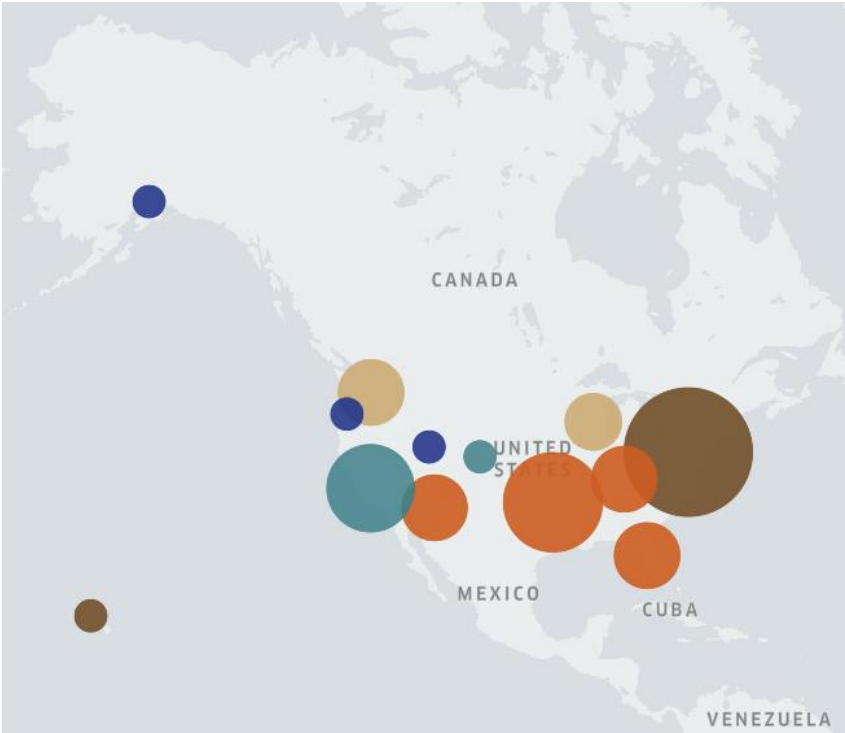
2003 Craigslist Concentration Map with Clusters



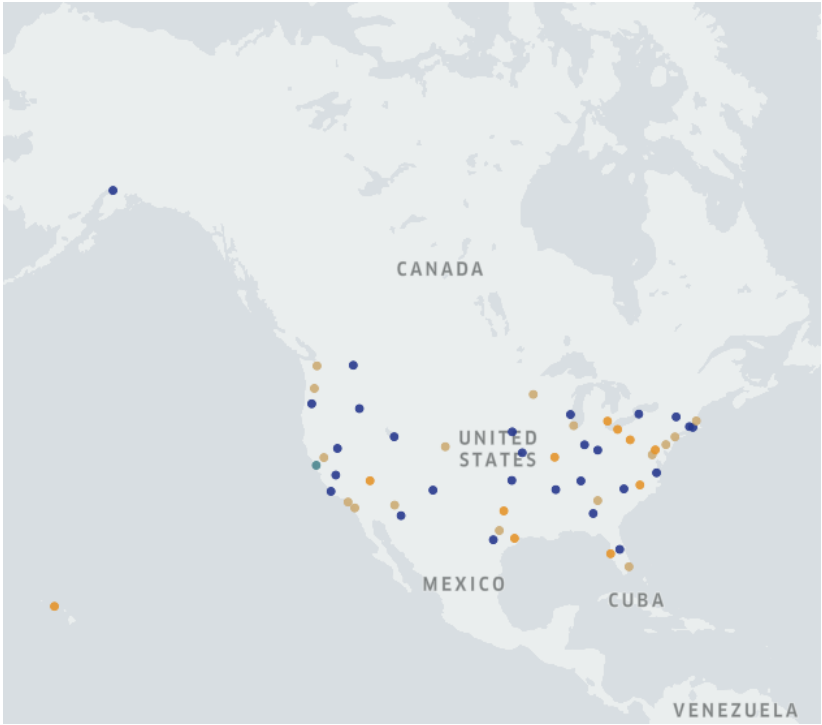
2003 Craigslist Concentration Map with Points



