Law Enforcement Roundtable on Drugs

March 4th, 2021

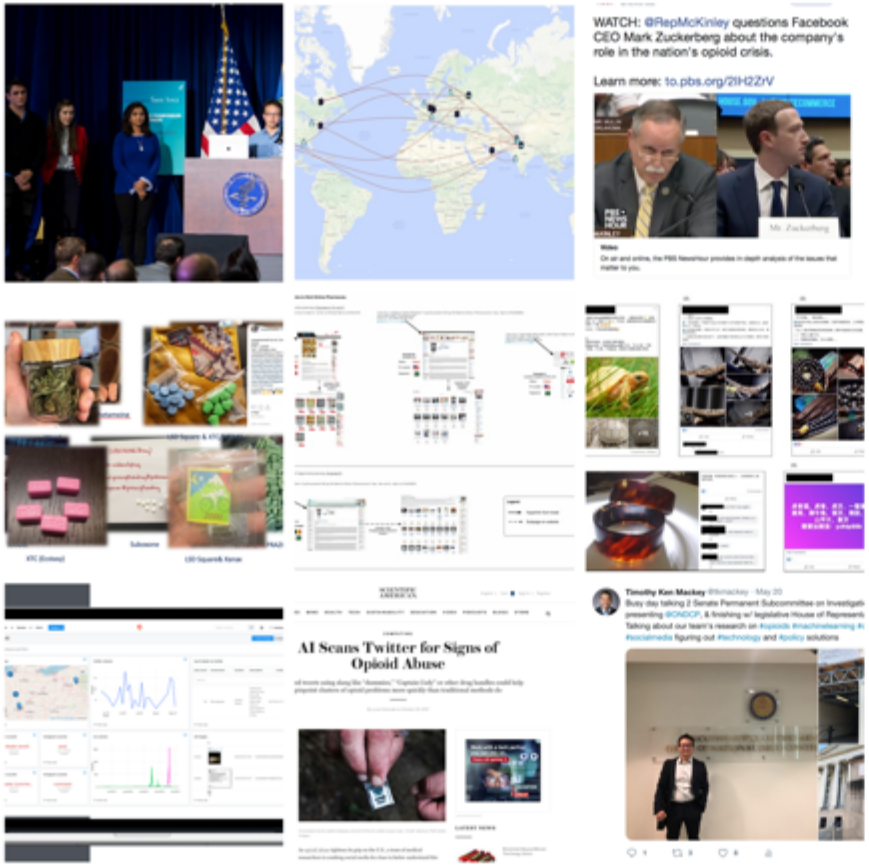
Big Data Investigation of Cyber Fentanyl Cross-Border Trade on the Internet

Tim K. Mackey, MAS, PhD
Associate Professor, UC San Diego
CEO, S-3 Research LLC

tkmackey

UC San Diego

S-3 Research
A big data, machine learning and blockchain company



We are a big data, machine learning, blockchain, and data visualization startup focused on developing technology to keep the public safe from the dark side of the web

Funded by the National Institutes of Health through the Small Business Innovation Research Grant program, S3 was borne from cutting-edge research and is made up of an interdisciplinary team of innovators, academics, and internationally recognized subject matter experts in online safety

NIH National Institute on Drug Abuse

SBIR America's Seed Fund

GENERAL METHODOLOGY FOR BIG DATA PUBLIC HEALTH INTELLIGENCE

Research focused on interdisciplinary big data approaches with lab of faculty and students with backgrounds in global health, public policy, data science, cognitive science, GIS, and quantitative and qualitative researchers

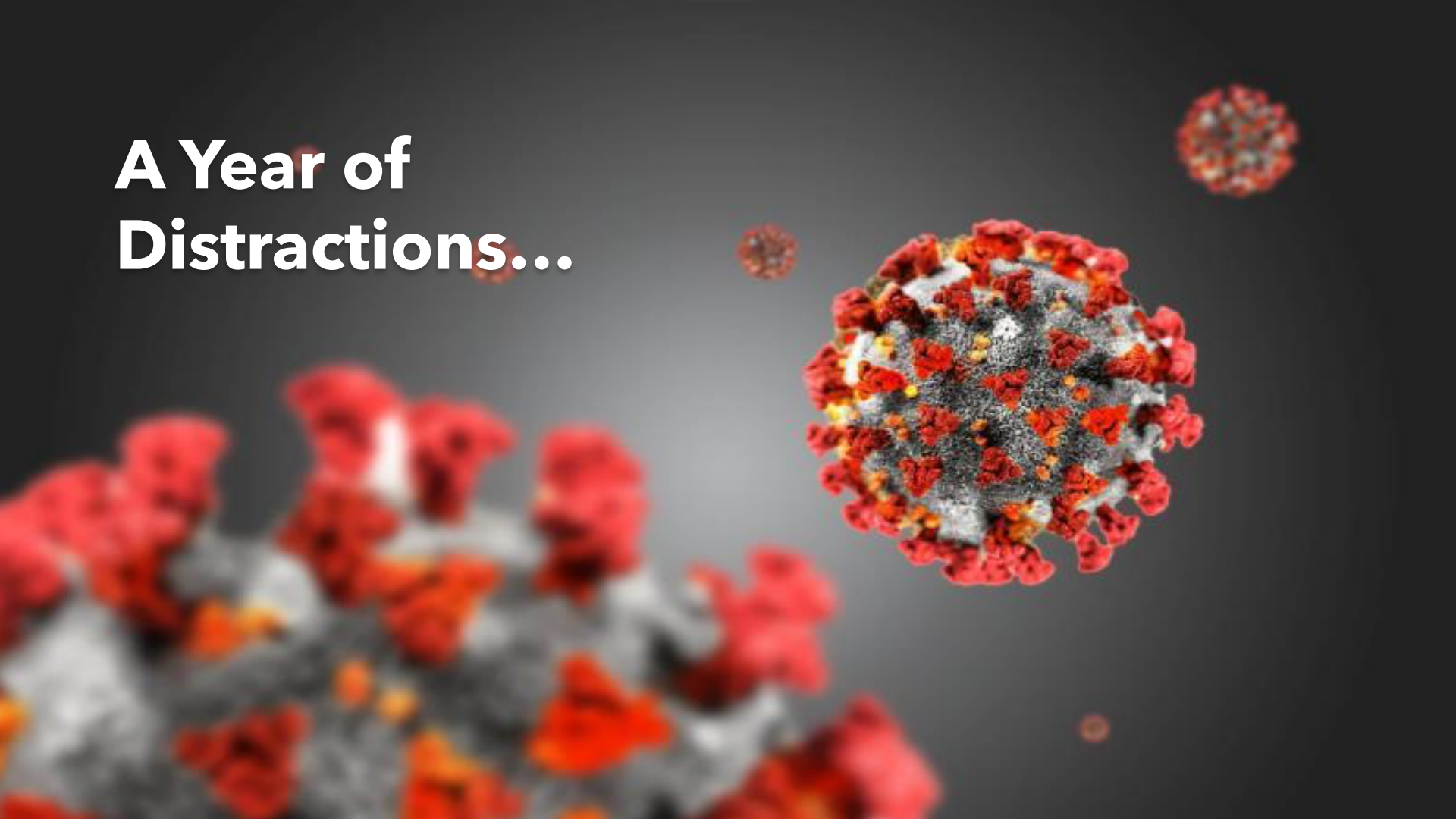
Big data surveillance on multiple social media platforms, Internet sites and other digital sources

