Fisher College

Boston, Massachusetts

Online Opioids

Report Concerning Ease of Access, Highlighting Potential Solutions Using Existing Laws and Technology

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A Research Project by the Fisher College Criminal Justice Division

Acknowledgements

The entirety of this report was completed by 2016 Fisher College Criminal Justice Division students under the direction of their professor.

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Executive Summary

Background

Fisher College Criminal Justice students set out to measure the scope of illicit opioids availability on the Internet in this study to support and augment efforts of the Commonwealth of Massachusetts concerning opioid abuse. The perspective is that of a potential opioid abuser using ordinary Internet tools and platforms to find places to purchase opioids illegally. The research then attempts measure how much of the traffic is within the jurisdiction of the Commonwealth and what resources are available to combat the traffic.

Methodology

Each of the eleven (11) students in the class study were assigned a specific opioid at random to research and document. The research focused on common open areas of the Internet for collection: search engines, shopping platforms and social media. The intent is to replicate how ordinary consumers might use the Internet while searching for a product to purchase. The searches in the study focused on "first page" results which are the most accessed by Internet users[1]. None of the search methods or sites accessed involved underground or hidden services, such as the Dark Web. The opioid sites collected were examined in more detail in a quantitative study for jurisdictional purposes.

Key Findings

- Opioids of various types are easy (in primary results) to find for purchase through multiple common and open platforms on the Internet.
- Regardless of the original method of search (search engine, shopping site, or social media) the final destination was mostly a dedicated website selling opioids.
- The Internet structure of opioid trafficking is *layered* with different parties playing different roles (marketing, transactions, support, etc.).
- The websites directly engaged in opioid traffic mostly have some or all of their technical operation in the United States (65%).
- The opioid websites recorded appear to be in violation of existing law.
- The type of opioid in each original search tended to be irrelevant since the final destination shops offered nearly all opioids and/or substituted branded names for generics or vice versa.
- The online opioid traffickers are using malware, spam, fraud and hacking to promote their sites.

[1] https://chitika.com/google-positioning-value

Key Recommendations

Further details for each recommendation are in the Recommendations section. Each recommendation, for state policy makers, is intended to directly address the findings above.

- Engage direct in action to to collect, monitor, and terminate the linkage, advertising, and content of sites involved in opioid traffic.
- Increase the barriers to creating these sites on the provider (registrar/ISP) end and conduct investigations to determine the parties behind the opioid sites.
- Contact legitimate parties with malware infected websites or shopping sites with illicit postings to get the postings removed.
- Collect additional data in this area by conducting follow-up research on a larger scale.
- Provide documentation and training in this subject to law enforcement.
- Treat all opioids as a single class of drugs within the context of the Internet with the awareness that lesser-known opioid names may be used to bypass keyword filtering.
- Use the letter of the law to enforce against the online support services in addition to the online pharmacies themselves.

1 Introduction

1.1 Background

In 2015 the Governor and Attorney General of the Commonwealth of Massachusetts initiated an aggressive policy process to address the increases of opioid abuse, addiction and harm within the state[2]. Legislation and executive action have been focused on portions of the problem immediately within the government's control: drug manufacturing, physician prescribing, pharmacy handling, and how our public health and safety personnel respond to abuse. The problems under consideration are over-prescribing, theft, and treatment for addicts. What may be missed in these efforts is Internet opioid traffic which completely falls outside of the traditional physician-pharmacist-patient supply chain of potentially dangerous and addictive drugs. Fisher College Criminal Justice students set out to measure the scope of availability of opioids on the Internet in this study to support and augment efforts of the Commonwealth.

According to a 2015 Matrix Global Advisors study, Massachusetts rates 15th among U.S. states for health care costs related to opioid abuse, spending $584,278,745 annually for various treatment[3]. The study also provided statistics of where the abusers obtained their opioids which indicated that most obtained the opioids from a valid prescription or from a person with a valid prescription (whether stolen or shared). However 11.5% obtained the drug from an unknown source or "dealer". Internet sources likely fall into this space which is outside of traditional controls. It is possible that successful public policy efforts on opioid abuse in traditional settings may increase use of the Internet as a source for the drugs. In particular, various Internet platforms may be a main source of general information for certain younger age groups[4].

This report highlights eleven (11) case studies of websites specifically dealing in opioids and shows how a majority of the traffic is within the Commonwealth's jurisdiction to enforce while demonstrating the detection methods used.

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[2] http://www.mass.gov/governor/press-office/press-releases/fy2016/governor-signs-landmark-opioid-legislation-into-law.html

[3] http://www.drugfree.org/wp-content/uploads/2015/04/Matrix_OpioidAbuse_040415.pdf

[4] http://www.statista.com/statistics/272365/age-distribution-of-internet-users-worldwide/

1.2 Objectives

The objectives of this Online Opioids Report are to:

- Explore the ease with which opioids are available for sale on the open Internet, meaning no hidden or underground sources.
- Understand the illicit online marketplace from a consumer perspective, meaning the potential abuser searching for opioids.
- Measure the risks presented by online traffic against current pubic policy efforts on opioid abuse.
- Document what tools are available for detection, monitoring, and enforcement.
- Offer possible solutions for policy makers and law enforcement, especially what can be done quickly for the least expense.

2 Methodology

2.1 Research Questions

The research questions to be answered by this Online Opioids Report are:

1. How easy is it to find illegal opioids for purchase on the Internet?
2. What kind of public policy problems does Internet opioid trafficking pose?
3. What portion, if any, of this problem is within the jurisdiction of the Commonwealth?
4. What tools are available to address the issues?

2.2 Research Design

The Online Opioids Report used mixed methods to answer the research questions. The following table summarizes the methods used to answer each question:

Table 1 Methods used to answer research questions

Research Question	Method Used to Answer Question
How easy is it to find opioids for purchase on the Internet?	Use of common Internet platforms by individuals from different perspectives to generate quantitative results to determine ease of access
What kind of public policy problems does Internet opioid trafficking pose?	Analysis of known public health and safety harms potentially created by online sales paired with existing public policy approaches as a group discussion tool
What portion, if any, of this problem is within the jurisdiction of the Commonwealth?	Detailed analysis of online opioid marketplace showing which portions are clearly within jurisdiction under existing law with a quantitative measurement of the portions of the collected traffic
What tools are available to address the problem(s)?	Explanation of how student methods can be duplicated on a larger scale and what additional actions can be taken by government as a qualitative analysis

2.3 Instruments

2.3.1. Opioid search terms

Opioids are defined as synthetic analgesics which function in the human body like morphine or other substances derived from the opium poppy plant. Variations of opioids have been developed to treat specific conditions. Opioids as a category are *controlled* substances, meaning they are on U.S. federal schedules which limit their access and use.[5] The schedules are intended to grade drugs on 1) medical applicability, 2) potential for abuse, and 3) potential for harm. The higher the potential for abuse and harm, the more restrictive the schedule. Opioids have a high potential for addiction and can easily result in overdose deaths in unsupervised settings. All of these drugs require a prescription and many are only intended to be used in a hospital setting or administered by a professional.

The following opioids were each assigned at random to a single student for use in this research: *Demerol, Dilaudid, Duragesic, Exalgo, Kadian, Lorcet, Lortab, Percocet, Roxicet, Vicodin*, and *Zohydro*. The goal of assigning different drugs was to give each researcher an individual starting point and compare the results later. This research intentionally avoided commonly discussed names associated with opioid abuse, e.g. Oxycodone, Oxycontin, and Fentanyl.

See Appendix 7.1. for the Descriptions of Assigned Opioids.

[5] http://www.deadiversion.usdoj.gov/schedules/

2.3.2. Search Engines

Three (3) search engines are most commonly used in the U.S.[6] and the world[7]: **Google, Bing** and **Yahoo**. Search engines work by crawling the Internet for content, indexing that content, and ranking the results. What results are served first, on "page one", are based on proprietary algorithms that rate all collected Internet content. The returned results are supposedly the most recent, relevant or popular web pages. The students in this research searched for their specific opioid separately on Google, Bing, and Yahoo in three (3) lab sessions for 50 minutes and then reported the top results for analysis. The searches were in the format of "buy <<*opioid name*>> *online*". The research focused on *organic* search results, meaning non-sponsored (advertising). Issues with sponsored search results are discussed in 4.1.2.1.

See Appendix 7.2. for the Descriptions of Search Engines.

2.3.3. Shopping Platforms

There are a variety of ways to sell products on the Internet. One method is to create a dedicated website to sell products. However, there are a number of services which allow anyone to create a merchant account and post different products for sale (eCommerce). The services charge commissions or fees on the products sold. Ten (10) of the most popular shopping platforms are: **eBay, Craigslist, Yahoo! Shopping, Overstock.com, Etsy, Oodlee, Crater, Bonanzle, Sell.com, Blujay,** and **Alibaba**. Students were assigned to search each platform for their opioid. The searches were conducted in two (2) formats: First, to use the shopping platforms native search function and second, search the content of the site from another search engine using the format "<*opioid name*> site:<*shopping site*>". The reason for the two searches was to see if there was a difference between what the site indexed and what was actually posted within the site. It is possible for websites to block certain undesirable keyword searches within their own while the actual content may exist and can be found from outside the site.

See Appendix 7.3. for the Descriptions of Shopping Platforms**.**

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[6] http://searchengineland.com/infographic-the-top-three-us-search-engines-99036

[7] http://www.ecloudbuzz.com/top-10-best-search-engines-in-the-world/

2.3.4. Social Media

The two social media platforms examined for this study were **YouTube** and **Twitter**. The two platforms are among the most popular[8] but were specifically selected because they are distinctly different in format. YouTube allows members to upload video content and Twitter is primarily for issuing very brief messages (140 characters). Students were assigned to search for their opioid on both sites and to record the results.

See Appendix 7.4. for the Descriptions of Social Media Platforms.

2.3.5. WHOIS Research

Every technical point on the Internet has a corresponding resource, or "WHOIS", record which details who owns or controls the resources. WHOIS is a collective term for a series of publicly accessible databases used for determining what parties are responsible for a website. Researchers used WHOIS searches to obtain records and analysed the records to assign jurisdictional responsibility for each opioid website collected.

2.4 Sample

The Online Opioid report relies on purposive critical case sampling. The search sample sizes are limited to "first page" results since these are typically what is accessed by Internet users which for our study is capped at 10 results for each of the 11 participants in each examined category. However, for comparison we often collected up to 100 results for each category to better understand the true scope. These results were retrieved in 50 minute sessions and search terms were assigned randomly. From the various searches the participants collected 252 specific illegal websites offering opioids for sale and tabulated how many can be enforced against by the Commonwealth. In particular, 11 active opioid websites found in the first stages of the research were assigned to students randomly to be further developed into case studies.

2.5 Data Collection

Data was collected by students in the Fisher College computer lab under the supervision of the instructor. Data was collected in individual spreadsheets, text comments and website screen captures as needed. All raw data and brief reports were submitted to the professor and validated before being placed in an unified database and document store.

2.6 Data Analysis

Individual results were compiled into a database at the end of each lab session. Results were sorted and then represented later to the entire group with statistics and additional findings for review and discussion. Data collected by students was also issued to their peers

[8] http://smallbiztrends.com/2015/07/social-media-sites-statistics.html

anonymously for review and returned to the instructor with updates. The goal was to develop quantitative results on the availability of illegal opioids for sale and which sites are in scope of enforcement.

2.7 Limitations

This research was unfunded. Resources were therefore limited to shared on-campus computer equipment and students performed research during designated class hours. Students did not receive any compensation for this work. There were no control groups in this research.

No purchases of drugs were performed therefore there was no verification of actual product shipping or product contents. It is unknown from this study A) whether the online shops in fact ship a product or B) what the actual chemical components of any offered product are. Research was focused on the availability and legality of the sites themselves.

The Internet is a vast global collection of information and resources. This study focused on the obvious and what data could be collected by a small number of students during one semester. We have not attempted to answer how much of the Internet is used for opioid trafficking, only the way it may appear to persons seeking it out and then how public policy may be used to address a known problem.

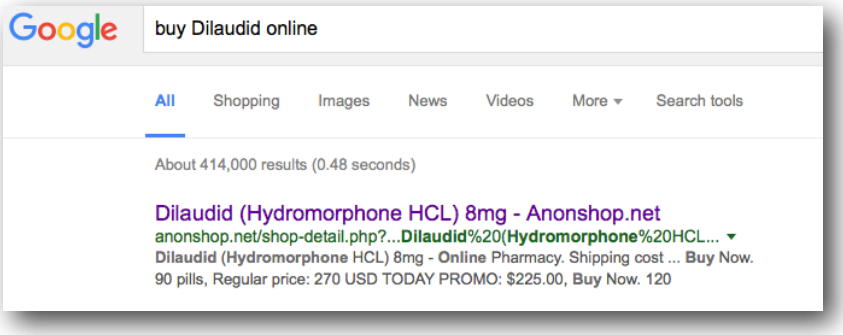
3 Results

3.1 How easy is it to find opioids for purchase on the Internet?

Ease, in this study, is defined by availability and convenience. The ease of finding the sites is based on *prominence* of the results, meaning ones that are first, on-top, or obvious; and also the general *availability* or volume of positive results. *Positive results* are ones which led to a site where opioids are offered for purchase. Our qualification for an *illegal opioid site* is one which does not comply with the Ryan Haight Act[9], meaning that the site is offering purchase of opioids and either 1. Does not display pharmacy license/location information, and/or 2. Does not require a prescription, and/or 3. Offers to issue a virtual prescription without a physical physician visit. This is quantified by the number of results in top search positions.

3.1.1. Search Engine Research

Eleven (11) participants, each with a different opioid name, conducted searches on the three (3) top engines. Results were examined in three ways: 1. What was the percentage of search results where the first link led to location where illicit opioids could be purchased? (total sample size: 33) 2. What is the percentage of "first page" result links which led to illicit opioid sites? (The number of common results on the "first page" is ten, total sample size: 330) and 3. What was the percentage in the first 10 pages of results that led to illicit opioid sites? (total sample size: 3300). The non-opioid purchase sites, or negative results, were generally three types of websites: 1. drug industry information sites, 2. public service/anti-opioid-abuse/treatment service sites, and 3. legitimate online pharmacies. In general, the number of illicit search results were much larger than the other three types. Across all three (3) search engines the average percentage of first search results which led to illicit opioid site was 90.9%. This refers to the first search result returned by "*buy <<OPIOID NAME>> online*", that was a link for an illegal pharmacy in nearly all cases.



The following three sections chart the availability or volume of opioid websites linked in search results for each of the engines studied.