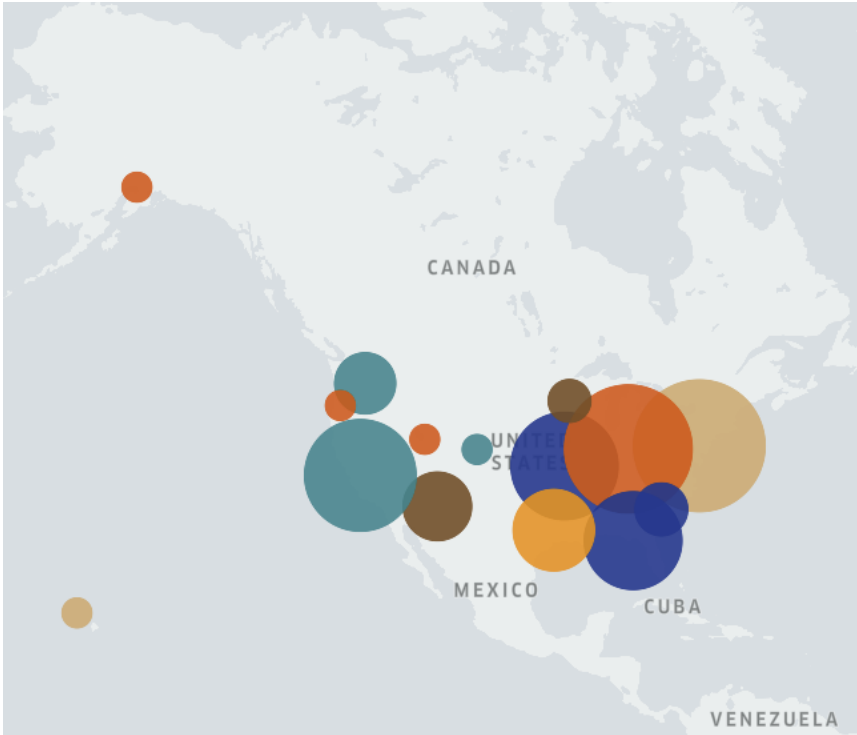
2004 Craigslist Concentration Map with Clusters



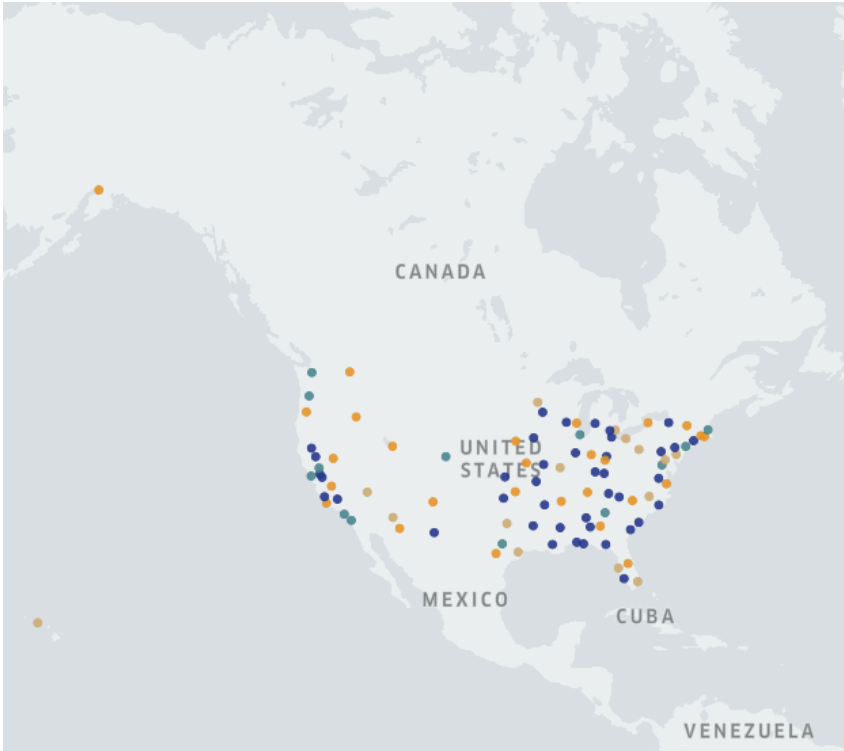
2004 Craigslist Concentration Map with Points