Machine learning and NLP that identifies and characterizes online topics, trends and behaviors

In-depth interdisciplinary analysis of multiple data features focusing on SUD, COVID-19, drug diversion

Solutions to identify, characterize, visualize and report data on public health intelligence

A Year of Distractions...



Post-Digital Pandemic

“Infoveillance”?: Using sources of Internet-mediated data to better understand public health concerns, including in the context of outbreaks and pandemics (*Eysenbach*).

Translation of Opioid Research to COVID-19: Past research used to detect illicit drug diversion online and SUD-related health behaviors translated to COVID-19 pandemic

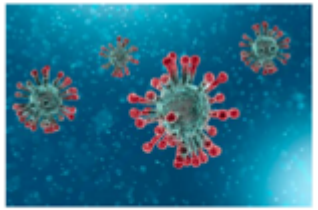
COVID-19 Frauds and Cybercrime: Documented cases of COVID-19-related digital misinformation, cybercrimes, online frauds (e.g. robocalls, phishing scams, fake products sold online) now associated with the pandemic and gaining attention of several international organizations

Coronavirus scammers are flooding social media with fake cures and tests

ARTIFICIAL INTELLIGENCE

This machine-learning upstart trained software to snare online drug dealers. Now it's going after fake coronavirus test equipment peddlers

US govt-funded outfit hopes to kill off web quackery that puts us all at risk



Machine-learning software to snare scammers hawking fake COVID-19 test kits on social media is being built by a tiny startup funded by the US National Institutes of Health.

Original Paper

Big Data, Natural Language Processing, and Deep Learning to Detect and Characterize Illicit COVID-19 Product Sales: Infoveillance Study on Twitter and Instagram

Tim Ken Mackey[1,2,3,4], MAS, PhD; Jiawei Li[2,3,4], MS; Vidya Purushothaman[3,5], MBBS, MAS; Matthew Nali[1,3,4], BA; Neal Shah[2,3], BS; Cortni Bardier[6], BA, MA; Mingxiang Cai[3,4], MS; Bryan Liang[3], MD, JD, PhD

[1]Department of Anesthesiology and Division of Infectious Diseases and Global Public Health, School of Medicine, University of California, San Diego, La Jolla, CA, United States
[2]Department of Healthcare Research and Policy, University of California, San Diego, La Jolla, CA, United States
[3]Global Health Policy and Data Institute, San Diego, CA, United States
[4]S-3 Research LLC, San Diego, CA, United States
[5]Masters in Public Health Program, Department of Family Medicine and Public Health, University of California, San Diego - School of Medicine, La Jolla, CA, United States
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La Jolla, CA, 92037
United States
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Email: tmackey@ucsd.edu

Table 1. Twitter and Instagram posts associated with questionable sales of COVID-19–related products.

Infodemic wave and COVID-19[a]–related product	Posts, n	
	Twitter (n=1271)[b]	Instagram (n=596)[b]
Wave 1		
Fake cures	209	0
Herbal medicines	33	6
Wave 2		
Testing kits and PPE[c]	1028	571
Testing kits	970	410
PPE	112	181
Wave 3		
Pharmaceuticals	5	22

[a]COVID-19: coronavirus disease.
[b]Total does not add up to sum of posts in waves due to some posts having co-occurring COVID-19–related products.
[c]PPE: personal protective equipment.

Fake COVID-19 Products Instagram and Twitter

Data Collection: Data collected during early stages of outbreak (March 3 – April 11, 2020). Total of 6 million tweets and 204K Instagram posts filtered for terms associated with suspect sales (e.g. sales and product terms)

Results: Total of 1,271 tweets and 596 posts associated with questionable sales of COVID-19-related products

Types of Selling: First wave of questionable herbal and other preventative treatments and second and third wave focused on home (DTC) testing kits and some drugs