[9] http://www.dea.gov/pubs/pressrel/pr041309.html

3.1.1.1. Google Opioid Search Results

Figure 1: Google - Opioid Sites Linked in First 10 Results

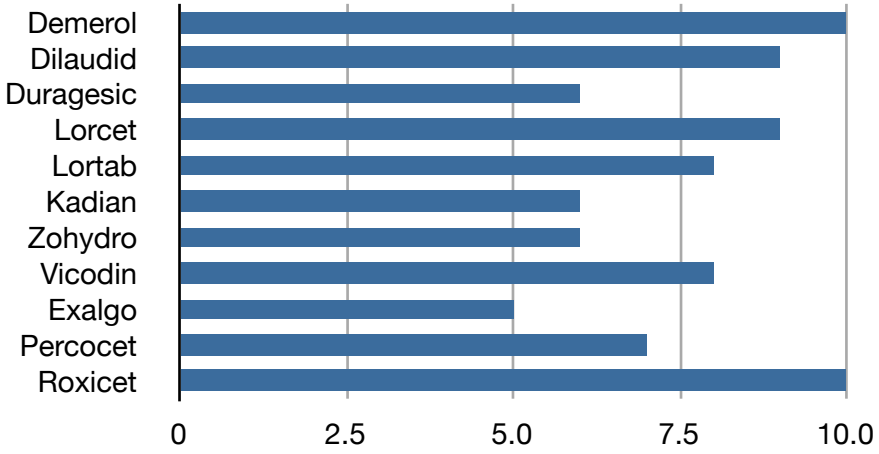
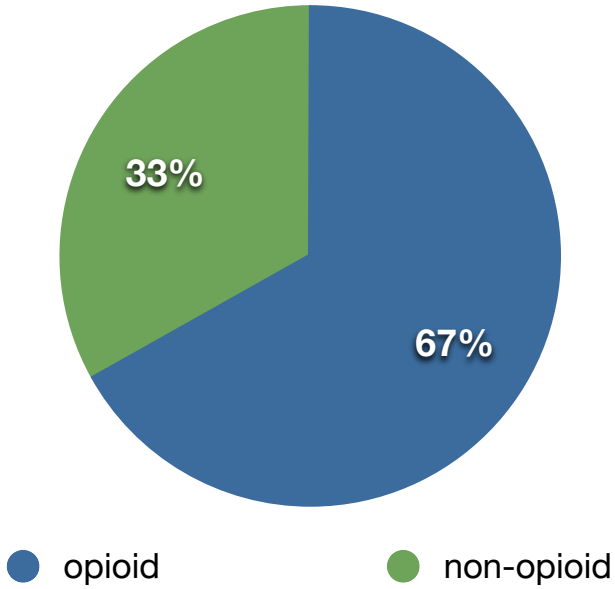


Figure 2: Google - First 100 links/Ten Pages



3.1.1.2. Yahoo Opioid Search Results

Figure 3: Yahoo - Opioid Sites Linked in First 10 Results

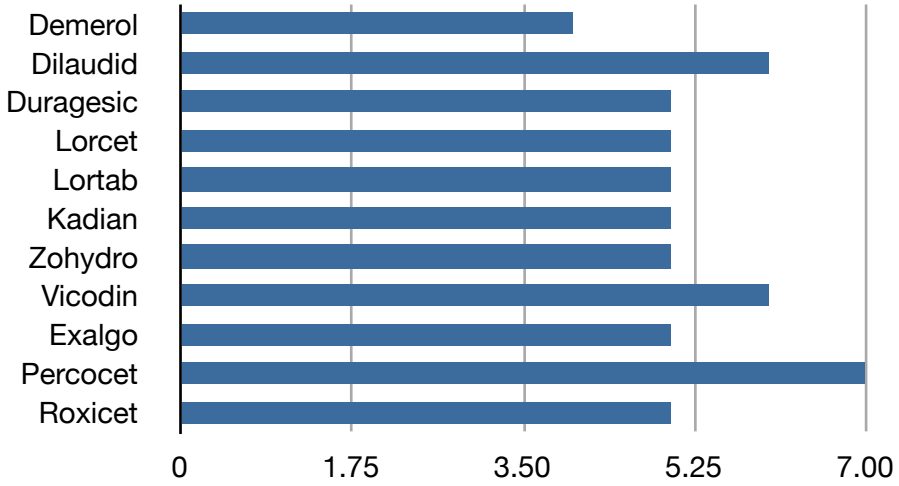
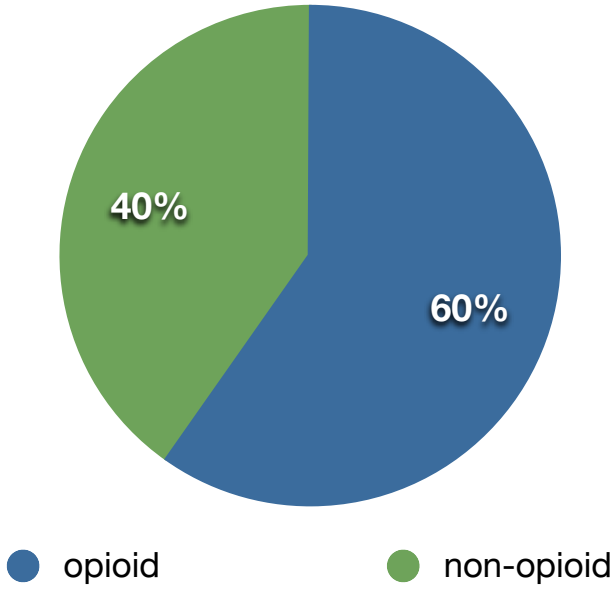


Figure 4: Yahoo - First 100 links/Ten Pages



3.1.1.3. Bing Opioid Search Results

Figure 5: Bing - Opioid Sites Linked in First 10 Results

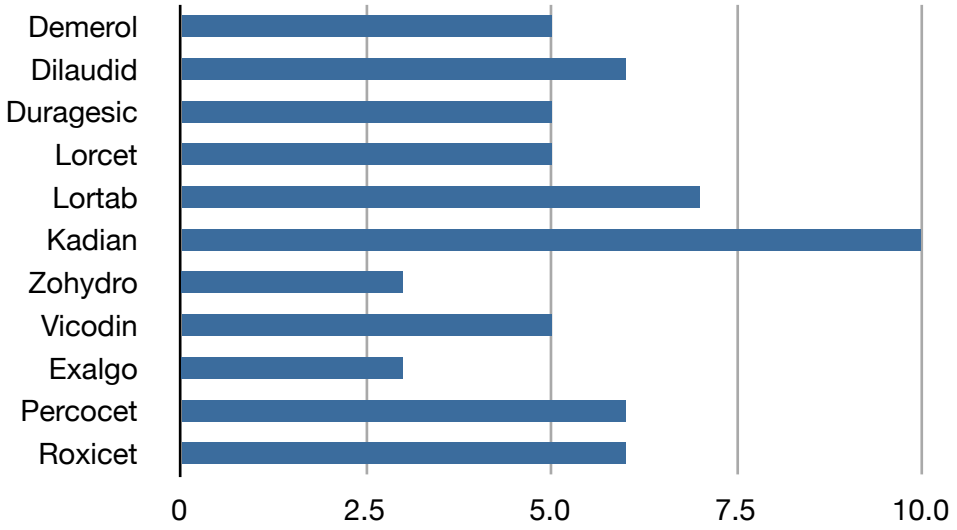
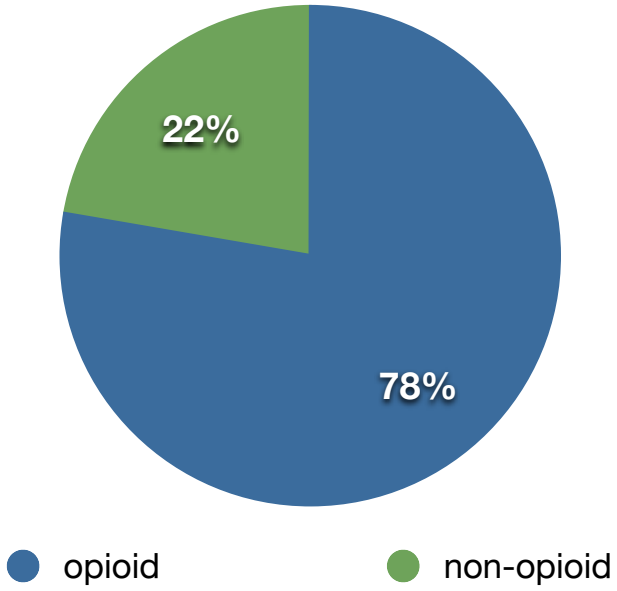


Figure 6: Bing - First 100 links/Ten Pages



3.1.2. Shopping Platforms

As a category, popular shopping platforms did not offer the easy path to opioids as do search engines. However, specific shopping sites seem to have more issues than others, the reasons are explored in this study. The recorded examples generally led to external dedicated opioid websites rather than sales occurring through the shopping sites themselves. To be clear, the apparent purpose of the postings found on the shopping sites was to link to an external site, there were no cases found where opioids were sold within the site itself.

Table 2 Shopping Site Opioid Results

	eBay	**Craigslist**	Yahoo! Shopping	Overstock	**Etsy**	**Oodle**	eCrater	Bonanzle	Sell.com	Blujay	Alibaba
Dilaudid	No	**Yes**	No	No	No	**Yes**	No	No	No	No	Maybe
Duragesic	No	No	No	No	No	No	No	No	No	No	Maybe
Lorcet	No	No	No	No	**Yes**	No	No	No	No	No	No
Lortab	No	No	No	No	**Yes**	**Yes**	No	No	No	No	Maybe
Kadian	No	**Yes**	No	No	No	No	No	No	No	No	No
Demerol	No	**Yes**	No	No	No	No	No	No	No	No	No
Zohydro	No	No	No	No	**Yes**	No	No	No	No	No	No
Vicodin	No	No	No	No	No	**Yes**	No	No	No	No	Maybe
Exalgo	No	No	No	No	No	No	No	No	No	No	No
Percocet	No	No	No	No	**Yes**	**Yes**	No	No	No	No	Maybe
Roxicet	No	No	No	No	No	No	No	No	No	No	No

3.1.3. Social Media

Due to the nature of social media, results for opioid searches were different than search engines and shopping platforms. Results frequently led to the same opioid websites found through other methods. However, YouTube findings are more varied and discussed further.

3.1.3.1. YouTube

YouTube search results for opioids were plentiful, but more complex and difficult to quantify. In contrast to search engines or shopping platforms, where most links have a one-to-one relationship, a single YouTube result concerning opioid sales might have several more websites linked from the comments section of a video. Beyond the linkage to opioid websites the videos themselves are used to demonstrate hot to buy opioids online or how to use particular opioids. Results are further explained in the Discussion section.

3.1.3.2. Twitter

For our searches onTwitter, all of the eleven opioids returned at least one result which led to a website where opioids were sold. Only Zohydro and Exalgo produced less than ten (10) results. Details about the Twitter accounts and related websites are explained in the Discussion section.

3.2 What kind of public policy problems does Internet opioid trafficking pose?

Student researchers examined known issues stemming from widespread opioid abuse, the proposed methods the Commonwealth plans to use in dealing with them, and how sales of opioids online may circumvent planned changes in regulation.

Within the new Massachusetts law (Act Relative to Substance Use, Treatment, Education and Prevention[10]) there are a number of provisions which address treatment and education. These parts of the new law would benefit people with opioid abuse concerns whether or not they purchased the drugs illegally online. However, this research focuses on aspects of the law intended to control or limit access to the drugs themselves. The chart below explains different issues, the policy recommendation, and whether online opioid sales can bypass public policy.

Table 3 How Internet Opioid Sales May Bypass Public Policy Efforts

Issue	Policy Recommendation	Does Internet Bypass?
Patients may receive multiple opioid prescriptions from different doctors	Monitor opioid prescriptions in a state database so doctors know patient history	Drugs purchased outside the system without a prescription are not tracked
Patients may not be aware of non-opioid pain relief alternatives	Patients will receive information on non-opioid pain killers	Online-only opioid abusers will not be aware of differences between different painkillers
Prescriptions for opioids are often for large amounts not necessarily needed	Seven-day limit on initial opioid prescriptions	Drugs purchased online without a prescription have no limits
Patients may not be aware of the dangers of opioid use	Require doctors to counsel patients on the dangers of opioids	Online-only opioid abusers would not receive counseling
Unused opioids at drug companies may end up being sold illicitly	Mandatory participation by drug manufacturers to collect and dispose unneeded drugs	It is possible this may reduce the availability of illicit drugs online
Patents with abuse issues may unknowingly be issued opioids	Medical professionals must evaluate a patient's status prior to issuing a prescription	Online-only opioid abusers do not meet with medical professionals
Prescribers may issue too many opioid prescriptions	Prescribers should be monitored and benchmarked against other prescribers	Illegal opioid websites do not require prescriptions
Slow-release opioids pose a particular problem of abuse	Patients issued long-acting or slow-release opioids must enter into a pain management treatment agreement	Websites selling opioids have no restrictions on type of drug, dosage, or amount

Opioids are a special class of controlled substances with significant abuse potential and high possibility of overdose and death. Humans often develop a physical tolerance to opioids

[10] https://malegislature.gov/Bills/189/House/H3817

which means the abuser must consume increased dosages in order to feel the same effect or “high”. Opioids in pill form may not be powerful enough for the abuser, or may become more difficult to obtain when a prescription expires, as well as become too expensive. The abuser may begin using heroin to achieve the same effects at a lower cost. It is often cited that heroin addiction begins with a valid opioid prescription[11]. An overdose of opioids occurs when the drug lowers respiratory function to an extreme level.

Opioids purchased online by abusers present special problems. One is that in a traditional medical setting professionals attempt to determine safely what a patient’s personal limit is for opioid dosage. Someone purchasing opioids without any consultation will not have the knowledge or professional observation to calculate the proper dosage. A second issue is the source of the drugs. Drugs not obtained from a lawful pharmacy often have unknown ingredients, dosage, and/or contaminants.

[11] https://www.drugabuse.gov/related-topics/trends-statistics/infographics/abuse-prescription-pain-medications-risks-heroin-use

3.3 What portion, if any, of this problem is within the jurisdiction of the Commonwealth?

For the purposes of this research, jurisdiction is defined by the provisions of the Ryan Haigh Act which allows the attorney general of one state to shut down an illegal pharmacy in another state. All three (3) search engines studied in this research are located in the United States and the two (2) social media platforms are located in the United States. For the shopping planforms, of the four (4) that had illegal opioid links, three (3) were in the United States. There are certain steps which all of these platforms can take to reduce the opioid traffic within their space. These are listed in the Discussion and Recommendations sections in this report. As discussed, these platforms are more of a gateway and there real issues are the websites selling opioids and who controls them. A full explanation of the parties involved in enabling websites to be active on the Internet can be found in section 4.4.4.

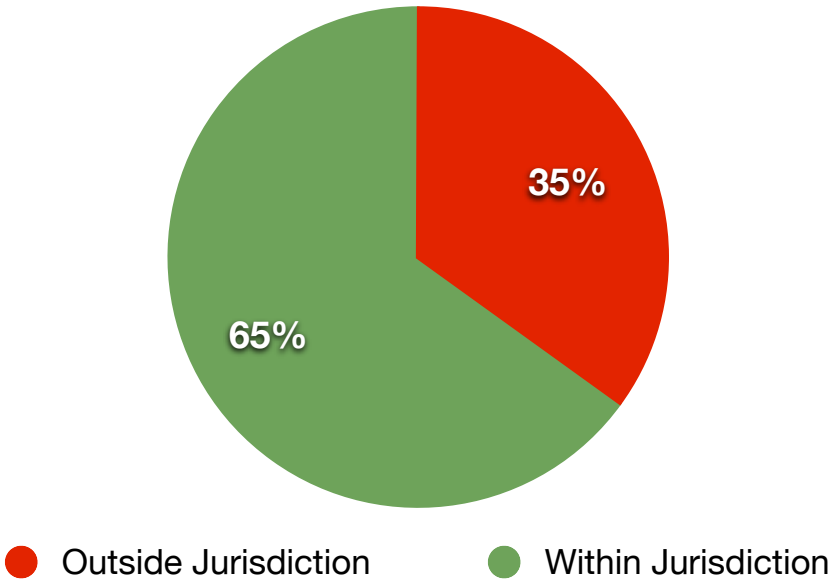
3.3.1. Illegal Opioid Websites within Jurisdiction

An important part of the research was to determine how much of the actual opioid websites are within jurisdiction. In our case studies, ten (10) out of the eleven (11) opioid websites randomly selected and assigned were located in the United States. Overall, the participants collected and reviewed 252 websites finding 164 had some or all of their technical infrastructure in the U.S.

3.3.1.1. Total Percent of Recorded Websites within Jurisdiction

This chart shows the overall percentage of the 252 opioid websites which have all or some of their technical operation in the United States.

Figure 7: Jurisdiction of Opioid Sites



3.3.1.2. Eleven Opioid Website Case Studies

The following sites were randomly selected and assigned to the research participants for further investigation. The table below indicates the various commercial parties involved in sponsoring or hosting the website. Websites with all or some of their operation in the United States are indicated in **bold blue**. Only one (1) out of eleven (11) did not have any of their operation in the U.S. Five (5) out of eleven (11) are completely in the U.S. More details are available in the Discussion section as well as appendices 7.5 and 7.6.

Table 4 Eleven Website Case Studies

Site	Registrar	ISP
drugs-order.net	**MONIKER ONLINE SERVICES LLC**	**CloudFlare, Inc.**
chartermedicalsales.com	**GoDaddy.com, LLC**	**Cox Communications Inc.**
fastpainmeds.com	**NETWORK SOLUTIONS, LLC.**	**Google Inc.**
hydrocodones.net	**NETWORK SOLUTIONS, LLC.**	Confluence Networks Inc*
anonshop.net	GUANGDONG NAISINIKE CO LTD (CN)	**CloudFlare, Inc.**
bulkrcmeds.com	**ENOM, INC.**	**Server Central Network**
vicodin-mexico.com	1 API GMBH (DE)	**Level 3 Communications,**
painreliefph.com	RU-CENTER (RU)	purplestones (KR)
healthzstorez.net	Internet BS (BS)	**Namecheap, Inc.**
loyal-pharmacy.com	**GKG.NET, INC.**	**QuadraNet, Inc**
365painsolutions.com	DOMAINSHYPE.COM, INC. (IN)	**QuadraNet, Inc**

**Company has some U.S. locations*

3.4 What tools are available to address the problem(s)?

Various Online service providers (search engines, shopping sites, social media companies, content hosting companies, and domain registrars) all have the technical ability and legal authority to remove content and accounts which violate the law or the provider terms of use. Very few online services engage in proactive monitoring of their users, clients, and customers. Public policy action would involve data collection, investigations, notification and a general ongoing plan to manage the situation. The participants in this research have identified tools and principles which, if used properly, can be used to manage and combat illegal online opioid websites.