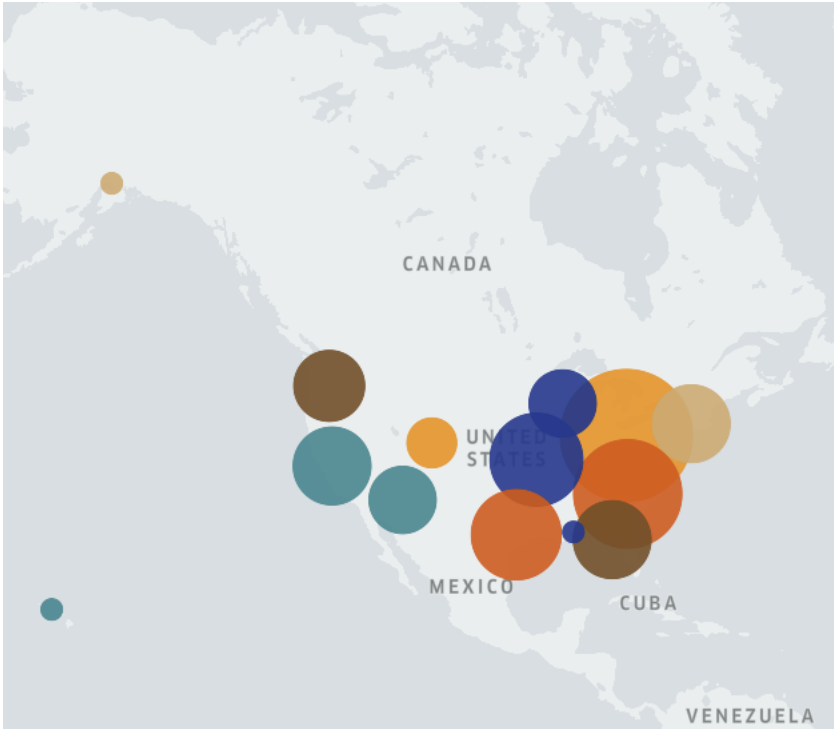
2005 Craigslist Concentration Map with Clusters



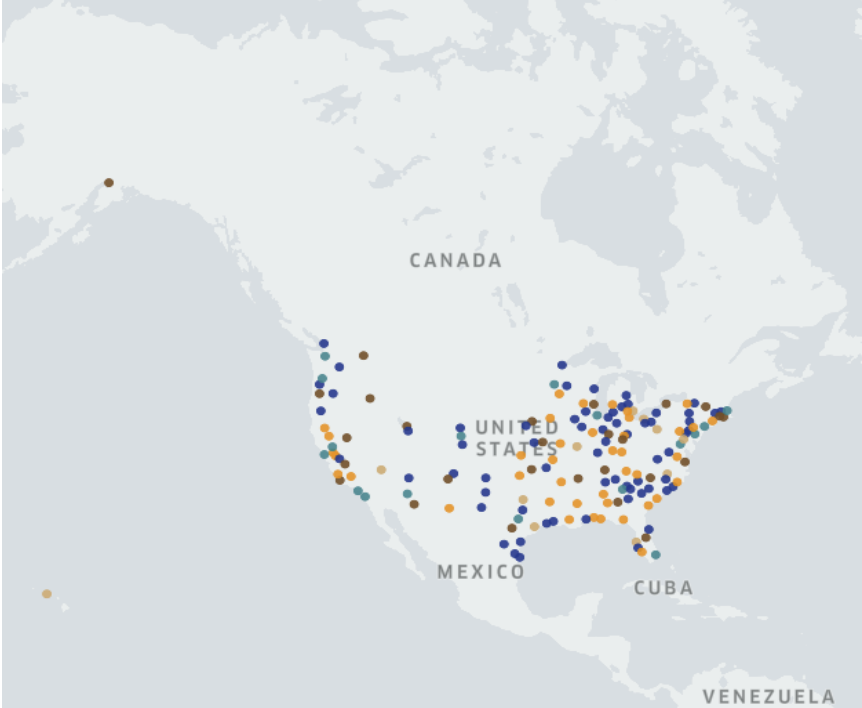
2005 Craigslist Concentration Map with Points



2006 Craigslist Concentration Map with Clusters



2006 Craigslist Concentration Map with Points



Craigslist Entry and Volume Data

Craigslist Entry Dates 1995-2006 and April 2007 Posts per 1,000 Population.