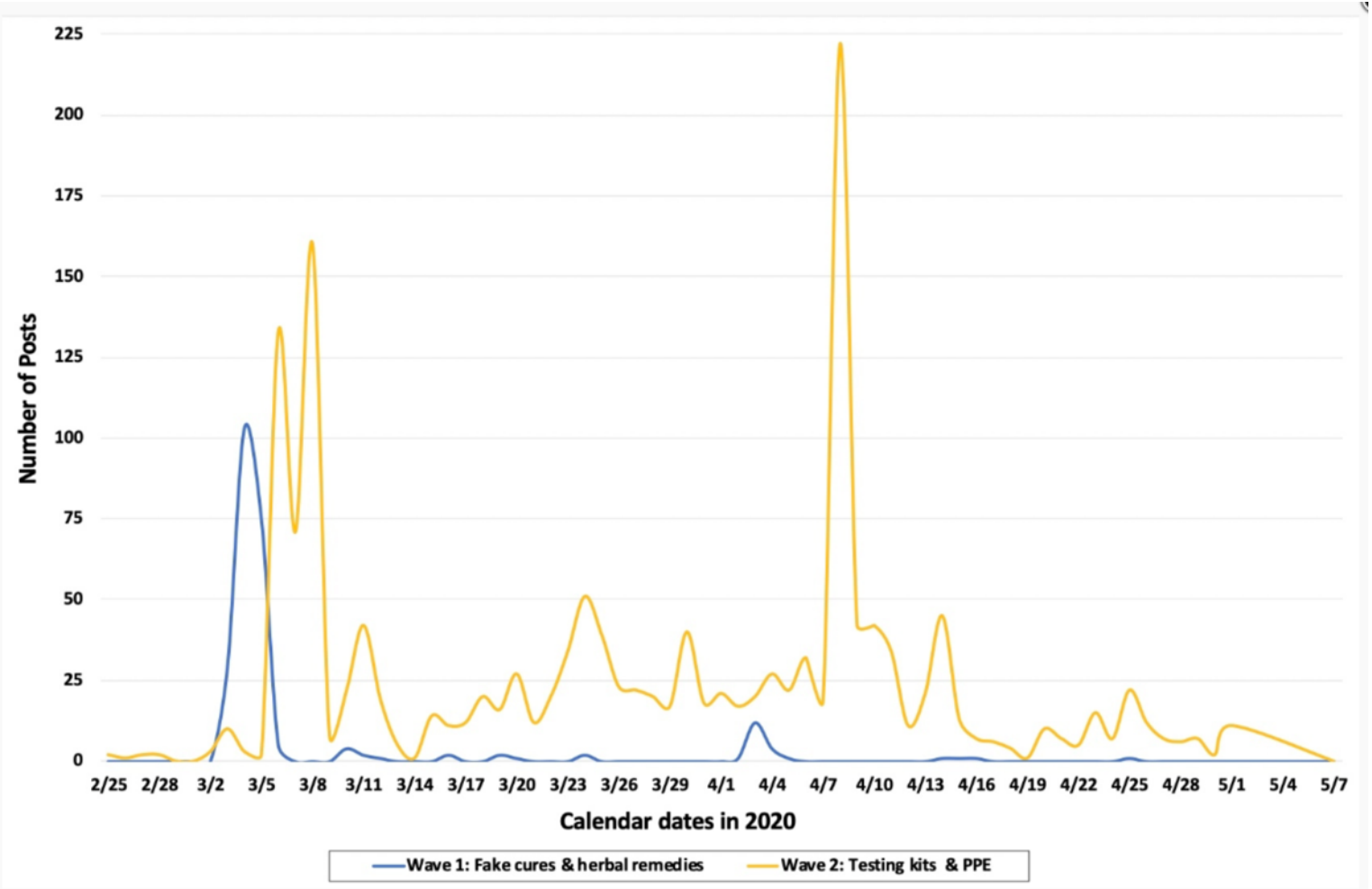
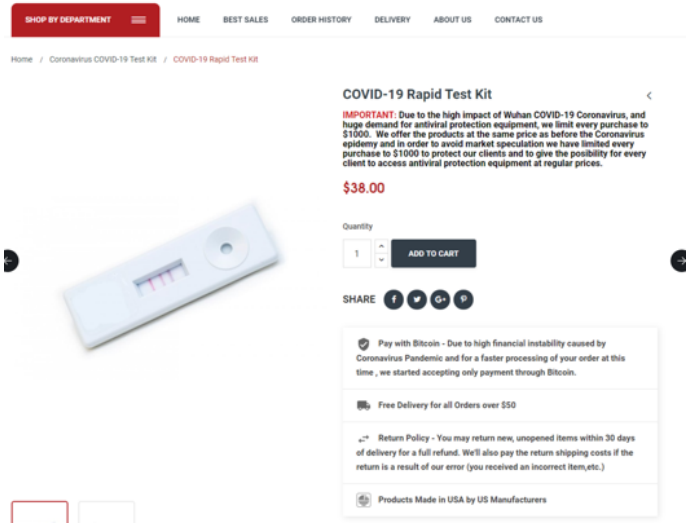
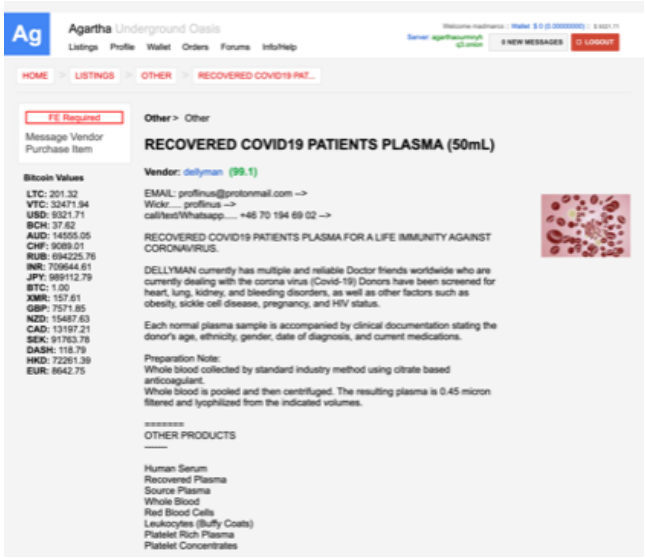
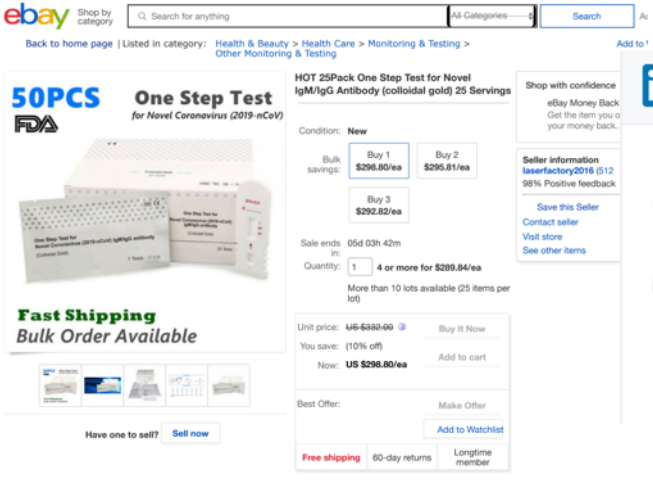


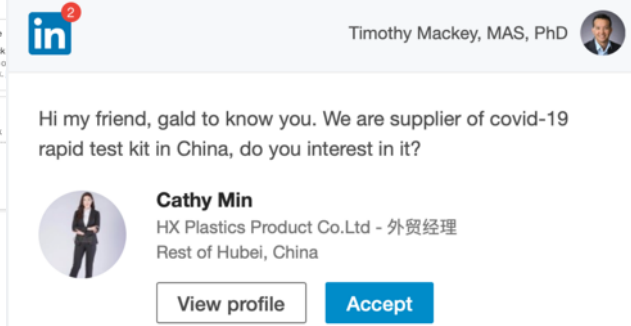
Figure 2. Timeline for volume and topics of signal posts related to suspect coronavirus disease products on Twitter and Instagram. PPE: personal protective equipment.