3.4.1. Ryan Haight Online Pharmacy Consumer Protection Act Of 2008

The original Controlled Substance Act (CSA) of 1970, which established drug schedules and federal drug enforcement, was written nearly three decades before the Internet was generally available to the public. While the authors of the original law were aware of dangers of interstate narcotics trafficking, the concept of electronically networked illegal pharmacies accessible to consumers was not foreseen. in 2001 a teenager named Ryan Haight ordered narcotics from a website after submitting a electronic questionnaire. Unknown to his parents, the dugs were shipped to his house and he died of an overdose after consuming them. The result of this unfortunate incident was a change to the existing CSA in 2008 which accounted for Internet pharmacies and cross state border enforcement. The Ryan Haight modifications to the CSA make it illegal to sell pharmaceuticals on the Internet without a prescription or to issue prescriptions virtually without an in-person doctor visit. The law requires Internet pharmacies to clearly disclose their location, their license, the names of professionals affiliated with the pharmacy and other regulatory compliance documentation. There is no requirement for the Internet pharmacy to actually ship opioids to violate the law, violations simply occur in their representations to the Internet consumer. The opioid websites collected in this research did not display location or license and/or offered opioids without prescription (often with the clearly posted message “No Prescription Required”). The law also permits the attorney general in one state to enforce against an illegal Internet pharmacy in another state. With this in mind, there is no legal excuse for flagrantly violating opioid websites anywhere in the U.S. The issue then becomes one of identifying which websites operate from the United States.

3.4.2. Internet Records Research

An internet website is combination of several technical components. Each one of these components is sponsored by a legal entity which can be identified and each component has a corresponding public Internet resource record or “WHOIS” record. The various records attached to each portion of the Internet indicate the commercial parties that provide the infrastructure for a website. These are the same commercial entities that have the ability to terminate a website, respond to a subpoena, or be held liable for failing to comply. The participants in this research used open systems to identify which opioid websites operated from the United States. The Internet’s record set is large and complex but does not represent an insurmountable learning curve. With knowledge of how to navigate the record set and identify U.S. based responsible parties, the issue becomes one of managing the size and scope of the collected data.

3.4.3. Scaling the Issue

Clearly the Internet is a large space with hundreds of millions of websites in existence. The number of illegal opioid sites quickly found in our research may make the problem seem enormous and intractable. The ability to rapidly deploy illegal Internet pharmacies presents a challenge to enforcement which can often take considerable time to execute. A few facts found in this research may assist: 1) The same opioid websites appeared repeatedly in all searches across platforms, 2) There is a narrow number of “final” opioid transaction sites, 3) Opioid websites appear clustered at specific providers, and 4) the number of hours consumed to perform this research was minimal and conducted by a small group. An effect effort would not require significant resources and could be done on an ongoing basis to learn more about the problem over time

3.4.4. Training

Students participating in this research all learned the skills needed to identify illegal pharmacies, how to obtain Internet resource records, and how to determine whether websites were within jurisdiction. This same curriculum can be taught in brief seminars and integrated with existing law enforcement training.

4 Discussion

4.1 Search Engines

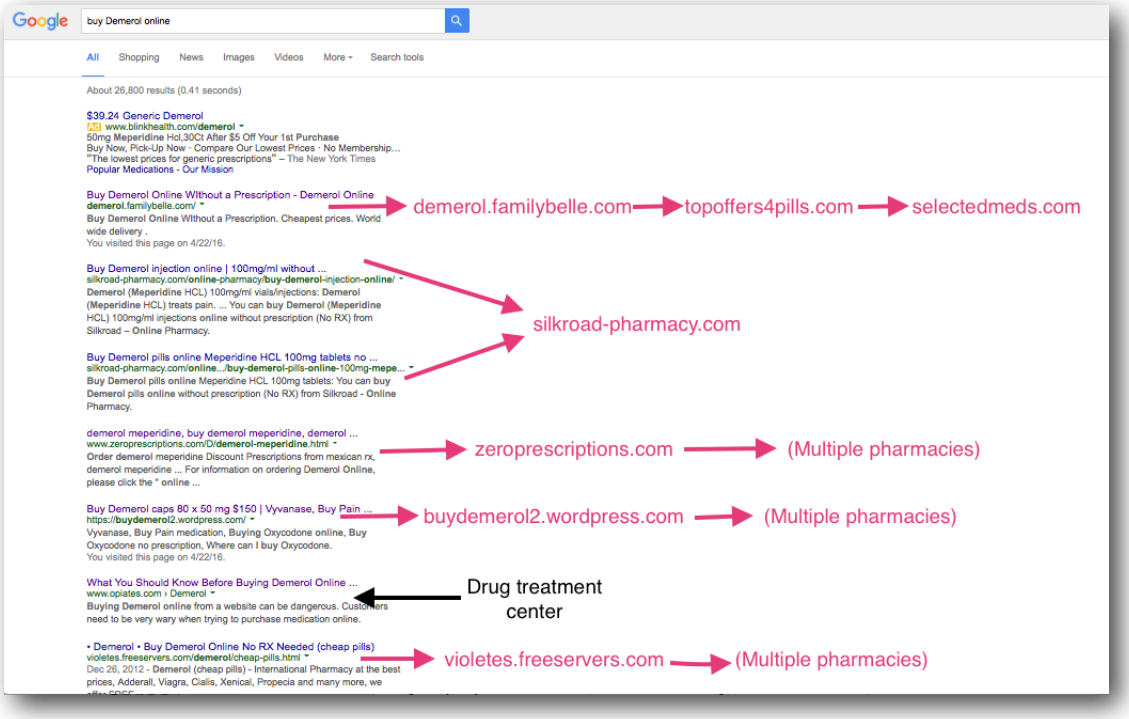
In determining ease of finding illegal opioid sites for search consider the combined findings of all three search engines:

* **First Results Links**: 90.9% of first links led to illegal opioid sites for all three search engines.
* **First 10 Results**: An average of 6.15 out 10 first page links for all three search engines led to illegal opioid sites.
* **First 100 Results**: An average 68.15% of the first 100 links on all three search engines led to illegal opioid sites.

In all three cases there is a better than 50% chance that any given link will lead to an illegal opioid site. There are many factors to consider when evaluating search engine results and it is important to understand how the technology works and the various goals of search engine companies. While using a search is free, search engines are commercial enterprises. Search engines serve relevant advertising based on user keyword input and collect data on users to develop marketing strategies. Search engine algorithms are becoming increasingly complex, learning from cumulative searches and selections. Searching also adapts to the individual conducing the searches based on their keywords and click-throughs. A bias in opioid search results may be developed by continuously searching for opioids which presents the user with more relevant results based on the user's input and choices. Therefore, as a user searches for and selects links for purchasing opioids, the engine may return more similar results. In order to avoid this bias, searching lab sessions were on separate days and previous search cache data was deleted. In each lab a fresh user profile conducted the search on a different search engine and each session was limited to 50 minutes.

Because search engines use Internet Protocol (IP) geo-location which presents U.S. based browsing with American-specific results, the search engines are likely to return U.S. targeted results. What this meant in terms of opioid search became obvious: Most results were in English, prices were almost always in U.S. dollars, and the sites frequently assured the users that the drugs were legal in the U.S. and that the drugs were sourced from the U.S. No searches were conducted from international proxy IP addresses, which would mimic a non-U.S. location.

The following image shows a map of seven first-page links and where they led. Six out of seven in the example led to illegal opioid websites. Graphs in red are illegal opioid sites.



4.1.1. Search Engine Manipulation or "Dark SEO"

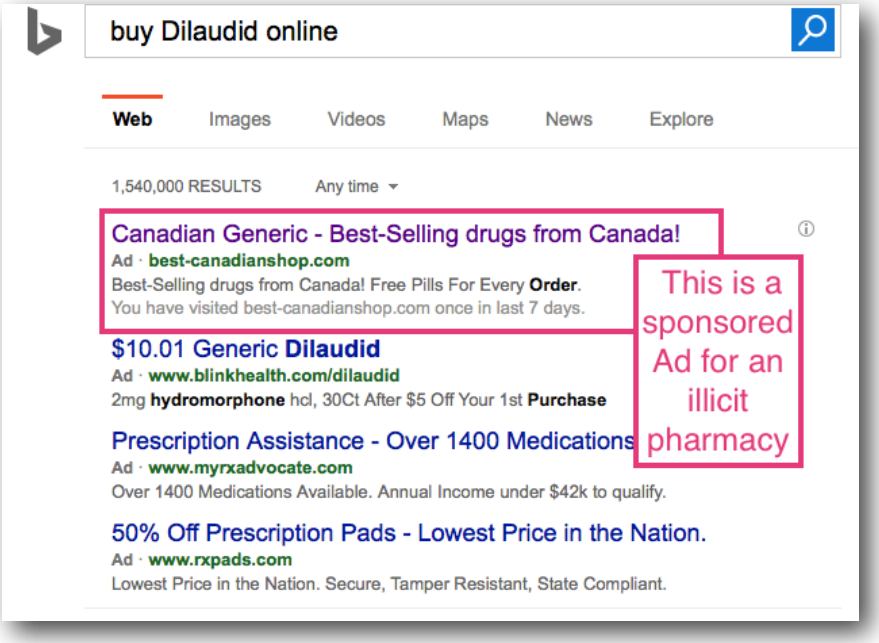
Search Engine Optimization (SEO) is a practice which, in theory, moves certain website links into higher positions within search results. There are many ways of enhancing a search result position but some are considered unethical. Some examples of manipulation include: 1. Deploying dozens of websites with the same content, 2. Hiding multiple keywords in the source code of websites, and 3. Spamming website forums and blog comment sections. Due to the nature of the sites recorded in this study, many would appear to be marketed in this way. Search engine companies may have limited control over what sites appear in top organic results. However, the links served in our research are related to a specific search string: "*buy <<OPIOID NAME>> online*", e.g. "buy hydrocodone online". Searches for simply "hydrocodone" or even "get high on hydrocodone" do not produce the same results. The searches triggering illegal opioid sites are directly related to transactions. It may difficult, but not impossible for search engines to block these results.

4.1.2. Specific Issues with Search Engines

During the course of this research some specific issues with search engine results were revealed. These issues need to be addressed at the search engine level and not the website level.

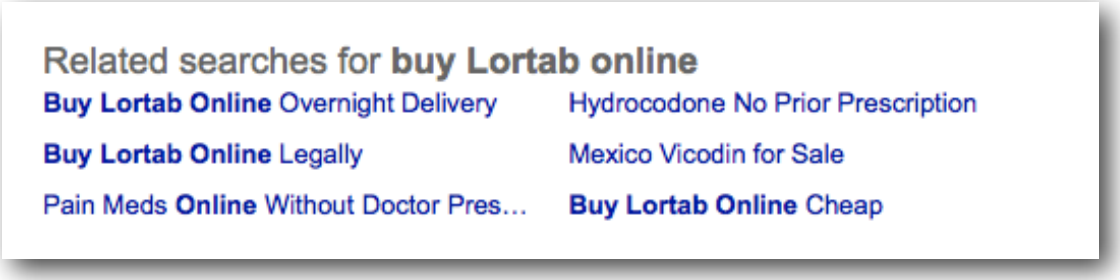
4.1.2.1. Search Engine Sponsored Advertisements for Illicit Pharmacies

Companies may purchase space within search engine results so their results appear at the top or side of the search results page every time certain keywords are searched. The major search engine companies have put restrictions in place in recent years but advertising of illicit sites still appears to be a problem. Sponsored results for illicit pharmacies did not appear within Google, but did appear in Yahoo and Bing.



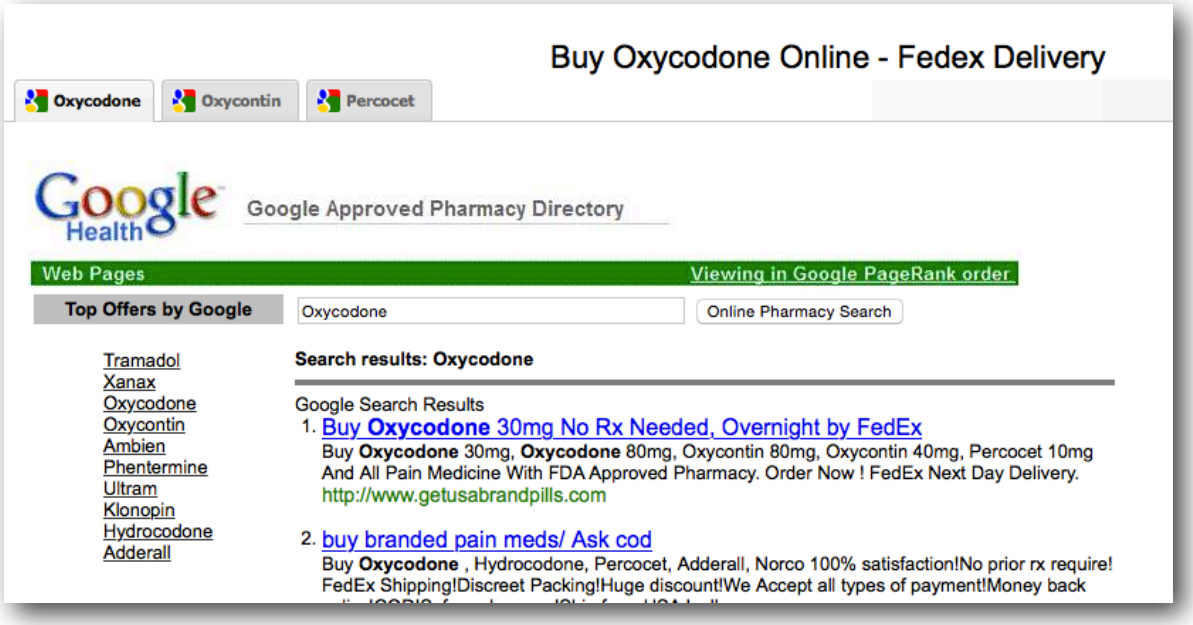
4.1.2.2. Organic Search Suggestions

Search engines are designed to adjust results based on what users are looking for. Search engines then offer suggestions for searches based on previous selections. In the Bing example below the suggested searches include “No Prior Prescription”, “Without Doctor”, and “Cheap”. Also, other opioids are offered as search suggestions beyond what was searched for.



4.1.2.3. Google Health

Google Health is a Google platform that was terminated in 2012[12]. However, this study found several examples of illicit pharmacies using the name “Google Health” to promote their opioid sites. Some of the activity was occurring within Google’s space[13]. The example bellow is actually a large directory of opioid sites using the byline “Google Approved Pharmacy Directory”.



[12] https://www.google.com/intl/en_us/health/about/

[13] https://sites.google.com/site/beststorehealth/buy-hydrocodone-online---get-vicodin-norco-lortab-meds

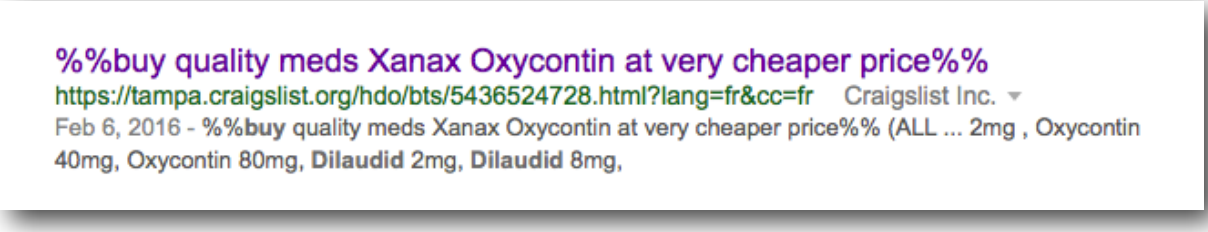
The example below is not posted within Google's platform but is still using the reputation of "Google Health" to sell illegal opioids. The issue is one of a false legitimacy being presented to the consumer.