Source: (Kroft & Pope, 2014)

	Year	Month	City	MSA	State	Job Posts/ 1,000	Housing Posts/ 1,000	Personal Posts/ 1,000
1	1995	March	SF Bay Area	San Francisco-Oakland-Fremont	CA	16.7	22.3	46.0
2	2000	June	Boston	Boston-Cambridge-Quincy	MA	4.0	20.8	8.8
3	2000	August	Los Angeles	Los Angeles-Long Beach-Santa Ana	CA	2.4	2.4	6.3
4	2000	August	San Diego	San Diego-Carlsbad-San Marcos	CA	2.1	6.3	10.7
5	2000	August	Washington DC	Washington-Arlington-Alexandria	DC		3.8	5.3
6	2000	August	Chicago	Chicago-Naperville-Joliet	IL	3.5	3.1	3.7
7	2000	August	New York	New York-Northern New Jersey-Long Island	NY	3.4	14.1	13.1
8	2000	August	Portland	Portland-Vancouver-Beaverton	OR	3.2	6.0	8.8
9	2000	August	Seattle	Seattle-Tacoma-Bellevue	WA	7.0	6.8	9.2
10	2000	October	Sacramento	Sacramento-Arden-Arcade-Roseville	CA	9.2	5.5	10.2
11	2001	April	Denver	Denver-Aurora	CO	11.6	15.0	26.8
12	2001	April	Atlanta	Atlanta-Sandy Springs-Marietta	GA	5.3	9.6	18.2
13	2001	April	Austin	Austin-Round Rock	TX	16.7	21.4	38.9
14	2002	October	Phoenix	Phoenix-Mesa-Scottsdale	AZ	7.7	14.5	23.4

Year	Month	City	MSA	State	Job Posts/ 1,000	Housing Posts/ 1,000	Personal Posts/ 1,000	
15	2002	October	Miami	Miami-Fort Lauderdale- Pompano Beach	FL	10.1	21.3	17.6
16	2002	October	Minneapolis	Minneapolis- St. Paul- Bloomington	MN	4.1	8.5	17.8
17	2002	October	Philadelphia	Philadelphia- Camden- Wilmington	PA	4.4	6.2	12.8
18	2003	April	Detroit	Detroit- Warren- Livonia	MI	1.2	3.0	5.9
19	2003	April	Dallas	Dallas- Fort Worth- Arlington	TX	5.7	5.9	20.0
20	2003	April	Houston	Houston-Sugar Land-Baytown	TX	3.5	5.1	9.6
21	2003	November	Tampa Bay	Tampa-St. Petersburg- Clearwater	FL	2.9	9.4	9.5
22	2003	November	Honolulu	Honolulu	HI	5.8	18.9	14.6
23	2003	November	New Orleans	New Orleans- Metairie- Kenner	LA	2.1	4.7	1.1
24	2003	November	Baltimore	Baltimore- Towson	MD	4.0	6.2	9.7
25	2003	November	St. Louis	St. Louis	MO	2.0	3.5	7.1
26	2003	November	Raleigh	Raleigh-Cary	NC	7.4	10.3	26.2
27	2003	November	Las Vegas	Las Vegas- Paradise	NV	8.4	17.6	51.5
28	2003	November	Cleveland	Cleveland- Elyria-Mentor	OH	1.2	1.8	3.9
29	2003	November	Pittsburgh	Pittsburgh	PA	1.7	4.7	7.0
30	2004	January	Providence	Providence-Fall River-Warwick	RI	3.7	12.3	17.0
31	2004	February	Fresno	Fresno	CA	2.6	4.0	11.3
32	2004	February	Hartford	Hartford-West- Hartford-East- Hartford	CT	2.7	3.5	5.9
33	2004	February	Orlando	Orlando- Kissimmee	FL	4.2	14.7	16.8
34	2004	February	Indianapolis	Indianapolis- Carmel	IN	1.6	2.1	5.3
35	2004	February	Kansas City	Kansas City	MO	1.8	2.9	8.1
36	2004	February	Charlotte	Charlotte- Gastonia- Concord	NC	2.4	4.5	8.3