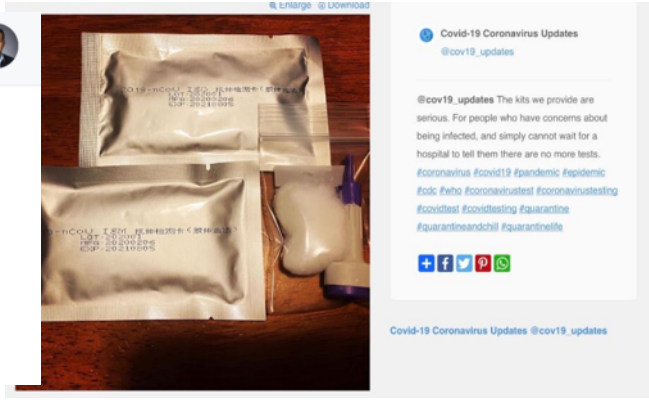

SHOP BY DEPARTMENT
HOME
BEST SALES
ORDER HISTORY
DELIVERY
ABOUT US
CONTACT US
Home / Coronavirus COVID-19 Test Kit / COVID-19 Rapid Test Kit
COVID-19 Rapid Test Kit
IMPORTANT: Due to the high impact of Wuhan COVID-19 Coronavirus, and huge demand for antiviral protection equipment, we limit every purchase to $1000. We offer the products at the same price as before the Coronavirus epidemy and in order to avoid market speculation we have limited every purchase to $1000 to protect our clients and to give the possibility for every client to access antiviral protection equipment at regular prices.
$38.00
Quantity
1
ADD TO CART
SHARE
Pay with Bitcoin - Due to high financial instability caused by Coronavirus Pandemic and for a faster processing of your order at this time , we started accepting only payment through Bitcoin.
Free Delivery for all Orders over $50
Return Policy - You may return new, unopened items within 30 days of delivery for a full refund. We'll also pay the return shipping costs if the return is a result of our error (you received an incorrect item,etc.)
Products Made in USA by US Manufacturers

Tweet
Dr. Coronavirus
@DrCoronavirus
FLASH SALE: ALLTEST 2019-nCoV IgG/IgM RAPID TEST - (COVID-19) Diagnosishttps://t.co/OD0P3mi4geToday's FLASH SALE feature the ALLTEST 2019-nCoV IgG/IgM RAPID TEST - Reliable Coronavirus Disease 2019 (COVID-19) Diagnosis. dlvr.it/RSKmVP
COVID-19
COVID-19
ALLTEST 2019-nCoV IgG/IgM Rapi
ALLTEST 2019-nCoV IgG/IgM Rapi
9:41 PM · Mar 21, 2020 · dlvr.it


Agartha Underground Oasis
Listings
Profile
Wallet
Orders
Forums
Info/Help
0 NEW MESSAGES
LOGOUT
HOME
LISTINGS
OTHER
RECOVERED COVID19 PAT...
FE Required
Message Vendor
Purchase Item
Other > Other
RECOVERED COVID19 PATIENTS PLASMA (50mL)
Vendor: dellyman (99.1)
Bitcoin Values
LTC: 201.32
YTC: 32471.94
USD: 9321.71
BCH: 37.62
AUD: 14555.05
CHF: 9089.01
RUB: 694225.76
INR: 709644.61
JPY: 989112.79
BTC: 1.00
XMR: 157.61
GBP: 7571.85
NZD: 15487.63
CAD: 13197.21
SEK: 91763.78
DASH: 118.79
HKD: 72261.39
EUR: 8642.75
EMAIL: profilnus@protonmail.com -->
Wickr..... profilnus -->
call/text/Whatsapp..... +46 70 194 69 02 -->
RECOVERED COVID19 PATIENTS PLASMA FOR A LIFE IMMUNITY AGAINST CORONAVIRUS.
DELLYMAN currently has multiple and reliable Doctor friends worldwide who are currently dealing with the corona virus (Covid-19) Donors have been screened for heart, lung, kidney, and bleeding disorders, as well as other factors such as obesity, sickle cell disease, pregnancy, and HIV status.
Each normal plasma sample is accompanied by clinical documentation stating the donor's age, ethnicity, gender, date of diagnosis, and current medications.
Preparation Note:
Whole blood collected by standard industry method using citrate based anticoagulant.
Whole blood is pooled and then centrifuged. The resulting plasma is 0.45 micron filtered and lyophilized from the indicated volumes.
OTHER PRODUCTS
Human Serum
Recovered Plasma
Source Plasma
Whole Blood
Red Blood Cells
Leukocytes (Buffy Coats)
Platelet Rich Plasma
Platelet Concentrates


ebay
Shop by category
Search for anything
All Categories
Search
Back to home page | Listed in category: Health & Beauty > Health Care > Monitoring & Testing > Other Monitoring & Testing
50PCS
One Step Test
for Novel Coronavirus (2019-nCoV)
FDA
Fast Shipping
Bulk Order Available
Have one to sell?
Sell now
HOT 25Pack One Step Test for Novel IgM/IgG Antibody (colloidal gold) 25 Servings
Condition: New
Bulk savings:
Buy 1 $296.80/ea
Buy 2 $295.81/ea
Buy 3 $292.82/ea
Sale ends in: 05d 03h 42m
Quantity: 1
4 or more for $289.84/ea
More than 10 lots available (25 items per lot)
Unit price: US $332.00
You save: (10% off)
Now: US $298.80/ea
Buy It Now
Add to cart
Best Offer:
Make Offer
Add to Watchlist
Free shipping
60-day returns
Longtime member
Shop with confidence
eBay Money Back
Get the item you o your money back.
Seller information
laserfactory2016 (512
98% Positive feedback
Save this Seller
Contact seller
Visit store
See other items


Timothy Mackey, MAS, PhD
Hi my friend, gald to know you. We are supplier of covid-19 rapid test kit in China, do you interest in it?
Cathy Min
HX Plastics Product Co.Ltd - 外贸经理
Rest of Hubei, China
View profile
Accept


Covid-19 Coronavirus Updates
@cov19_updates
@cov19_updates The kits we provide are serious. For people who have concerns about being infected, and simply cannot wait for a hospital to tell them there are no more tests.
#coronavirus #covid19 #pandemic #epidemic #cdc #who #coronavirustest #coronavirustesting #covidtest #covidtesting #quarantine #quarantineandchill #quarantinelife
Covid-19 Coronavirus Updates @cov19_updates

Covid19 Fake Social-media Surveillance

Refresh

from 04/01/07 to Today/Now platform instagram× twitter× tumblr× +3 more

Channels Breakdown – Covid fake: signals breakdown

6 minutes ago

dealer counter – covid fake: dealers counts

836
Dealers

6 minutes ago

post counter – covid fake: post counts

2,235
Posts

6 minutes ago

Covid fake: last processed time

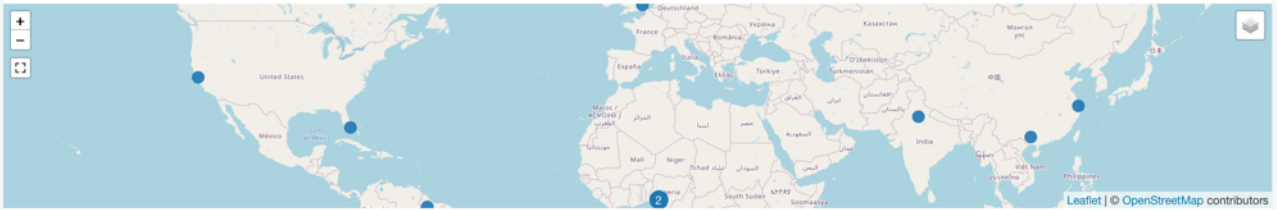
platform	last_processed_time
twitter	05/05/20 15:25
instagram	05/05/20 03:21
reddit	05/05/20 13:53
tumblr	05/05/20 00:40
youtube	05/05/20 18:30

5 days ago

covid fake: top hashtags

6 minutes ago

covid fake: geo



6 minutes ago

covid fake: post timeline

6 minutes ago

Images Library – covid fake: images library

platform	link	image
instagram	https://www.instagram.com/p/B_ize4vH-GA	

Search...