4.2. Shopping Platforms

Online shopping platforms did not provide easy access to opioids as did search engines. Only some opioid names returned results and four websites. These are detailed below.

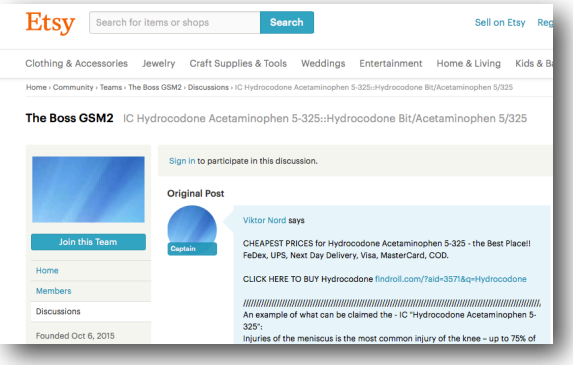
4.2.1. Craigslist (craigslist.org)

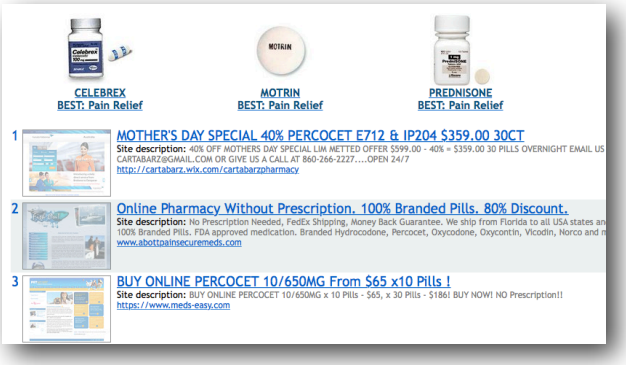
Headquartered in California, Craigslist is an online classified advertising site. Craigslist has been cited in recent years as a site for trafficking opioids.[14] However, Craigslist has made efforts to police illicit advertising.[15] In terms of our research, we were able to find search results for opioids, but the actual advertisement on Craigslist had always been removed by the time we reviewed it.



4.2.2. Etsy (etsy.com)

Headquartered in New York, Etsy is generally a site for selling home crafts, jewellery and antiques. It is not the kind of website one might associate with criminal traffic. Nevertheless, postings for opioids have been found on Etsy. These postings are simply links to external pharmacy sites, no illegal opioids appear to be sold within the site. The entry below[16], advertising Percocet, links to alisall.net which redirects to foundall.net. Both sites are hosted by Yellow Fiber Networks in Virginia.





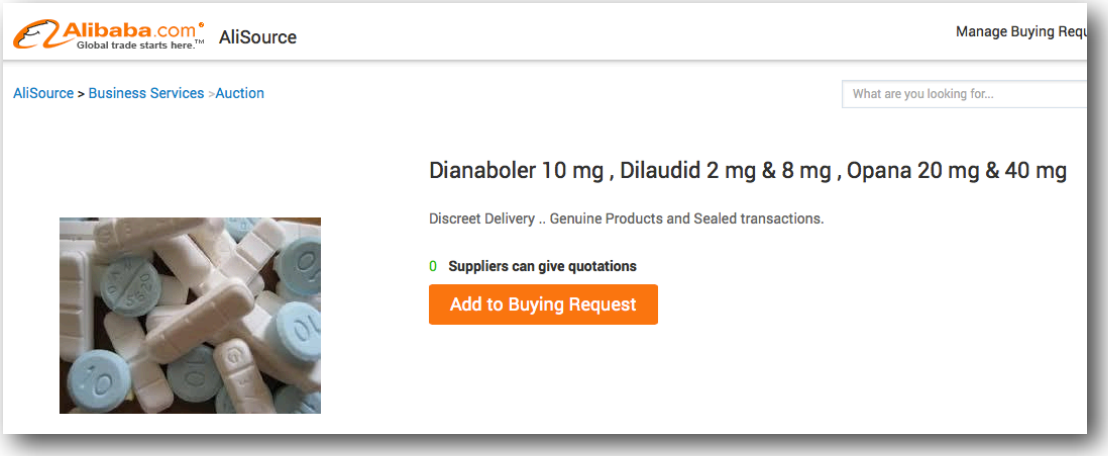
[14] http://nationalpainreport.com/pain-meds-sold-illegally-craigslist-8821879.html

[15] http://abcnews.go.com/Technology/Business/story?id=7795174

[16] https://www.etsy.com/uk/teams/25609/feed/discuss/16683810/

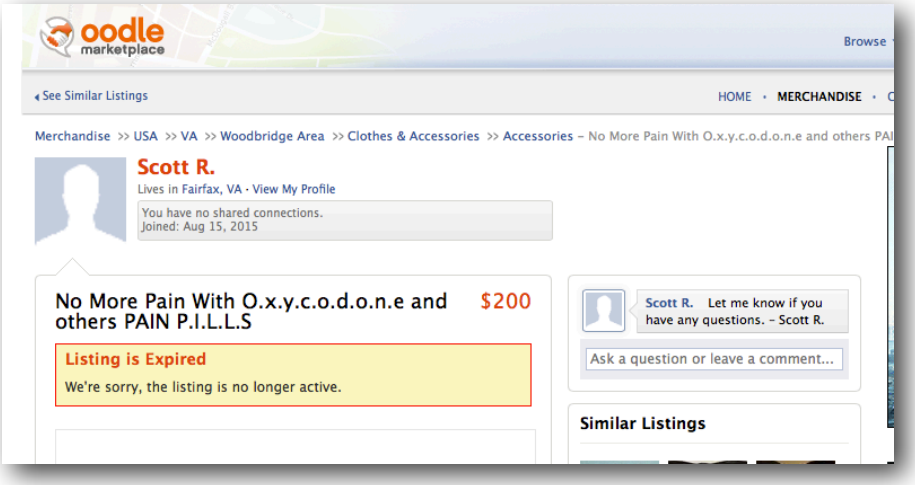
4.2.3. Alibaba (alibaba.com)

Alibaba is a Chinese online retailer that offers a platform for bulk selling, wholesalers, raw materials providers and manufacturers. Results for opioid searches were inconclusive. For some drugs there were search results but no pages or products available at the site itself. It seemed there were places created to sell certain drugs but listings had either been removed or not yet populated.



4.2.4. Oodle (oodle.com)

California located Oodle classified service for a number of products and services. The postings all used modified drug name strings which suggests Oodle is attempting to filter certain keywords.

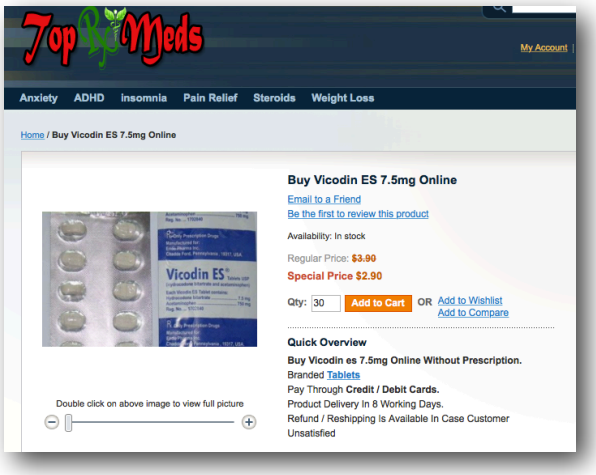


4.3. Social Media

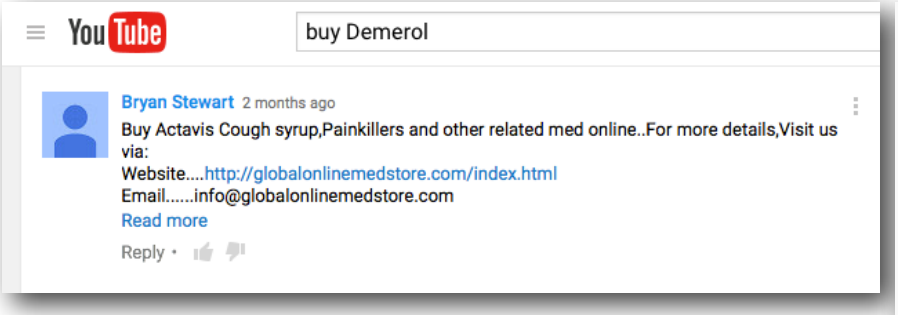
Social Media allows Internet users to engage, post content and conduct transactions. Social Media, in particular, is accessed largely by people ages 18-29[17], therefore understanding this Internet space may be critical to preventing opioid abuse in youth.

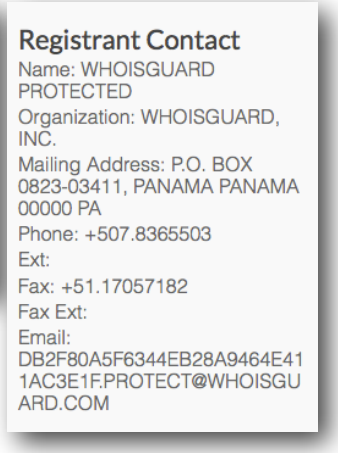
4.3.1. YouTube

YouTube features a number of easily found videos linking to services trafficking in opioids. Some of these videos are in effect commercials for illegal online pharmacies. Below is a still shot for toprxmeds.com. toprxmeds.com is registered through Moniker in Florida and hosted by Cloudflare in California.



The comments sections of opioids videos contain links to illegal pharmacies. The example below, globalonlinemedstore.com is sponsored by eNom in Washington, hosted by NameCheap in California and uses NameCheap's privacy protection.





[17] http://www.pewinternet.org/fact-sheets/social-networking-fact-sheet/

4.3.1.1. Direct Online Connections

Not every YouTube search led to a dedicated site where opioids could be purchased. Particularly within YouTube videos, direct phone numbers and email addresses were posted to indicate a point of contact for purchasing opioids. However, additional research by participants found these phone numbers and email address were, in the end, tied to particular websites. Documenting the relationships between the YouTube contact information and illegal sites was beyond the scope of this research.

4.3.1.2. Subculture of “Grape Drank”, “Lean” or “Sizzurp” and Implied Violence

Searches for opioids on Youtube frequently returned videos focusing on the sale of prescription strength cough syrup, specifically Actavis. This type of cough syrup contains Codeine, a controlled substance, no longer found in over-the-counter cough syrups. Cough syrup with Codeine is often combined with different sodas and candy to create “Grape Drank” (also called “Dirty Sprite”, “Lean” and “Sizzurp”). The videos on YouTube are directly marketing to illicit users of cough syrup. There is a certain amount of implied violence in the videos and commenting. In one image provided below there is a handgun the frame of a site linked from within a YouTube comment.

4.3.2. Twitter

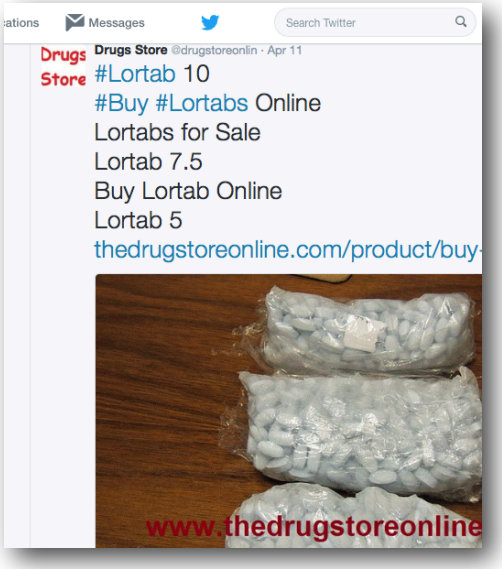
For all opioids searched on Twitter, the first result led to an external illegal pharmacy website. Most of the results were Twitter accounts dedicated to a particular pharmacy website rather than Twitter users posting links for pharmacies and other information. The accounts examined seemed to serve no other purpose but to promote a pharmacy website. The chart below shows how various Twitter accounts led to opioid websites mostly located in the United States.

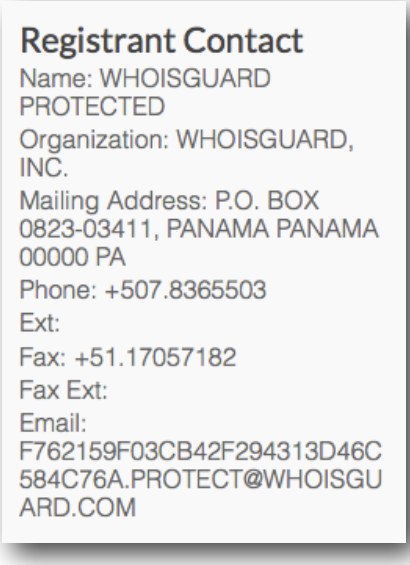
Table 5 Twitter handles and related opioid sites

Twitter Name	Handle	Tweets	Website	U.S. Link
Pain Pills Got Me	@got_pills	569	chemshop.me	Automattic, Inc In CA
Drugs Store	@drugstoreonlin	61	thedrugstoreonline.com	NameCheap in CA
Knight Of Pharma	@knightofpharma	42	knightofpharma.com	None
Elizabeth Sarah	@imElizabeth007	347	walgreenonlinepharmacy.c	Level 3 in CO
Janine Close	@janineclose425	119	onesteppharma.net	CloudFlare in CA
Buy Pain Meds Today	@BuyPainMeds2Day	64	fastpainmeds.com	Network Solutions in FL
Meds Shope	@meds_shope	25	medsshope.com	CloudFlare in CA

4.3.2.1. Twitter Case Example: @drugstoreonlin, thedrugstoreonline.com

The Twitter account drugstoreonlin is dedicated to promoting the website thedrugstoreonline.com, posting advertisements for various drugs on a daily basis. The postings openly feature a variety of opioids alongside ecstasy and other non-opioid pharmaceuticals. The account gives its location as “United States”. The website itself, thedrugstoreonline.com, is hosted in the United States by NameCheap, Inc. and registered in the United States through eNom, Inc. The website uses NameCheap’s privacy protection service WHOISGUARD.





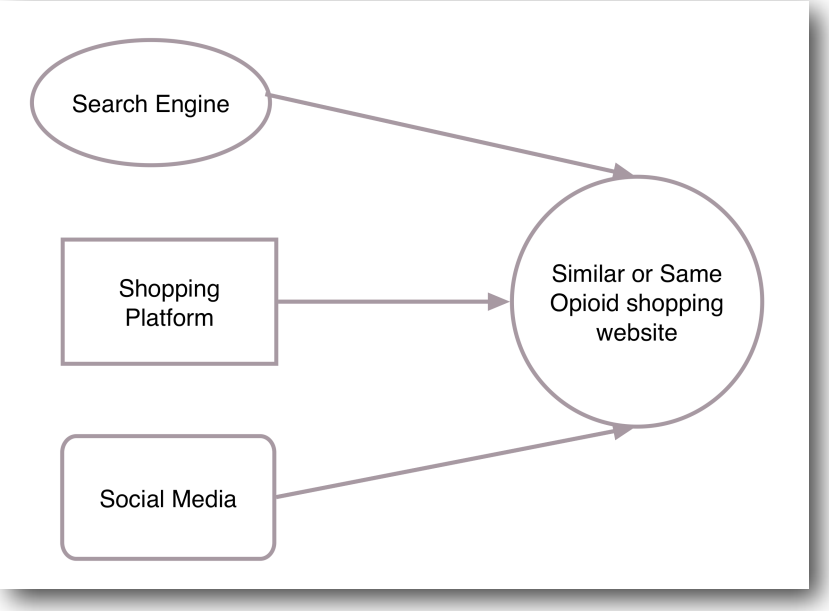
4.4. Illegal Opioid Websites

For the purposes of this study we have used the Ryan Haight Act definition[18] of a violating pharmacy website. An illegal opioid website is one which: 1) Does not display location, licensure and compliance on the homepage and/or 2) Either does not require a prescription OR offers virtual prescriptions (no physical visit with a doctor). The law provides for cross state border enforcement by state attorneys general. The law also provides for enforcement against sites "*serving as an agent, intermediary, or other entity that causes the Internet to be used to bring together a buyer and seller to engage in the dispensing of a controlled substance...*"[19] which would include redirection sites and directory sites intentionally linking to the illegal pharmacy sites. The law does not require any of the websites to actually ship a controlled substance. The issues are about fraudulent representation, enticement, solicitation, etc. to the consumer which do not require, as a standard, any actual transaction or laboratory tests of shipped drugs.