Year	Month	City	MSA	State	Job Posts/ 1,000	Housing Posts/ 1,000	Personal Posts/ 1,000
37	2004	February	Cincinnati- Middletown	OH	1.5	2.7	4.8
38	2004	February	Columbus	OH	2.3	4.5	8.2
39	2004	February	Nashville- Davidson- Franklin	TN	2.5	5.2	9.7
40	2004	February	Norfolk	VA	1.4	3.1	8.5
41	2004	February	Milwaukee- Waukesha- West Allis	WI	1.0	1.3	2.9
42	2004	September	Anchorage	AK	7.5	16.9	17.1
43	2004	September	Santa Barbara	CA	10.5	15.5	17.5
44	2004	September	Boise	ID	4.6	10.2	15.9
45	2004	September	Albuquerque	NM	2.6	4.1	4.0
46	2004	September	Buffalo	NY	1.0	2.2	4.5
47	2004	September	Memphis	TN	1.4	1.4	3.9
48	2004	September	Salt Lake	UT	4.6	5.1	7.2
49	2004	November	Tucson	AZ	3.2	7.7	7.1
50	2004	November	Omaha	NE	1.8	1.8	4.5
51	2004	November	Reno	NV	8.0	21.1	20.8
52	2004	November	Albany- Schenectady- Troy	NY	2.1	6.4	10.4
53	2004	November	Tulsa	OK	.9	1.0	3.1
54	2004	November	Eugene- Springfield	OR	5.5	10.8	18.8
55	2004	November	San Antonio	TX	2.6	4.1	6.9
56	2004	November	Spokane	WA	5.8	10.3	14.4

Appendix I - Sensitivity Analysis Tables

Table 12

Differences in differences analysis with additional specifications

	All MSAs	>65%	High Fraud	No SF	SF>65%
	(1)	(2)	(3)	(4)	(5)
Craigslist	1.122*	0.651	18.662	0.795	0.411
(SE)	(0.654)	(0.737)	(18.431)	(0.684)	(0.758)
Med. Income				0.00004	0.00004
(SE)				(0.0001)	(0.0001)
Poverty				-.499***	-.694***
(SE)				(0.186)	(0.191)
Obs.	5,699	4,702	377	4,560	3,630
e (e2-a)	0.775	0.822	0.508	0.791	0.84
e (df-a)	380	380	63	379	359

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included the full sample without dropping any observations. In the second specification observations with a coverage rate of up to 65% were dropped from the analysis. Coverage is the percentage of police and other enforcement agencies that reported arrests. The third specification includes only the observations with unusually high fraud arrest counts greater than twice the standard deviation of the overall sample. The fourth specification excluded San Francisco while adding controls for median household income and poverty rate. For the fifth specification San Francisco and any MSAs with 65% coverage or less were excluded from the analysis. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in brackets in separate rows.

Table 13*Differences in differences analysis with additional specifications*

	All MSAs	Dropping >300 (1)	Dropping >200 (11)	Dropping >150 (46)	Dropping >100 (134)	Dropping >75 (228)
	(1)	(2)	(3)	(4)	(5)	(6)
Craigslist	1.122*	1.090*	0.856	0.335	-3.49***	-3.38***
(SE)	(0.654)	(0.653)	(0.647)	(0.614)	(0.544)	(0.544)
Obs.	5,699	5,698	5,688	5,653	5,565	5,471
e (e2-a)	0.775	0.779	0.795	0.799	0.774	0.78
e (df-a)	380	380	380	380	380	380

Notes: * $p < .05$; ** $p < .01$; *** $p < .0001$. The first specification included the full sample without dropping any observations. In the second specification observations with an unusually high incidence of fraud arrests defined as more than 300 arrests per 10,000 people were excluded. The third specification excluded observation with more than 200 fraud arrests per 10,000. The fourth specification excluded observations with more than 150 fraud arrests per 10,000. The fifth specification excluded observations with more than 100 fraud arrests per 10,000. The sixth specification excluded observations with more than 75 fraud arrests per 10,000. The number of observations dropped under each specification is included in brackets. All specifications include MSA fixed effects and time fixed effects. Robust standard errors are provided in brackets in a separate row.