1 2 3 4 5 ··· 112

5 days ago

Search Table – covid fake: top dealers

number 10

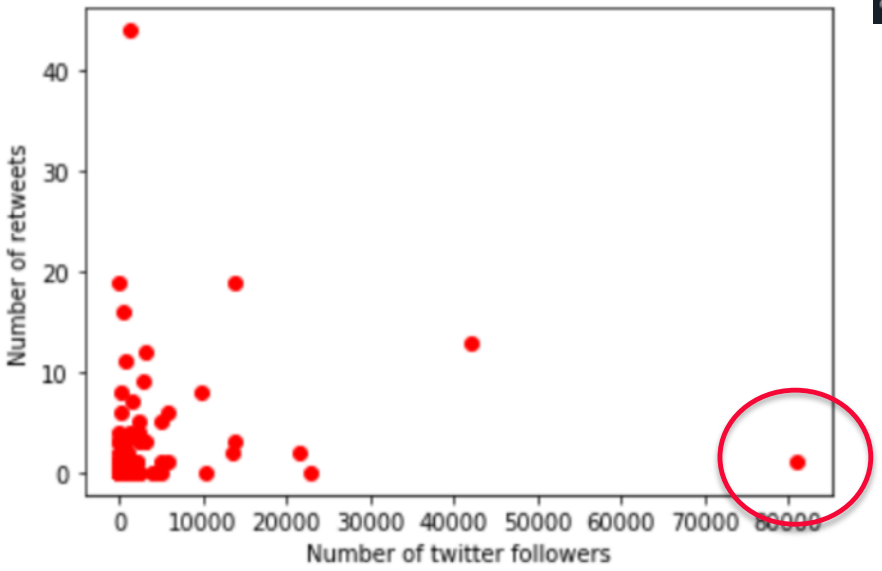
count	username	platform	uid
631	incurablecancer	twitter	420146431
144	williamsharry464	darkweb	http://agarthaourmnyhq3.onion/vendor/williamsharry464
58	amy_sincoheren_beauty	instagram	7347897278
27	worldfaka	darkweb	http://agarthaourmnyhq3.onion/vendor/worldfaka

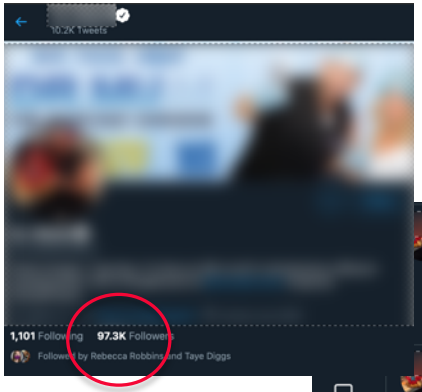
6 minutes ago

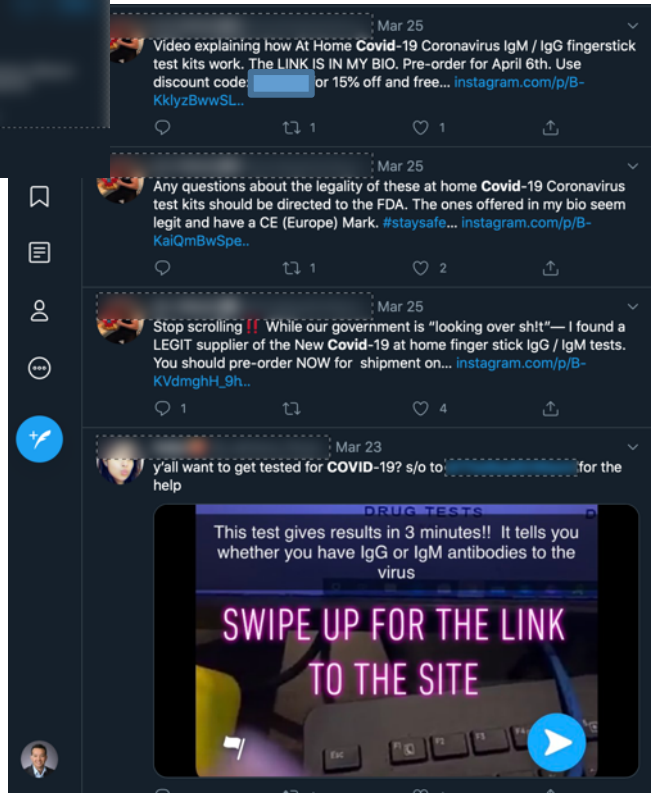
Search Table – covid fake: post table

03/16/20	post	COVID-19 IgG/IgM Rapid Test Kit Sales From China Contact me 172223687@qq.com #QuarantineLife #COVID—19 #nycshutdown https://t.co/gbQAMkeXLL	vivi03261955	1214514522041376768	https://twitter.com/vivi03261955/status/1239437689830526977

COVID-19 Fakes Celebrity Influencer?







The next fakes wave, Vaccines?

Donald J. Trump @realDonaldTrump · Oct 1

Tonight, @FLOTUS and I tested positive for COVID-19. We will begin our quarantine and recovery process immediately. We will get through this TOGETHER!