4.4.1. Final Destination is a Dedicated Opioid Website Regardless of Route Used or Drug Sought

The overall situation is that regardless of the original method used, the destination is typically a dedicated site offering illegal opioids. The routes change and shift, but the search engines, shopping platforms and social medial merely serve as marketing gateways. The websites in general sell controlled substances only and no other merchandise. The final websites frequently are the same small pool of opioid sites regardless of the route used to find them.

Figure 8: Opioid Site as Destination

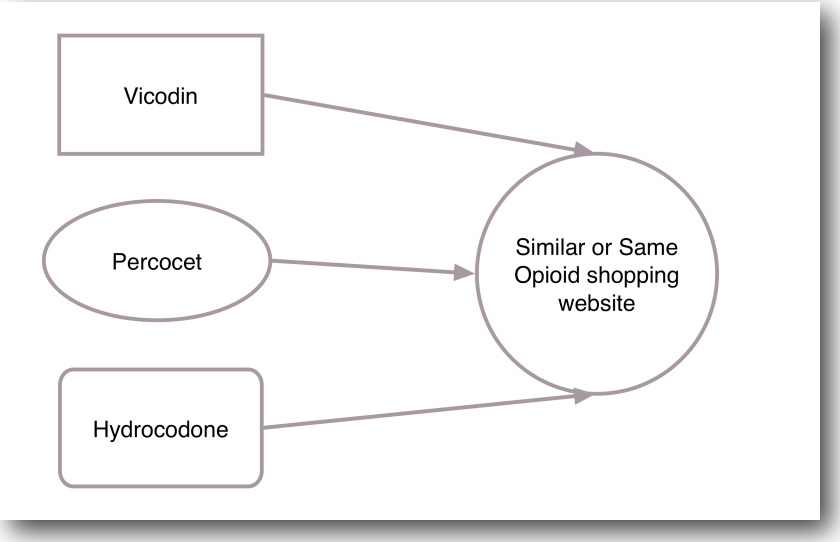


[18] http://thomas.loc.gov/cgi-bin/bdquery/z?d110:HR06353:@@@D&summ2=m&

[19] https://www.gpo.gov/fdsys/pkg/PLAW-110publ425/html/PLAW-110publ425.htm

It also does not seem to matter which opioid is sought, the final sites claim to offer all opioids or substitute another opioid for the one sought.

Figure 9: Website as Destination for any opioid



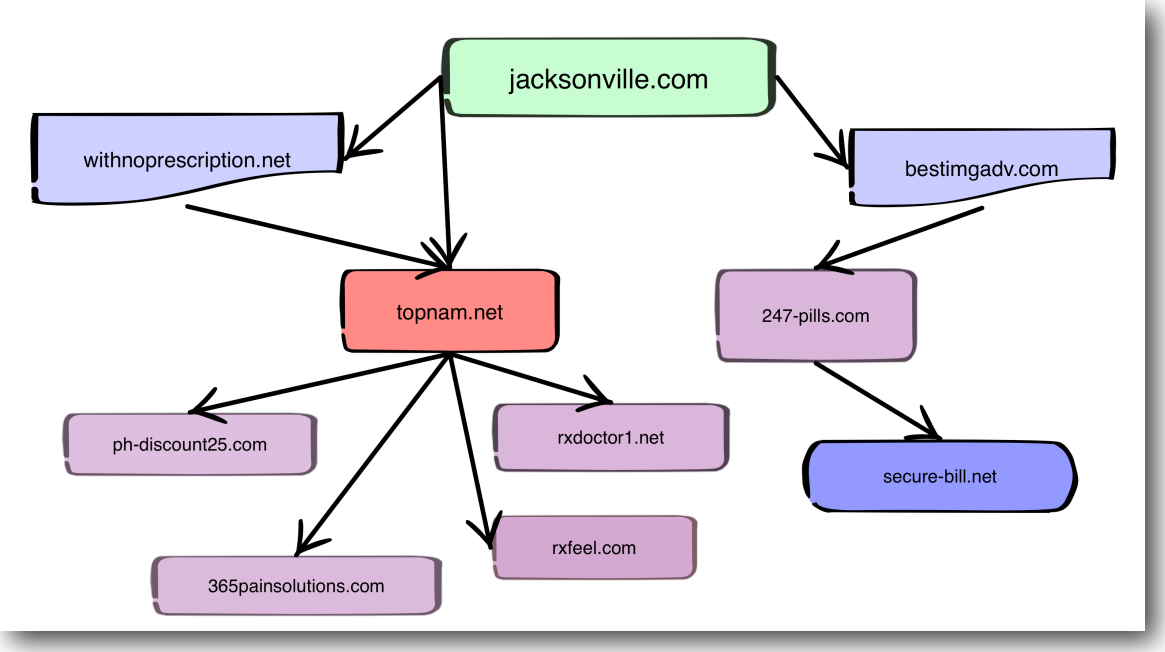
4.4.2. Opioid Web Traffic Structure is Layered

As shown in the data and examples above, search engines, shopping sites, and social media guide opioid seekers to specific websites but there are additional components between the first level search and the final sites. The example searches for opioids led several participants to the site jacksonville.com, a legitimate newspaper website that has multiple comment section posting that led to illegal opioid websites.

This layer of infected or compromised site appeared frequently and in different formats. The links led to secondary sites which in some cases automatically re-directed to a third location

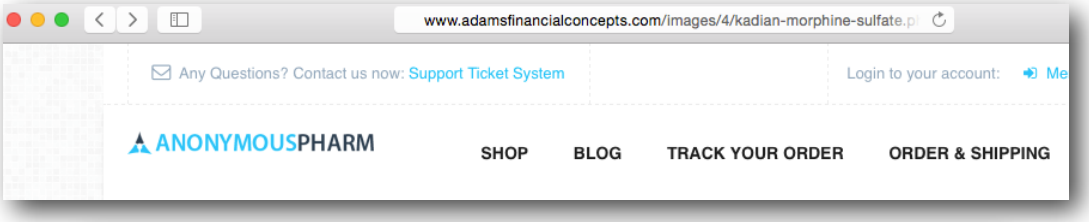
which served as a gateway which provided access a final site where drugs could be purchased. The following chart shows the various paths from the spammed pages at jacksonville.com.

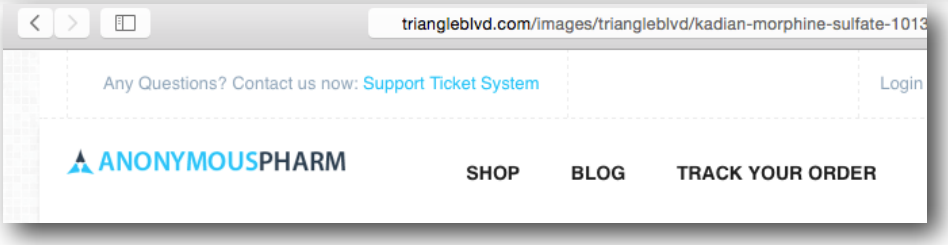
Figure 10: Click Path to Opioid Websites



4.4.2.1. Use of Malware and Hacking to Promote Opioid Traffic

One website seemed to dominate search our opioid results: anonshop.net. The reason is that the content from anonshop.net has been loaded into hidden directories on a number of unrelated websites. Below are two examples.



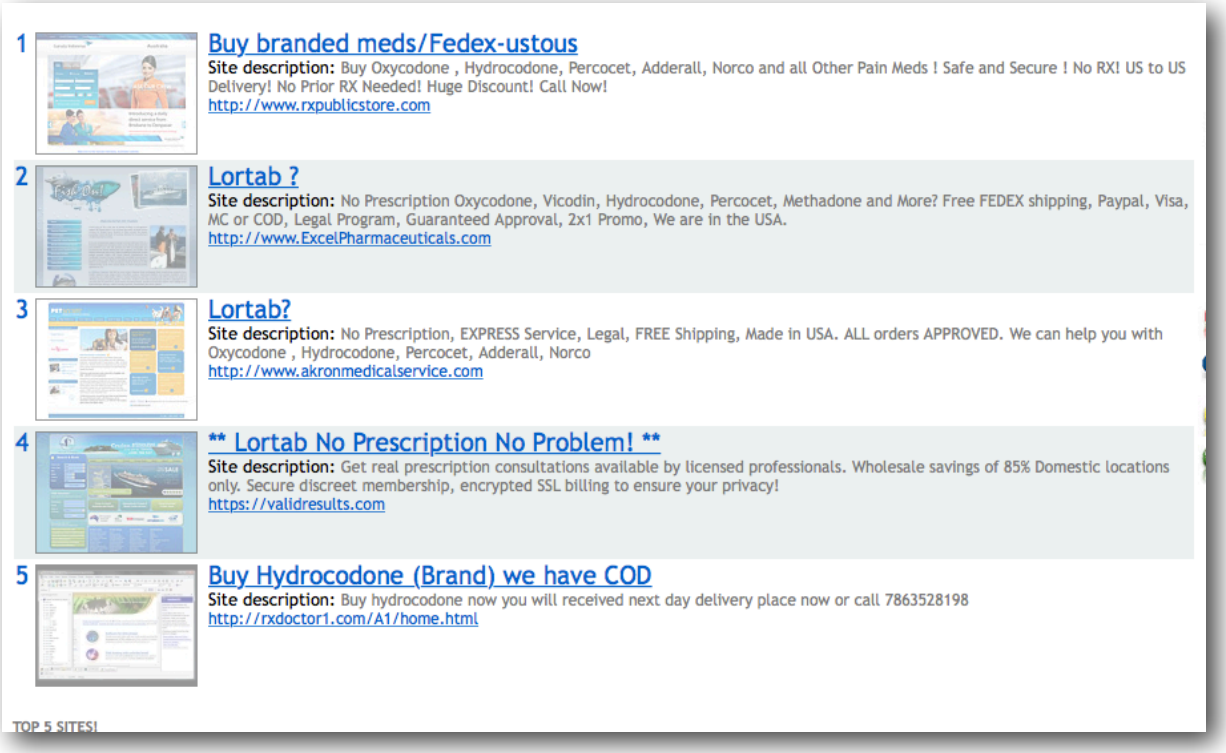


The compromised websites ranged from plumbing stores to photography studios. The owners of these websites are likely unaware of the opioid content. This is a specific example of search engine manipulation. The identical content hidden in all of these sites makes it

appear that there is a great interest in a particular subject or that there is a great volume of certain content. As search engines crawl the Internet, they will find more and more references to ANONYMOUSPHARM and place them higher in search results.

4.4.2.2. Pharmacy Directory Websites

Many of the websites found in our searches were directories of illegal pharmacies. While these sites did not sell opioids themselves they were dedicated to promoting the illegal pharmacies and fall into the category of an "*entity that causes the Internet to be used to bring together a buyer and seller*"[20] under the Ryan Haight Act. The example below, foundall.net, is hosted by Yellow Fiber in Virginia.

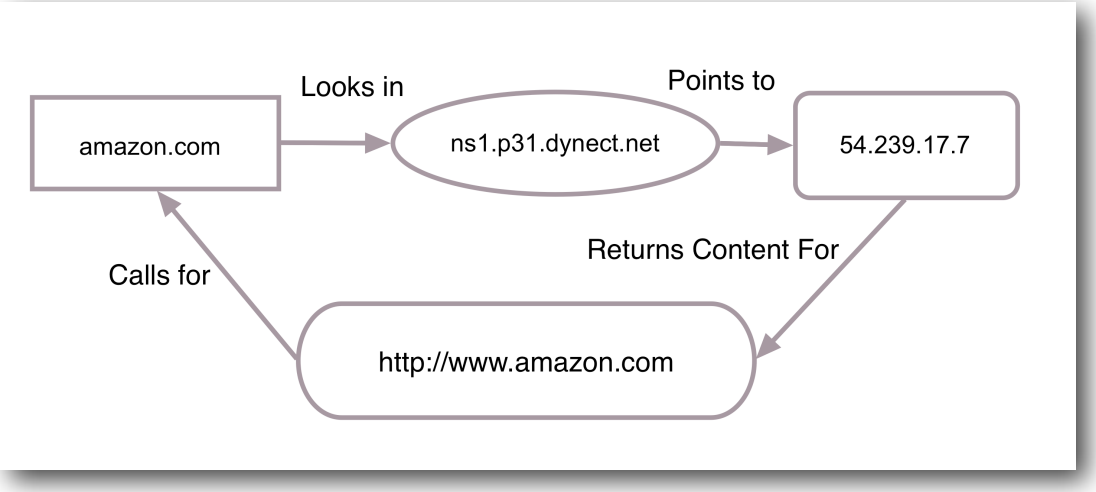


[20] https://www.gpo.gov/fdsys/pkg/PLAW-110publ425/html/PLAW-110publ425.htm

4.4.4. Components that Create a Website and Who Controls Them

A website accessible on the Internet has a number of requirements. Machines that serve web content are assigned unique numbers called *Internet Protocol addresses* (IP). *Domain names* are human-readable strings, like "fisher.edu", assigned to IP addresses by being associated through special Internet computers called *Name Servers*. When a domain name is entered into a browser address field or clicked on in a webpage, software on our computers and mobile devices translates that domain into an IP address which is where the web content resides. Companies called *Internet Service Providers* (ISP) host web content at IP addresses. Companies called *Registrars* have the exclusive ability to associate a domain name with an IP address through a name server. In some cases a single company provides the domain name, the name server and the IP address. In other cases all three are controlled by different entities or some combination. The example below shows how a request for the website *http://www.amazon.com* calls for data on the domain *amazon.com* which looks in the name server *ns1.p31.dynect.net*, which then points to the IP address *54.239.17.7*, which then returns the content for the Amazon website:

Figure 11: DNS Example

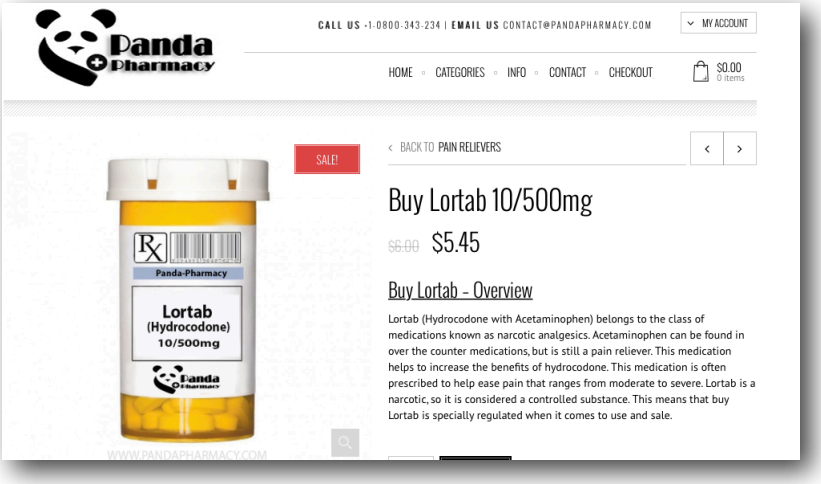


Registrars and ISPs are generally subject to the laws where they are located or where their data is stored. Different Internet providers are often subject to the laws of countries they do business in as well. In order for an ISP to be issued IP addresses they must be a properly registered business and must produce identification. Registrars who sponsor domain names are accredited by the Internet Corporation of Assigned Names and Numbers (ICANN). ICANN has contracts with registrars which require various kinds of compliance and disclosure. This system is collectively known as the Domain Name System (DNS) and comprises much of the World Wide Web accessible to networked computers and devices. Each one of these points on the Internet (domain names, name servers, IP addresses, registrars and ISPs) have public records associated with them called WHOIS records. It is through these WHOIS records our student participants tracked and located the parties who controlled various opioid websites.

4.4.4.1. Hosts/ISPs of Note

Sixteen (16) pharmacy sites were hosted at a single IP address: 192.133.139.26, which is owned by **Serverel** in California. These included the sites: iwebimg.net, topwebimg.com, bestimgadv.com, ipafind.com, iwebadv.com, topweboffer.com, fishkiest.com, glampharm.com, iglamdrugs.com, iwebdrugs.com, iwebpharma.com, rivascript.com, rivaspot.com, thisimgadv.com, thisweboffer.com, and websaleadv.com. These sites appear to be part of an affiliate click tracking program called Rivaclick.