570.7K 916K 1.8M

Replying to @realDonaldTrump and @FLOTUS

100% CURE TO HIV
A cure to HIV and a vaccine for coronavirus
Contact Prof Maduike Ezeibe:
WhatsApp:+234 8103368435
Email: prof.maduikeezezeibe@gmail.com
Testimonials: youtu.be/fawA7fBE1mo
#deprem #KUWTK #NadieConAxel #FuerzaAxel
#TrumpIsNotLikeYou #HIV #hivcure #coronavirusuk

HIV Cure 2020 with proof
I confirm a medicine that can cure HIV/AIDS which I discovered. The medicine was produced with Aluminum Silicate and ...
youtube.com

6:54 AM · Oct 2, 2020 · Twitter Web App

Back to Illicit Drugs and the ongoing opioid epidemic

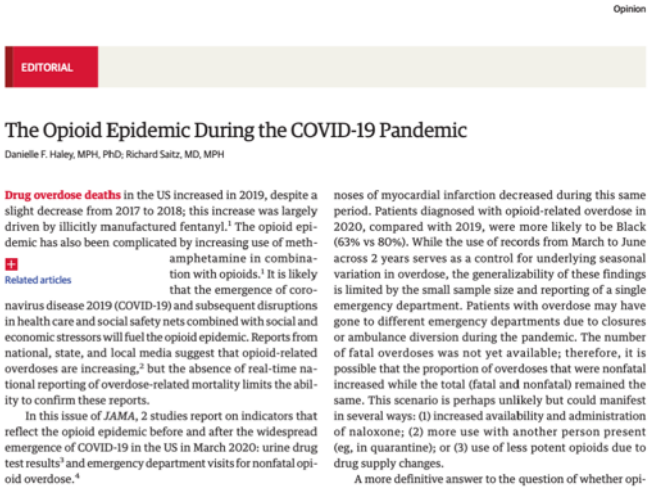
COVID-19 and Opioids: Dual Public Health Emergencies?

Opioid Overdose: Increases SUD behavior, relapse, and opioid-related overdoses due to social, economic, and other treatment access-related stressors (*deaths of despair*) (data points: urine tests and ED non-fatal overdose, ambulance teams, police reports, etc.)

Treatment: Lack of access to addiction specialty treatment services or naloxone prescribing. Potential closures of state and private SUD treatment centers (in-patient and residential), inability to admit new patients, and potential state revenue shortfalls for addiction treatment.

Related Health Risks: Opioid use impact on respiratory and pulmonary health that can impact susceptibility. Link to mental health and SUD, etc.

Illegal Sourcing: Lack of access to legitimate sources or treatment options may drive opioid users to illicit sourcing points both online and offline.



Opinion

EDITORIAL

The Opioid Epidemic During the COVID-19 Pandemic

Danielle F. Haley, MPH, PhD; Richard Saitz, MD, MPH

Drug overdose deaths in the US increased in 2019, despite a slight decrease from 2017 to 2018; this increase was largely driven by illicitly manufactured fentanyl.[1] The opioid epidemic has also been complicated by increasing use of methamphetamine in combination with opioids.[1] It is likely that the emergence of coronavirus disease 2019 (COVID-19) and subsequent disruptions in health care and social safety nets combined with social and economic stressors will fuel the opioid epidemic. Reports from national, state, and local media suggest that opioid-related overdoses are increasing,[2] but the absence of real-time national reporting of overdose-related mortality limits the ability to confirm these reports.

Related articles

In this issue of *JAMA*, 2 studies report on indicators that reflect the opioid epidemic before and after the widespread emergence of COVID-19 in the US in March 2020: urine drug test results[3] and emergency department visits for nonfatal opioid overdose.[4]

noses of myocardial infarction decreased during this same period. Patients diagnosed with opioid-related overdose in 2020, compared with 2019, were more likely to be Black (63% vs 80%). While the use of records from March to June across 2 years serves as a control for underlying seasonal variation in overdose, the generalizability of these findings is limited by the small sample size and reporting of a single emergency department. Patients with overdose may have gone to different emergency departments due to closures or ambulance diversion during the pandemic. The number of fatal overdoses was not yet available; therefore, it is possible that the proportion of overdoses that were nonfatal increased while the total (fatal and nonfatal) remained the same. This scenario is perhaps unlikely but could manifest in several ways: (1) increased availability and administration of naloxone; (2) more use with another person present (eg, in quarantine); or (3) use of less potent opioids due to drug supply changes.

A more definitive answer to the question of whether opi-

Example Overdose (overdose keyword filtered)

Twitframe

[redacted]

I wanted to complain about being hungover to a co worker but then he told me that he went to the ER this weekend on an overdose. Shiiiiiit 😫😫😫

8:22 PM · Feb 3, 2020 from West Hollywood, CA

See [redacted] other Tweets

[redacted]

I lost another friend to heroin overdose today RIP D

8:13 PM · Feb 9, 2020 from Gainesville, GA

[redacted]

@AlexBerenson I just visited my daughter who recently got my married. Sorrow has replaced joy. Husband's son overdosed from her heroine. Dead at 25.

11:03 AM · Feb 23, 2020 from Zimmerman, MN

See Diane Johnson's other Tweets

[redacted]

@taylorndean I relapsed, overdosed, and died for 6 minutes a little over a week ago. Narcan takes longer when it's fentanyl. This is the process of recovery. Pick up where you left off. Relapse doesn't take away all you've learned.

10:18 PM · Feb 7, 2020 from San Diego, CA

98 See ॐ's other Tweets

[redacted]

One of my longterm clients passed away today. The #overdosecrisis took his life. He was a lovely young man, far too young for his life to be stolen from him. He left this world surrounded by love. Rest easy D.P. 😔🦋❤️ #overdose #dtes #worklife

8:09 PM · Feb 9, 2020 from Vancouver, British Columbia

[redacted]

Saw three people overdose in my neighborhood yesterday and I'm just wondering when the war on LEGAL drugs is going to start. Also, @DCPoliceDept get your shit together. CC: @MayorBowser #defendcolumbiaheights #shameonsackler

4:15 AM · Feb 19, 2020 from Arlington, VA

1 See Liz Trotter's other Tweets

A-Z Index

COVID-19 is an emerging, rapidly evolving situation.
Public health information (CDC) | Research information (NIH) | SARS-CoV-2 data (NCBI) | Prevention and treatment information (HHS)

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National Center for Biotechnology Information

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PubMed.gov

Search PubMed

Search

Advanced

User Guide

Save | Email | Send to | Display options

F1000Res. 2017 Nov 2;6:1937. doi: 10.12688/f1000research.12914.1. eCollection 2017.

Detection of illicit online sales of fentanyls via Twitter

Tim K Mackey [1 2 3], Janani Kalyanam [1 4]

Affiliations + expand

PMID: 29259769 PMCID: PMC5728221 DOI: 10.12688/f1000research.12914.1

Free PMC article

FULL TEXT LINKS

F1000Research FREE FULL TEXT

PMC FREE Full text

ACTIONS

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Title & authors

Abstract

Conflict of interest statement

Abstract

A counterfeit fentanyl crisis is currently underway in the United States. Counterfeit versions of commonly abused prescription drugs laced with fentanyl are being manufactured, distributed, and sold globally, leading to an increase in overdose and death in countries like the United States and Canada. Despite concerns from the U.S. Drug Enforcement Agency regarding covert and overt sale of fentanyls online, no study has examined the role of the Internet and social media on fentanyl illegal marketing and direct-to-consumer access. In response, this study collected and analyzed five months of Twitter data (from June-November 2015) filtered for the keyword "fentanyl" using Amazon Web Services. We then analyzed 28,711 fentanyl-related tweets using text filtering and a machine learning approach called a Biterm Topic Model (BTM) to detect underlying latent patterns or "topics" present in the corpus of tweets. Using this approach we detected a subset of 771 tweets marketing the sale of fentanyls online and then filtered this down to nine unique tweets

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psychostimulants, such as methamphetamine, increased by 34.8 percent. The number of deaths involving psychostimulants

Fentanyl

据王喜供述，外国客户想要的多为中国列管的精神麻醉药品，国内正规厂家很难买到。自己会依据客户需求，在“福步外贸论坛”等网站上寻找相关产品的替代品，然后加价转卖。

2018年12月20日，新京报记者检索发现，“福步外贸论坛”是一家涵盖行业采购、报关、货运代理等交易环节的外贸网站。以“芬太尼”为关键词在该网站搜索后，结果被屏蔽。但在一些与“医药中间体”有关的帖子中，仍有MDMB、2F、U47700等新精神活性类物质的替代品销售。

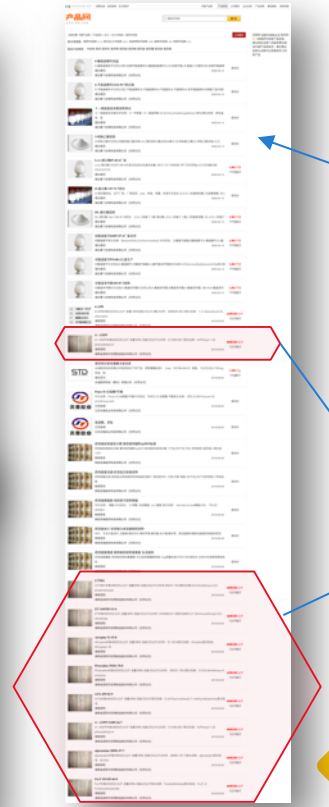
记者随机加了一位卖主的QQ，询问是否销售芬太尼的替代品。卖主表示没有现货，“有了，会通知你。”

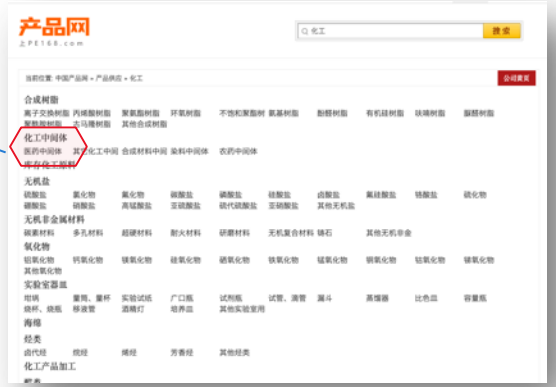
2019年1月2日，“福步外贸论坛”上依然有人出售U47700 等已被列管的新精神活性类物质替代品。 网络截图

Obs 1: Some website have banned the name of this controlled substance in their search bar, but under their “Pharmaceutical Intermediate” subcategories, selling information could still be found.

Tip 2: Fentanyl, potential Fentanyl precursor and derivates of fentanyl could always be found with MDMB, U4770.

EXAMPLES - eCommerce





Restricted drugs were sold under Pharmaceutical intermediate subcategory

Selected websites

神州商务网：
http://www.szqcdw.com/jiamengw/search.php?kw=fentanyl

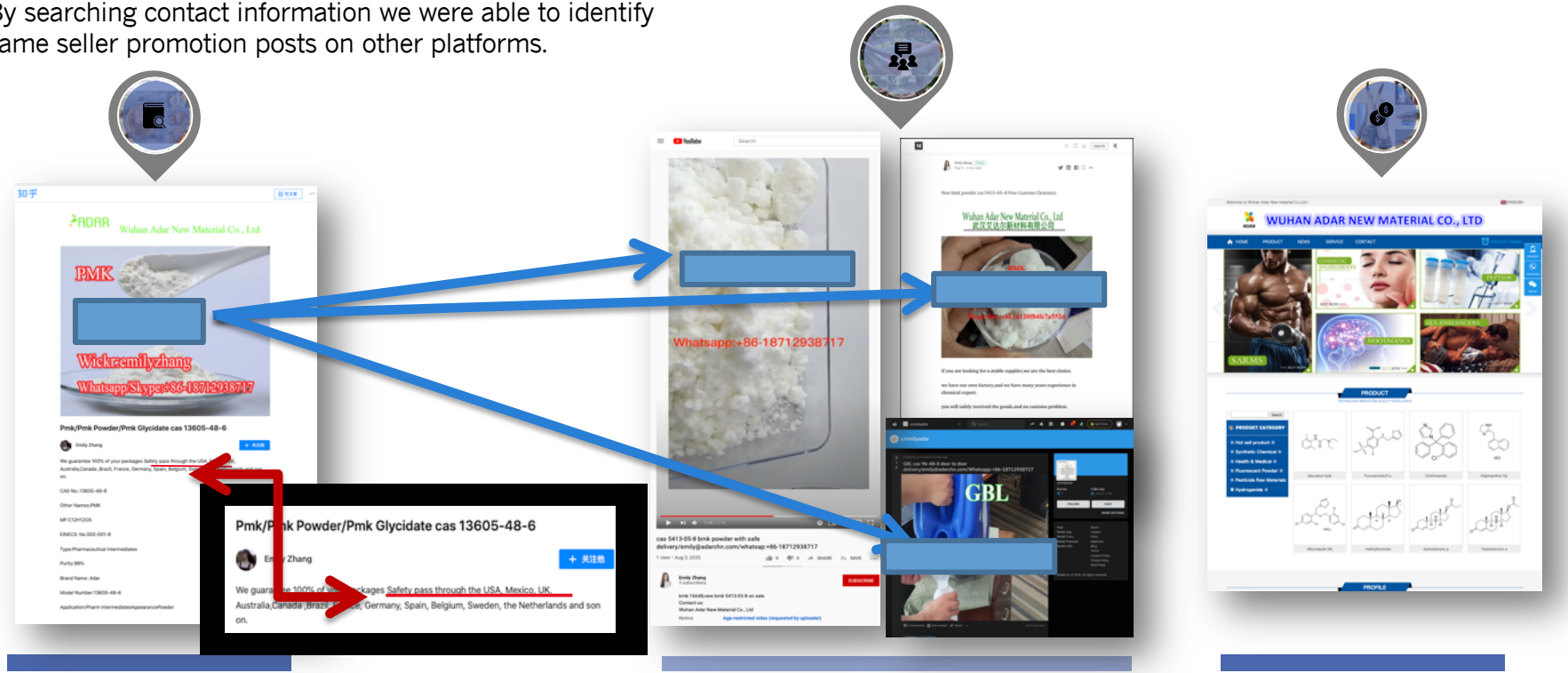
960化工：
https://www.chem960.com/changjia/23056293/