The host **NameCheap** (also a registrar) in California serves seven (7) of the websites collected in our research: 24medsonline.com, 24rxpharmacy.com, 24rxpills.com, pillpharmacyrx.com, rxbazar.com, no-rx-pharmacy.com, and therxonline.com. Several of these sites redirect to pandapharmacy.com which is also hosted by Namecheap.



4.4.4.2. Registrars of Note

The following U.S. based registrars sponsored concentrations of pharmacy websites: **eNom Inc.** (25), **GoDaddy.com LLC** (11), **Moniker Online Services LLC** (9), and **Network Solutions LLC** (7). Details about the websites and registrars can be found in section 4.4.7 and the appendix.

4.4.5. Americans Specifically Targeted

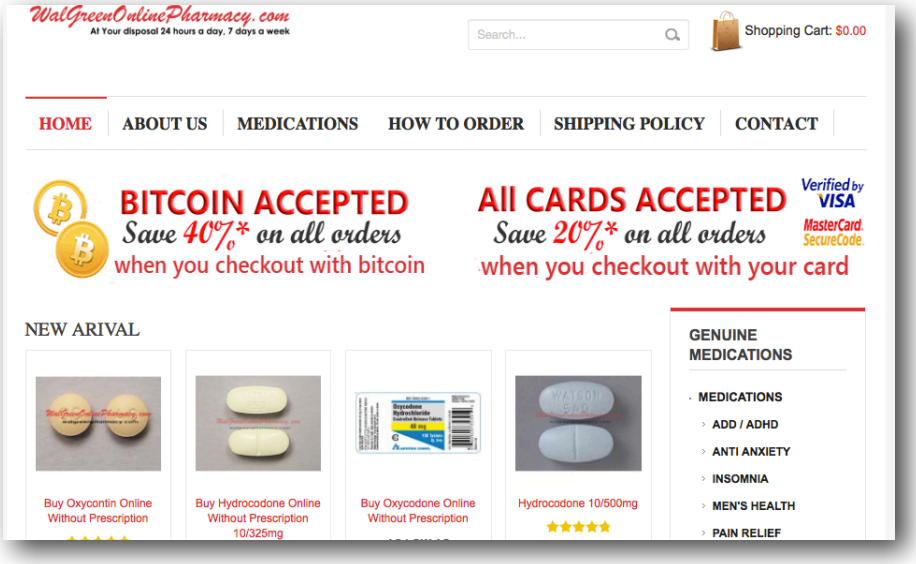
In general, the websites recorded take measures to ensure the customer that the pharmacy is located in the United States and/or the drugs are manufactured in the United States. Most of the websites feature U.S. phone numbers. With a few exceptions, content is in English and prices are listed in U.S. Dollars. Most problematic, the sites typically feature an "FDA" seal of approval.

4.4.6. U.S. Pharmacy Brand Names Abused

The use of known brand names represents a particular problem to consumers since they convey an image of safety and trust. Extending this image to opioid traffic makes these sites even more problematic than the websites not attempting impersonate a known brand. Bellow are two examples found in the research.

cvspharmacare.com is a website selling Hydrocodone, Oxycodone, Vicodin and other opioids. The website is not affiliated with CVS which is a trademark held by CVS Pharmacy, Inc. of Woonsocket, Rhode Island. CVS also holds the trademarks for "CVS/PHARMACY" and "FOR ALL THE WAYS YOU CARE". The string "cvspharmacare" clearly suggests these elements. cvspharmacare.com is hosted by Godaddy, a U.S. company.

walgreenonlinepharmacy.com is another website selling Hydrocodone, Percocet and other opioids. The site is not affiliated with the Deerfield, Illinois company Walgreens. walgreenonlinepharmacy.com is hosted by Level 3 Communications, Inc. in the U.S.

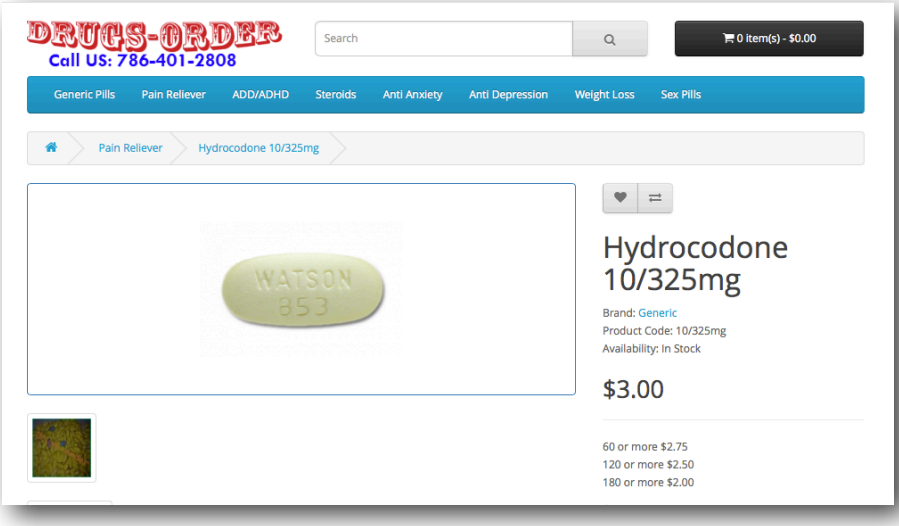


This illegal website is using a logo script very similar to the real Walgreens trademark, which is highlighted below for comparison.

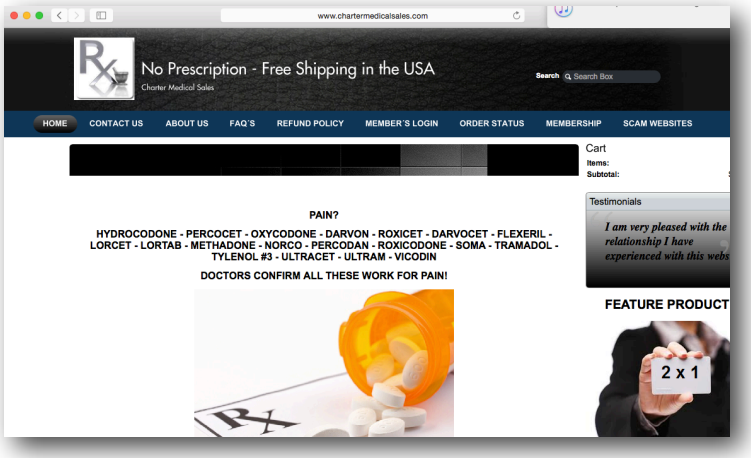
4.4.7. Eleven Case Studies

Participants were randomly issued different individual opioid websites for case study development. The websites were selected from the pool of 252 opioid websites found in our search research. The goals of the case studies were to 1) determine if the websites violated the Ryan Haight Act and 2) use WHOIS record research to determine jurisdiction for each by identifying responsible parties.

drugs-order.net: Completely in the United States. Sponsored by Moniker in Florida, hosted by CloudFlare in California. The customer service number for drugs-order.net is in Miami, Fl.



chartermedicalsales.com: Completely in the United States. This website presents an additional problem because the registration record uses Godaddy's Domains By Proxy service which hides the actual contact information of the domain owner. The Ryan Haight Act requires disclosure.



fastpainmeds.com: Completely in the U.S. Sponsored by Network Solutions in Florida, hosted by Google in California. This website presents an additional problem because the registration record uses a privacy protection service which hides the actual contact information of the domain owner. The Ryan Haight Act requires disclosure.

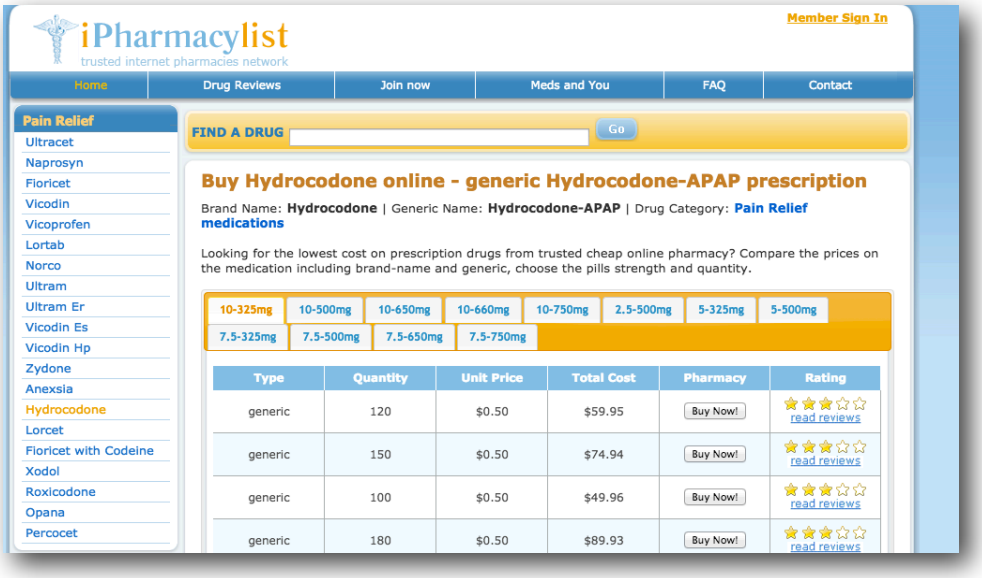
Registrant Contact
Name: PERFECT PRIVACY, LLC
Organization:
Mailing Address: 12808 Gran Bay Pkwy West, Jacksonville FL 32258 US
Phone: +1.9027492701
Ext:
Fax:
Fax Ext:
Email: 768fth8cboi9b92b6q2gcmieu5@domaindiscreet.com

hydrocodones.net: Completely in the U.S. Sponsored by Network Solutions in Florida and hosted by Confluence Networks Inc. which has multiple locations including Austin, TX. This website presents an additional problem because the registration record uses Network Solutions' privacy protection service which hides the actual contact information of the domain owner. The Ryan Haight Act requires disclosure.

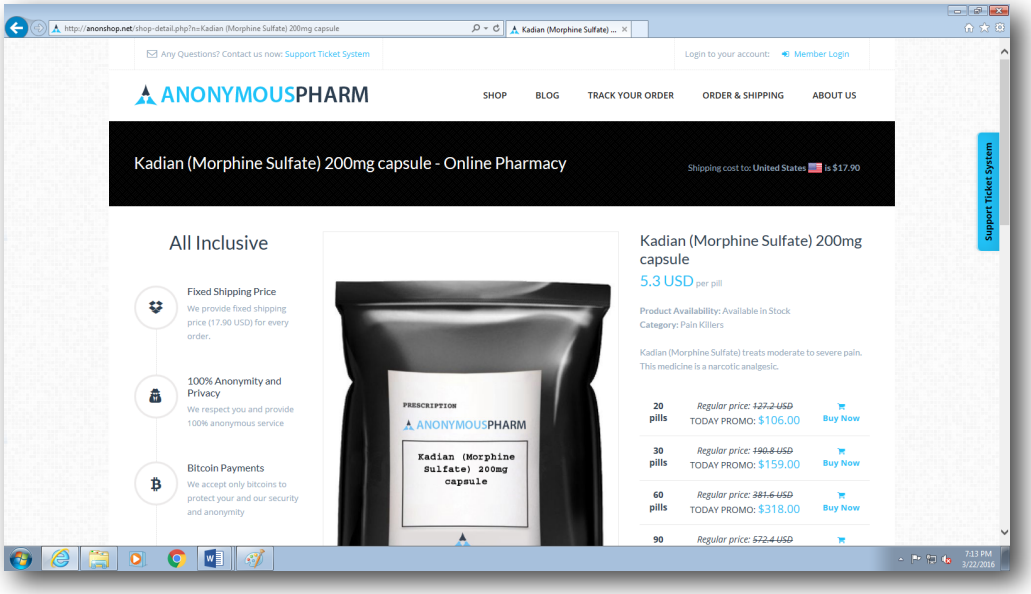
Registrant Contact
Name: PERFECT PRIVACY, LLC
Organization:
Mailing Address: 12808 Gran Bay Parkway West, Jacksonville FL 32258 US
Phone: +1.5707088780
Ext:
Fax:
Fax Ext:
Email: sd4ze8k84ew@networksolutionsprivateregistration.com

This site links to ipharmacylist.com which appeared frequently during the research. ipharmacylist.com seems to be a common destination for opioids searches, either directly or though secondary links and pharmacy directories. While ipharmacylist.com is registered and sponsored by a German-owned parent company, the operating company 1 & 1 Internet Inc is actually located in Pennsylvania[21].

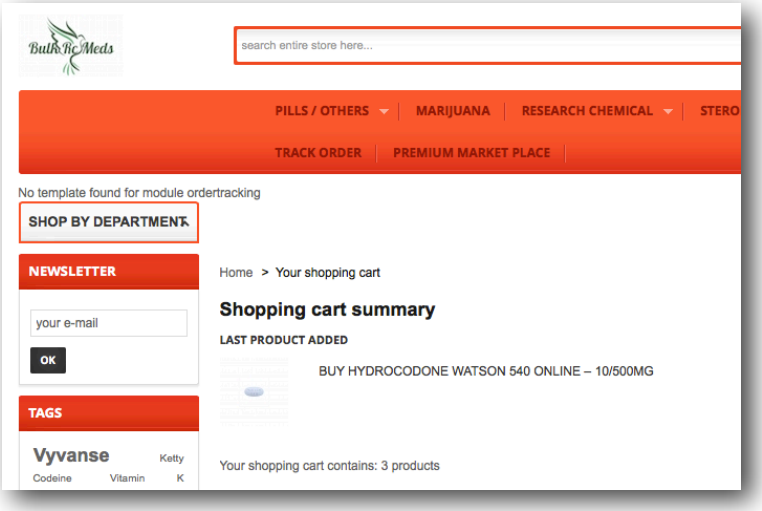
[21] http://www.bbb.org/washington-dc-eastern-pa/business-reviews/internet-web-hosting/1-1-internet-inc-in-chesterbrook-pa-1040770/

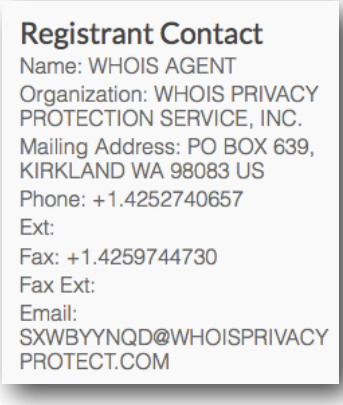


anonshop.net: Hosted in the U.S. by CloudFlare in California, sponsored in China. anonshop.net, aka "ANONYMOUSPHARM", is promoted by a series of apparently innocent infected websites with hidden directories that load the opioid shopping pages (see 4.4.3. for details).

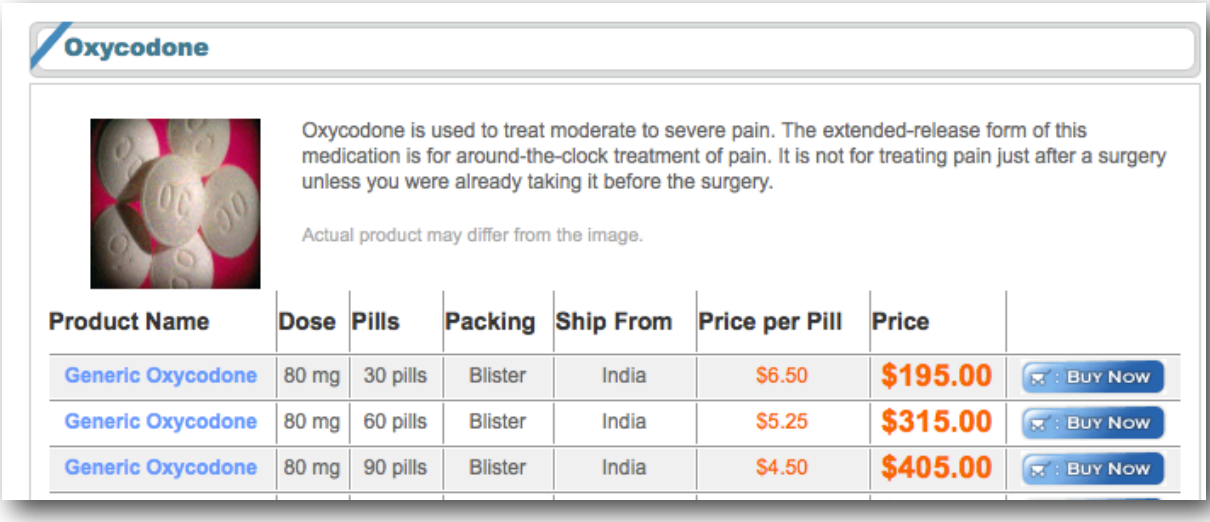


bulkrcmeds.com: Completely in the U.S. Sponsored by eNom in Washington, hosted by Server Central Network in Illinois. This website presents an additional problem because the registration record uses eNom's WHOIS PRIVACY PROTECTION service which hides the actual contact information of the domain owner. The Ryan Haight Act requires disclosure.



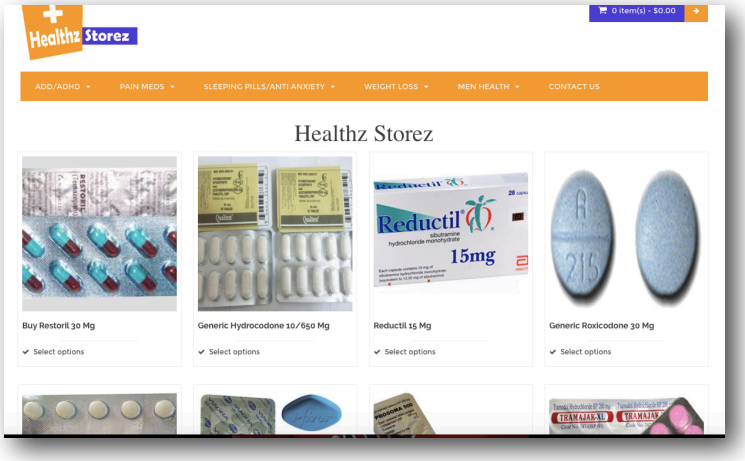


vicodin-mexico.com: Hosted in the U.S. by Level 3 in Colorado, sponsored in Germany. This was one of the few opioid pharmacy websites that displays an address, but they still fail Ryan Haight on the prescription issue.



painreliefph.com: Hosted in Korea, sponsored in Russia. This is the only website in our randomly assigned case studies without any technical infrastructure in the U.S.

healthzstorez.net: Hosted in the U.S. by NameCheap in California, sponsored in the Bahamas.



loyal-pharmacy.com: Completely in the U.S. Sponsored by GKG Net in Texas, hosted by QuadraNet in California.

365painsolutions.com: Hosted in the U.S. by QuadraNet in California, sponsored in India.

See Appendix 7.6. for a complete list of U.S. based websites.

5 Recommendations

Based on the results from the Online Opioid Study the following recommendations are made:

- **Engage direct in action to to collect, monitor, and terminate the linkage, advertising, and content of sites involved in opioid traffic.** Because Internet service providers are not proactively monitoring the situation, they need to be encouraged to take action from the public sector. Starting with the data in this report, the various service providers cited should be contacted directly about the sites and their policies with the short term intent of getting the content removed and the long term intent of enforcing policies going forward. For law enforcement, there are number of opportunities for investigations as the various U.S. based connections demonstrate.

- **Increase the barriers to creating these sites on the provider (registrar/ISP) end and conduct investigations to determine the parties behind the opioid sites.** U.S. providers cited in this report should be reminded of the Ryan Haight Act as a starting point. Each provider can integrate notice of the law into their customer platforms.

- **Contact legitimate parties with malware infected websites or shopping sites with illicit postings to get the postings removed.** Legitimate website owners with spam postings and infections should be contacted directly about the opioid shopping content on their websites. It may also be useful to contact their service providers about the issue to explore the problem further.

- **Collect additional data in this area by conducting follow-up research on a larger scale.** This research stopped collecting data at 252 opioid websites, there are clearly many more with additional details behind each one. Our report only examined two social media sites and collected a limited amount of information. This research should be conducted on a regular basis with results monitored for changes over time.

- **Provide documentation and training in this subject to law enforcement.** The process conducted in this research is fairly straightforward: 1) search on various platforms for opioid merchants, 2) examine the websites for legal compliance, 3) research the records behind the websites to determine jurisdiction and further action. The process can demonstrated, duplicated and integrated with current government efforts.

- **Treat all opioids as a single class of drugs within the context of the Internet with the awareness that lesser-known opioid names may be used to bypass keyword filtering.** There is a long list of opioid names which are not known to the general public but known to addicts and abusers. Any policy or enforcement must

include all opioid names as better known names become blocked in keyword filtering, others will be used.

- **Use the letter of the law to enforce against the online support services in addition to the online pharmacies themselves.** As the research demonstrated there are a number of levels supporting online sales of opioids. Each one of these components play a role in connecting a buyer to a seller of opioids. While directory websites and Internet service providers might claim they are not directly involved in opioids trafficking the law sees it differently. Any service which knowingly support the traffic, especially if they receive any type of compensation, should be treated like the actual traffickers.

6 References

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U.S Congress, October 1970. Controlled Substances Act. U.S. Government Printing Office. Available at: https://www.gpo.gov/fdsys/pkg/USCODE-2011-title21/pdf/USCODE-2011-title21-chap13-subchapI-partB-sec812.pdf

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U.S. Department of Justice. Controlled Substance Schedules. Drug Enforcement Administration. Available at: http://www.deadiversion.usdoj.gov/schedules/

7 Appendices

7.1 Descriptions of Assigned Opioids

Each student was assigned a specific opioid to use in their research. Opioids are a class of narcotic drugs intended to be used under the care of a physician to relieve pain. Opioids are designed to mimic the effects of morphine on the human body by blocking certain messages to the brain. These are considered controlled substances in the United States (usually Schedule 2 and Schedule 3) because of their high potential for abuse and possibly fatal effects on the body when unsupervised. Humans become tolerant of opioids with continued use, meaning they need progressively higher dosages to achieve pain relief. Some abusers turn to heroin as a faster and less-expensive method for obtaining a desired effect which caries additional risks of overdose and disease transmission.

Demerol: (4-Piperidinecarboxylic acid, 1-methyl-4-phenyl-, ethyl ester, hydrochloride) is part of pain medications called opioid analgesics, (meperidine) which is a pain reliever that stops the body from sending pain signals to the brain. Schedule II controlled substance comparable to morphine. Demerol is chemically made and contains opioids, it is either a tablet or liquid, used to treat moderate-to-severe pain, but not chronic pain. It is used for to help put people to sleep before an operation, as well as provide pain relief after childbirth. Demerol is manufactured by Sanofi Aventis. Both adults and children can take Demerol dosage is given determined by age and limited for every 3-4 hours. Demerol is controlling drug that should be strictly taken as prescribed by your doctor. Moderate to severe affect with other pain medications along with alcohol, other opioids, grapefruit juice, illicit drugs that will cause central nervous system depression. Demerol has a high risk for abuse because of the pleasure and giddiness it provides. Addicts abused by crushing, chewing, snorting, or injecting the dissolved product. The outcome is uninhibited of the opioid and pose a major risk to the addict that could result in overdose or death. It is recommended after use if any leftover to ask doctor where to dispose.

Dilaudid: An opioid analgesic drug that is manufactured from hydromorphone hydrochloride and is a hydrogenated ketone of morphine. Specifically an analgesic is considered a drug that relieves pain. Dilaudid is considered a hybrid drug of morphine. Prescribed as a narcotic painkiller by only a hospital or physician, dilaudid is used for the relief of moderate to severe pain, for example: a major surgery or a car accident that caused a lot of severe injuries. Dilaudid can come in five different forms, you can take it as an immediate release tablet and an extended release tablet, an injection, rectal suppository and an oral liquid (vicodin vs. dilaudid - Addiction: Substance Abuse). The dosage of this drug depends on what the condition is and how high the pain level is. The common dosage for this drug is usually 8mg/mL – 10mg/mL. Dilaudid can have negative side effects such as slowing or stopping of the breath, if it is overused, and can lead to complete cessation of breathing and death. Dilaudid is a highly addictive drug if it is not used properly. The chemical name of dilaudid (hydromorphone hydrochloride) is 4,5α-epoxy-3-hydroxy-17- methylmorphinan-6-one hydrochloride. A couple of drugs that are typically combined with dilaudid are Ambien, Xanax and Fentanyl (Dilaudid-HP Drug Interactions).

Duragesic: (N-Phenyl-N-(1-(2-phenylethyl)-4-piperidinyl) propanamide) is an opioid narcotic (fentanyl) delivered through a transdermal patch and should only be prescribed by a physician. Duragesic patches are used to treat severe pain for up to 72 hours and are not intended for mild pain relief. The drug is released slowly and absorbed through the skin into the bloodstream. Duragesic is manufactured by Johnson & Johnson subsidiary ALZA Corporation. Fentanyl is a synthetic opioid which is much more potent than pure morphine and heroin. Fentanyl may also be used intravenously in combination with benzodiazepines (sleep-inducers) for surgery sedation. The patches deliver between 12 and 100 micrograms (mcg) of fentanyl per hour depending on the prescription. Duragesic is an extremely powerful prescription which should only be applied under a doctor's care. Duragesic also has interaction warnings with other painkillers, antibiotics, anti-fungal medicine which slow removal of the drug by the liver. The patches should be kept away from children and pets. Any contact with the sticky part of the

patch could result in accidental absorption. Exposure of the patch to heat (heating pads or electric blankets) may increase absorption to dangerous overdose levels. Used pads should be folded and flushed down the toilet. Duragesic has a high risk of abuse and addiction. Overdosage could result in repression of the respiratory system and death. Addicts will often cut the patches open and suck the gel inside, chew the plastic pads, or smoke the removed gel. Continued abuse can cause liver damage and opioid tolerance-based addiction.

Exalgo: (4,5α-epoxy-3-hydroxy-17-methylmorphinan-6-one hydrochloride). Is an opioid narcotic delivered through an oral extended release tablet and should only be prescribed by a physician. Exalgo extended release tablets are used to treat severe ongoing pain. It is not for use on an as-needed basis for pain. Exalgo is manufactured by ALZA Corporation 700 Eubanks Drive Vacaville, CA. Exalgo is a hybrid medication of hydromorphone hydrochloride. Hydromorphone belongs to a class of drugs known as narcotic (opiate) analgesics. It works in the brain to change how your body feels and responds to pain. Exalgo extended-release tablets are available in 8 mg, 12 mg, 16 mg or 32 mg dosage strengths depending on the prescription. Hydromorphone extended-release tablets should be used only if you have been regularly taking moderate to large amounts of narcotic pain medication. This medication may cause overdose (even death) if taken by a person who has not been regularly taking narcotic medication. Exalgo is not intended for use as a needed analgesic. analgesics are drugs that alleviate pain without causing anesthesia, these are usually used to relieve severe pain. Side effects include constipation, nausea, vomiting, stomach pain, dizziness, drowsiness, headache, tired feeling, feelings of extreme happiness or sadness, sweating, mild itching, dry mouth, or flushing. The more serious side effects include weak or shallow breathing, confusion, light-headedness. Exalgo may be habit forming.

Kadian: The manufacturer for Kadian is Actavis which is an international pharmaceutical company. Kadian is a pure chemical substitute that contains opiates. This drugs intended use is for severe chronic pain such as cancer. It changes how your body feels and reduces how much pain you are feeling. It should only be used to treat severe pain and not used for acute pain because it acts on the brain. Kadian can be used for conditions such as; pain relief for bones and joints, sickle cell crisis, during after surgery relief, general anesthesia, severe pain from car accidents, renal colic or kidney stones, pulmonary edema, severe acute heart failure, rheumatoid arthritis, osteoarthritis, and cough suppressant for severe coughs. Kadian's routes of taking this substance are oral, injection, a patch, smoking, inhaling, and snorting. The chemical makeup is (5α,6α)-7,8-didehydro- 4,5-epoxy-17-methylmorphinan-3,6-diol. Some side effects include; abdominal pain, blurred vision, crawling, itching, numbness, or tingling feelings, change in the ability to see colors, chest pain, confusion, dizziness, faintness, or lightheadedness, fast, or irregular heartbeat or pulse, increased sweating, severe vomiting, pounding in the ears, shortness of breath, slow heartbeat, sweating or chills, nervousness, etc. Symptoms of overdose include; constricted pupils, decreased awareness or responsiveness, extreme drowsiness, fever, increased blood pressure, increased thirst, lower back or side pain, muscle pain, severe sleepiness, and swelling of the face, fingers, or lower legs. Kadian is prescribed by a physician only. The standard dosage for immediate release tablets is 15 to 30 mg orally every 4 hours as needed. The oral dosage is 10 to 20 mg orally every 4 hours as needed. The Subcutaneous dosage is 5 to 10 mg every 4 hours as needed. Morphine is typically combined with naltrexone.

Lorcet: An opioid narcotic that is given to people as a pain reliever. It is a orally narcotic drug with the combination of Acetaminophen and should only be prescribed by a physician. The way to take this drug is to make sure that you take one every 4 -6 hours depend on how severe your pain is. You should avoid taking this drug with any types of other drugs unless it is prescribed by a doctor. Hydrocodone is a pretty heavy drug, people need to follow the instruction provided by the doctors and try not to go beyond your prescription. Because just like every drugs, there is always a side effects. The side effects of this drug is that it can lead to nausea, vomiting, constipation, drowsiness, dizziness, lightheadedness, anxiety, abnormally happy or sad mood, dry throat, difficulty urinating, rash, itching. And if you are a pregnant women and you are taking this drug, you will need to talk to your doctor before you do any breastfeeding. According to researchers, they said that based on their studies, Lorcet (hydrocodone) is a way stronger/higher drug than codeine and 59% as powerful as morphine in analgesic properties. But there was a test between the hydrocodone and morphine, the test was conducted on monkeys. After the test was done, it turns out that hydrocodone is actually a much stronger drug than morphine. The chemical formula hydrocodone is C18H21NO3.Hydrocodone is an analgesic drug which mean that any

drugs that are analgesic, can be describe as narcotic drugs that have several way to work in the nervous systems and also have a combination of acetaminophen.

Lortab: (4,5α- epoxy-3-methoxy-17-methylmorphinan-6-one tartrate (1:1) hydrate (2:5) an oral opioid, which contains both acetaminophen and hydrocodone. Both of these opioids are pain killers, and should be prescribed by a physician. Acetaminophen lowers chemicals in the brain that transmit pain and Hydrocodone binds to the body's natural pain killers. Lortab is manufactured by Amneal, Watson, UCB pharma, etc. Should only be used as prescribed by your doctor. Side effects are drowsiness, dizziness, blurred vision and lightheadedness. These effects worsen if taken with alcohol. Misuse of this drug could cause addiction, overdose or death. Dosage for Lortab is 5 mg/325 mg, one or two tablets every four to six hours, should not exceed 12 tablets within a 24 hour period.

Percocet: Combination of two different components Oxycodone which is an opioid prescribed for pain relief and paracetamol which is more commonly known as "Tylenol". The combination of this two drugs together seem to reduce the friction between the normal state of the patient and the effect of the Oxycodone in the body which makes it safer and less drastic than other drugs prescribed for the same illness. Right now this drug is being manufactured by "Endo Pharmaceuticals" and they sell it as analgesics in different forms for the different dosages they sell Percocet. All the different versions of Percocet are for oral use and the shape and color of the pills variates between them, you can see round oval and diamond shape pills also you can find them as blue, yellow, pink and white. The chemical makeup of Percocet is $C18H21NO4•HCl$. The minor side effects of Percocet use, short term use, are: nausea, vomiting, dry mouth, blurred vision, headache, sweating, lightheadedness, dizziness and symptoms of constipation. The side effects related to long use are: shallow breathing, slow heartbeat, fainting, confusion, unusual thought and behavior, skin conditions, seizure, problems with urination or colored stools. The normal dosage of this drug is two tablets every six hours and is commonly used by itself but sometimes its combines with Xanax in order to change its effects. Analgesics are those drug prescribed to ease or eliminate pain from different sources like head, stomach, injuries etc.

Roxicet: The generic name for Roxicet is oxycodone and acetaminophen, dosages are in a tablet form or oral solution. It is a narcotic drug which is used to reduce serious pain prescribed by doctors. Roxicet has opium in it and has been advised by doctors not to take it after consumption of alcohol sedatives or any other narcotic pills. Roxicet is an opiate killer sold all over US used for severe neurological degeneration, used by cancer patient and other severe pain. Side effects include severe skin rashes, death if abused, kidney disease because of acetaminophen, colostomy, bowel obstruction, brain tumor, sleep apnea, breathing disorder, seizure, dark urine, respiratory suppression and many others. There are similarities between Roxicet and other narcotic pills in terms of affecting and harming unborn babies. Babies are usually dependable on drugs when born if their mothers took narcotics while pregnant. United states manufacture Roxicet and it is approved by the FDA with opiates intended t be used for surgery and after surgery for severe and critical bone pain and injuries for a certain period of time. This drug is in a liquid/tablet form however, it can be injected for fast reaction through the veins. Roxicet is a very powerful drug that doctors' advice that while someone is on it, they should avoid driving, working long shifts, operating machines because it causes dizziness, blurred vision, confusion which could result in a serious accident, death if overdosed, severe accident at work etc. To obtain Roxicet, it has to be prescribed by a license doctor or maybe a pharmacist in some Countries. It can be picked with a valid ID indicating and proving that the prescribed drug is meant for the right person and for the right purpose. Dosages depends on the severity of the pain. Adults are required to take one tablet every 6 hours, maximum 12 tablets daily, while orally adults should take one teaspoon every 6 hours as prescribed by the doctor. It is combined with acetaminophen so it is dangerous taking a lot if not recommended by a physician because it could cause severe kidney failure.

Vicodin: A hybrid drug that is composed of an opiate: hydrocodone and an artificial substance, acetaminophen. The chemical make-up is $C18H21NO3•C4H6O6•2½H2O$. The drugs intended use is to relieve serious pain. Serious pain can result from surgery and severely broken bones. While people that abuse Vicodin on a regular basis take the drugs in various ways the proper application is to take the drug orally. There are many side effects to abusing Vicodin. Long time abusers often experience mood swings, irritability, agitation, anxiety, poor stress management, memory issues, rebound pain sensitivity, an increased perception of pain, and an addiction that results in frequent sedation and an increased chance of bodily harm. Vicodin is legally only supposed to be

prescribed by hospitals and certain physicians. The drug does however manage to make its way onto the streets where overdose is not uncommon. The common dosage is to take one to two pills every six to eight hours as pain persists. You are warned to exceed 8 pills in 24 hours. Vicodin is commonly combined with alcohol, heroin, Lortab, Norco, and a variety of other drugs from schedules two and three classifications. Vicodin misuse ruins people and their families; the highly addictive nature of the drug is not something that should be taken lightly.

Zohydro: 4,5alpha)-epoxy-3-methoxy-17-methylmorphinan-6-one tartrate (1:1) hydrate (2:5) or morphinan-6-one, 4,5-epoxy-3-methoxy-17-methyl-, (5alpha)-, [R (R*, R*)]-2,3-dihydroxybutanedioate (1:1), hydrate (2:5) is a chemical mixture of hydrocodone bitartrate that is meant to be ingested orally in pill form or capsules of 50 mg or 80 mg depending on patient's tolerance . Zohydro is used to treat patients who have been through regular pain relief medication but may have become too tolerant to most pain relievers or other regular pain relief that has become inadequate or ineffective. It should not be used with patients who take anti depressants. Zohydro is manufactured by Alkermes Gainesville LLC, a company based out of Gainesville, Georgia. Taking too much Zohydro can cause Gastrointestinal Disorders: abdominal discomfort, abdominal pain,gastroesophageal reflux disease, non-cardiac chest pain, pain, peripheral edema, pyrexia Injury, Poisoning and Procedural Complications: contusion, fall, foot fracture, joint injury, joint sprain, muscle strain, skin laceration Investigations: increased blood cholesterol, increased gamma-glutamyltransferase Metabolism and Nutrition Disorders: dehydration, hypokalemia Musculoskeletal and Connective Tissue Disorders: arthralgia, musculoskeletal pain, myalgia, neck pain, and osteoarthritis. For these reasons, Zohydro should only be prescribed by a healthcare professional who are knowledgeable about opioids.

7.2 Search Engine Companies

Bing (Microsoft): 555 110th Ave NE Bellevue WA 98004 USA

Google: 1600 Amphitheatre Parkway Mountain View CA 94043 USA

Yahoo: 701 First Ave Sunnyvale CA 94089 USA

7.3 Shopping Platform Companies

Alibaba: 400 S El Camino Real #400, San Mateo, CA 94402 USA

Craigslist: 1381 9th Ave. San Francisco, CA 94122 USA

Etsy: 55 Washington St #512, Brooklyn, NY 11201 USA

Oodle: 340 S Lemon Ave #3604 Walnut, CA 91789 USA

7.4 Social Media Platforms

YouTube, LLC: 901 Cherry Ave. San Bruno CA 94066 USA

Twitter: 1355 Market Street. Suite 900. San Francisco CA 94103 USA

7.5 Service Provider Companies

7.5.1 Registrars

U.S. Based

Domainshype.com Inc.: 2635 Walnut Street Denver CO 80205 USA

Dynadot LLC: PO Box 345 San Mateo, CA 94401 USA

Dynamic Network Services: 150 Dow St, Manchester, NH 03101 USA

eNom Inc.: 15801 NE 24th Street Bellevue, Washington, 55436 USA

FastDomain Inc.: 560 Timpanogos Circle Orem, Utah 84097 USA

GKG.NET, INC.: 302 N. Bryan Ave Bryan TX 77803 USA

GoDaddy: 14455 N Hayden Rd Suite 219 Scottsdale, AZ 85260 USA

Moniker Online Services LLC: 1245 South Powerline Road #293 Pompano Beach FL 33069

Namecheap, Inc.: 11400 W. Olympic Blvd. Suite 200 Los Angeles CA 90064 USA

NETWORK SOLUTIONS, LLC: 12808 Gran Bay Parkway West Jacksonville Florida 32258

TierraNet Inc. D/b/a DomainDiscover: P.O. BOX 502010 San Diego, CA 92150 USA

Outside U.S.

1 and 1 internet SE: Brauerstraße 48, 76135 Karlsruhe, Germany

1 API GMBH: Talstrasse 27 Homburg Saarland 66424, Germany

DOMAINSHYPE.COM, INC.: Directiplex, Mogra Village Nagardas Road, Andheri (East) Mumbai Maharashtra, India

easyDNS Technologies: 219 Dufferin St. Toronto, ON M6K 3J1 Canada

Guang Dong NaiSiNike Information Technology Co Ltd.: 7A-1, 7th Floor, No. 6 Jingyuan Road, Jida Industrial Zone Zhuhai Guangdong, China

Hosting Concepts B.V. d/b/a Openprovider: Rotterdam 3024 BN Netherlands

NetEarth One Inc. d/b/a NetEarth:

RU-CENTER: 2/1, 3d Khoroshevskaya Str. Moscow, Russian Federation

ZNet Technologies Pvt Ltd.: D-10/52, Janki Marg, Chitrakoot, Vaishali Nagar Jaipur 302021 India

7.5.2. Hosting Companies

U.S. Based

Automattic, Inc: 60 29th Street #343 San Francisco CA 94110 USA

CloudFlare, Inc.: 101 Townsend Street San Francisco CA 94107 USA

Confluence Networks Inc.: Texas One 4100 Smith School Rd Austin TX USA

GoDaddy: 14455 N Hayden Rd Suite 219 Scottsdale AZ 85260 USA

Google Inc.: 1600 Amphitheatre Parkway Mountain View CA 94043 USA

HostHatch, Inc: 6th Street Los Angeles CA USA

Level 3 Communications, Inc.: 1025 Eldorado Blvd. Broomfield CO 80021 USA

Metro PCS:

Namecheap, Inc.: 11400 W. Olympic Blvd. Suite 200 Los Angeles CA 90064 USA

NameSecure L.L.C.: 13861 Sunrise Valley Dr, Herndon, VA 20171 USA

QuadraNet, Inc: 530 W 6th Street Suite 901 Los Angeles, CA 90014

Server Central Network: 111 W. Jackson Blvd. Suite 1600 Chicago IL USA

Serverel: 955 Escalon Ave Apt 804 Sunnyvale CA 94085 USA

Yellow Fiber Networks: 12100 Sunrisey valley dr Suite 290-3 Reston VA USA

7.6 Specific Internet Domains at U.S. Providers

The following is a partial list of websites collected in this research with either the sponsoring registrar or U.S. based IP address that hosts the content.

publicstore-247services.com	Wild West Domains LLC
care-onlinesupplies.com	Wild West Domains LLC
growthhormonehgh.com	TierraNet Inc. d/b/a DomainDiscover
elcorralcc.com	Register.com Inc.
buyweedsonline.com	Register.com Inc.
excelpharmaceuticals.com	Network Solutions LLC
akronmedicalservice.com	Network Solutions LLC
storesonlinepro.com	Network Solutions LLC
indiamart.com	Network Solutions LLC
hydrocodones.net	Network Solutions LLC
fastpainmeds.com	Network Solutions LLC
voy.com	Network Solutions LLC
online-discount-pharmacy1.com	NameSecure L.L.C.
rxexpress.club	NameCheap Inc.
healthmedicinetoday.com	Name.com Inc.
goodrx.com	Name.com Inc.
thefullpharma.com	Name.com Inc.
rxpharmaplus.com	Name.com Inc.
pillsorderonline.com	Moniker Online Services LLC
toprxmeds.com	Moniker Online Services LLC
drugs-order.net	Moniker Online Services LLC
rxmedico.com	Moniker Online Services LLC
easymedsdirect.com	Moniker Online Services LLC
bestmedvalues.com	Moniker Online Services LLC
freemedprograms.com	Moniker Online Services LLC
calimeds.com	Moniker Online Services LLC
overnightmorphine.com	Moniker Online Services LLC
adamjwhitlatch.com	Launchpad.com Inc.
a2zrxonlinestore.com	GoDaddy.com LLC
publixonlinehealthcarestore.com	GoDaddy.com LLC
quickservicestore.com	GoDaddy.com LLC
proboards.com	GoDaddy.com LLC
fastservicehere.com	GoDaddy.com LLC
helprx.info	GoDaddy.com LLC
eurotrip.com	GoDaddy.com LLC
lexiuminternational.com	GoDaddy.com LLC
tlctrio.com	GoDaddy.com LLC
jyoakam.com	GoDaddy.com LLC
chartermedicalsales.com	GoDaddy.com LLC
loyal-pharmacy.com	GKG.NET INC.
rxorderprocess.com	FastDomain Inc.
drugbuyersfreeboard.com	FastDomain Inc.
aofficialpassport.com	FastDomain Inc.
askthetrucker.com	FastDomain Inc.
healthysolutionsrx.net	eNom Inc.
rioguadaluperesort.com	eNom Inc.
fishkiest.com	eNom Inc.
glampharm.com	eNom Inc.
iglamdrugs.com	eNom Inc.
iwebdrugs.com	eNom Inc.
iwebpharma.com	eNom Inc.

rivascript.com eNom Inc.
rivaspot.com eNom Inc.
thisimgadv.com eNom Inc.
thisweboffer.com eNom Inc.
websaleadv.com eNom Inc.
thedrugstoreonline.com eNom Inc.
viagraprofessional.biz eNom Inc.
webmailweed.com eNom Inc.
bulkrcmeds.com eNom Inc.
jasonscottpharmaceuticals.com eNom Inc.
teamtlr.com eNom Inc.
researchchemc.com eNom Inc.
medsitemedical.com eNom Inc.
validatedresults.com eNom Inc.
globalonlinemedstore.com eNom Inc.
lookforweboffer.com eNom Inc.
drupalgardens.com Dynamic Network Services Inc.
bestmedzonline.net Dynadot LLC
rxmedzonline.net Dynadot LLC
fizerhealthsolutions.com Domainshype.com Inc.
365painsolutions.com Domainshype.com Inc.
abottpainsecuremeds.com Domainshype.com Inc.
legitbiotenpainsolutions.com Domainshype.com Inc.
legitcvspainsolutions.com Domainshype.com Inc.
morispainreliefsolutions.com Domainshype.com Inc.
onlinepainhealthsolution.com Domainshype.com Inc.
24x7painsolutions.com Domainshype.com Inc.
fizerhealthsolution.com Domainshype.com Inc.
pharmadude.com DNC Holdings Inc.
imexbb.com Blue Razor Domains LLC

1ameds.net 173.255.128.175
1stpayments-online.com 104.28.30.206
24hrsmedsavailable.com 204.11.58.210
24medsonline.com 68.65.120.174
24rxpharmacy.com 68.65.120.174
24rxpills.com 68.65.120.174
24x7-pharmacy.net 104.219.248.3
4dq.com 209.208.4.62
aboutedmeds.com 199.182.161.41
affordablemeds4u.com 199.79.63.199
alldaychemist.com 172.229.212.33
allhealthonline.org 199.182.161.46
anonshop.net 104.27.171.171
behance.net 74.205.63.94
bestdrugcorner.com 104.219.248.3
bestimgadv.com 192.133.139.26
buymedsquick.com 162.254.167.195
canadahealthandcaremall.com 199.182.161.44
canadianpharmacyviagra.org 199.182.166.233
cialissofttabs.org 184.105.178.85
coalitionforfamilies.org 192.185.62.74
dutec.net 98.129.229.18
endlessmeds.net 54.208.104.124
erectiledysfunctiontreatmenttips.com 173.214.250.132
fioricet180.com 64.50.185.59
foundall.net 74.119.193.197

getusabrandpills.com	184.172.12.49
goforpills.com	64.62.143.85
goldpharma-24.com	69.172.199.20
goodcanadianpharmacy.com	104.24.98.48
healthandcareinfo.com	199.182.161.43
healthmedications.biz	107.181.174.126
healthsystemsolutions.org	173.213.228.232
healthzstorez.org	104.219.248.3
hotuspharmacy.com	65.254.248.81
ipafind.com	192.133.139.26
ipharmacylist.com	74.208.123.126
iwebadv.com	192.133.139.26
iwebimg.net	192.133.139.26
legalonlinepharmacy.com	104.245.34.39
menshealthpro.org	173.214.250.139
newrxpharmacy.com	104.27.145.17
nextdaycheckout.com	64.50.190.179
no-rx-pharmacy.com	68.65.120.210
norcos.org	192.195.77.105
onlinesecurebilling.com	69.197.186.182
opioids.com	54.210.49.7
order-meds.biz	104.219.248.3
overthcounter.com	103.53.40.110
pandapharmacy.com	68.65.120.210
percocetnorx.com	104.31.81.34
pharmacysources.com	66.96.143.130
pharmadiscount24hs.com	199.59.243.120
pharmamarketonlinenow.net	173.236.97.118
pillpharmacyrx.com	68.65.120.210
prescription-lab.com	208.91.198.171
pricebuysideeffects.org	75.126.137.90
rx-generic.com	107.181.166.131
rxbazar.com	68.65.120.210
rxdoctor1.com	165.254.121.208
rxdoctor1.net	165.254.121.208
rxfeel.com	64.50.190.146
rxpharma.net	209.99.16.16
rxtank.com	52.200.239.121
securedbillingpage.com	174.128.238.230
shopdrugsonline.net	104.219.248.3
silkroad-pharmacy.com	104.28.5.107
therxonline.com	68.65.120.213
topwebimg.com	192.133.139.26
topweboffer.com	192.133.139.26
totalerasure.com	104.28.26.79
tutoriel-video.com	104.28.15.103
usa-checkout.com	66.240.241.81
validresults.com	52.200.243.123
weiku.com	54.191.112.5
x24hr.com	209.208.4.62

7.7 Brief Survey Questions for Participants

The participants took part in a brief survey concerning their impressions of this research using Strongly Disagree (SD), Disagree (D), Not sure (NS), Agree (A), Strongly Agree (SA) as responses to the following questions. The respondents were male and female college students between 18-25 years of age.

		SD	D	NS	A	SA
SQ1	Before attending this course I was aware of the various issues concerning opioid abuse	0%	30%	10%	30%	20%
SQ2	Opioid abuse and addiction are serious issues requiring government action	0%	0%	0%	0%	**100%**
SQ3	I was surprised at how easy it was to find websites offering controlled substances	0%	40%	10%	20%	20%
SQ4	Enough is being done to address online opioid trafficking	**40%**	**50%**	0%	10%	0%
SQ5	I know the dangers of opioids and opioid abuse	0%	10%	10%	**30%**	**50%**
SQ6	Before this course I knew selling drugs online was illegal	0%	0%	0%	**20%**	**80%**
SQ7	There are few obstacles to finding drugs online	10%	0%	0%	**40%**	**50%**
SQ8	Our government has effective control over the problem of online drug trafficking	**80%**	**30%**	10%	0%	0%