知乎：
https://www.zhihu.com/people/mandyxu123

Chemical Book：
https://www.chemicalbook.com/SupplyInfo_338536.htm

User Cross reference

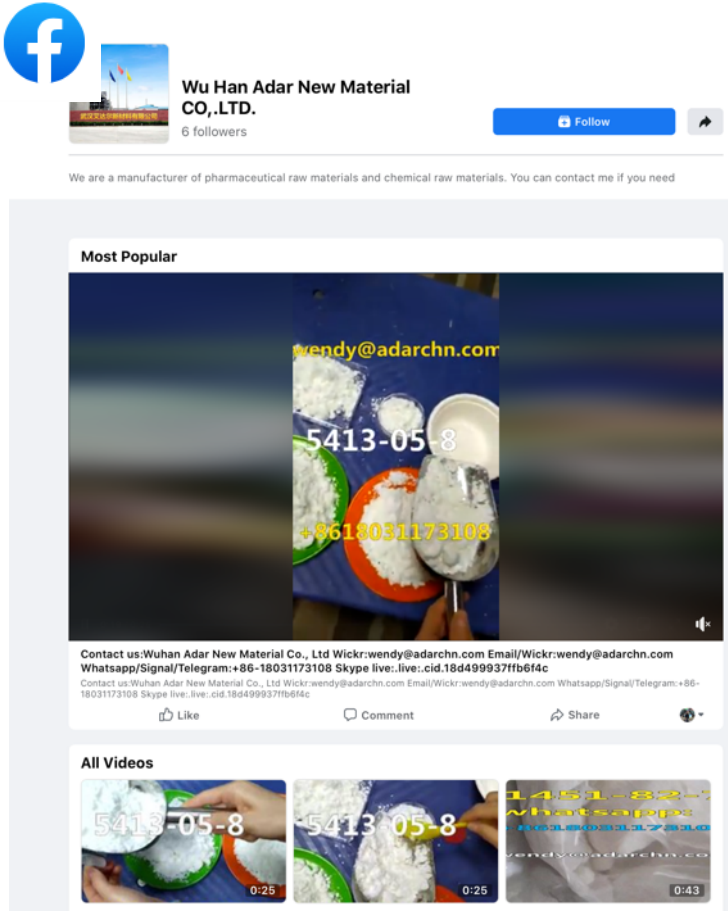
› By searching contact information we were able to identify same seller promotion posts on other platforms.



Zhihu

YouTube, Medium, Reddit

Company site


Wu Han Adar New Material CO,.LTD.
6 followers
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We are a manufacturer of pharmaceutical raw materials and chemical raw materials. You can contact me if you need
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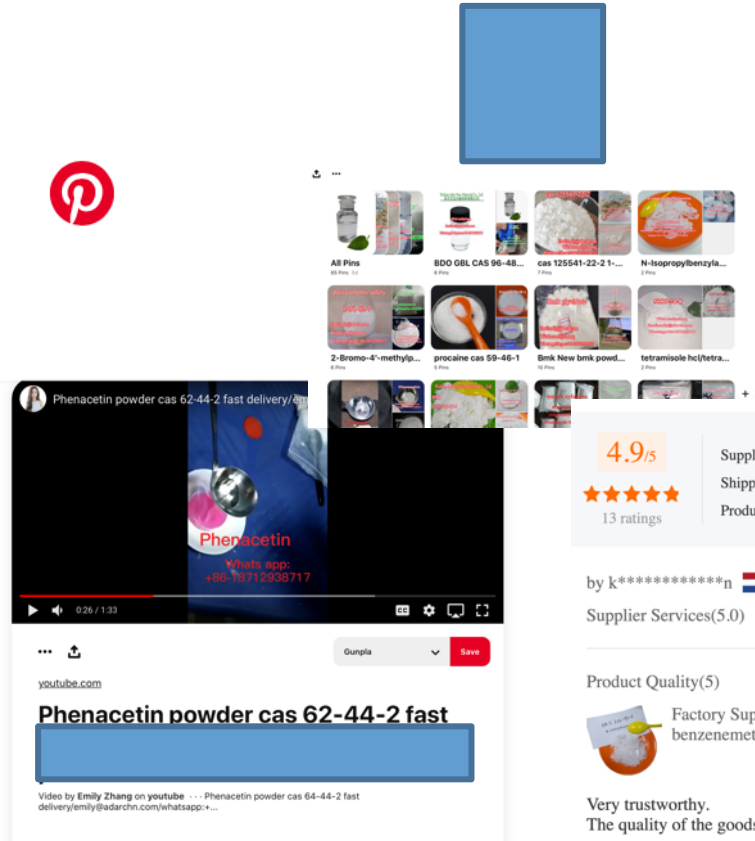
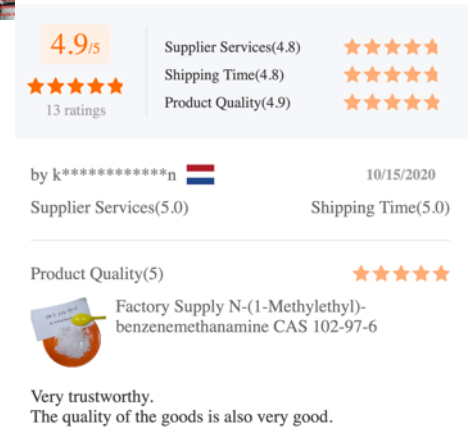
Like
Comment
Share
All Videos
0:25
0:25
0:43


All Pins
BDO GBL CAS 96-48...
cas 125541-22-2 1-...
N-Isopropylbenzyla...
2-Bromo-4'-methylp...
procaine cas 59-46-1
Bmk New bmk powd...
tetramisole hcl/tetra...
Phenacetin powder cas 62-44-2 fast delivery/
Phenacetin
Whats app:
+86-18712938717
0:26 / 1:33
Gunpla
Save
youtube.com
Phenacetin powder cas 62-44-2 fast
Video by Emily Zhang on youtube · · · Phenacetin powder cas 64-44-2 fast delivery/emily@adarchn.com/whatsapp:+...


4.9/5
13 ratings
Supplier Services(4.8)
Shipping Time(4.8)
Product Quality(4.9)
by k**********n
10/15/2020
Supplier Services(5.0)
Shipping Time(5.0)
Product Quality(5)
Factory Supply N-(1-Methylethyl)-benzenemethanamine CAS 102-97-6
Very trustworthy.
The quality of the goods is also very good.

Platforms

Social media:

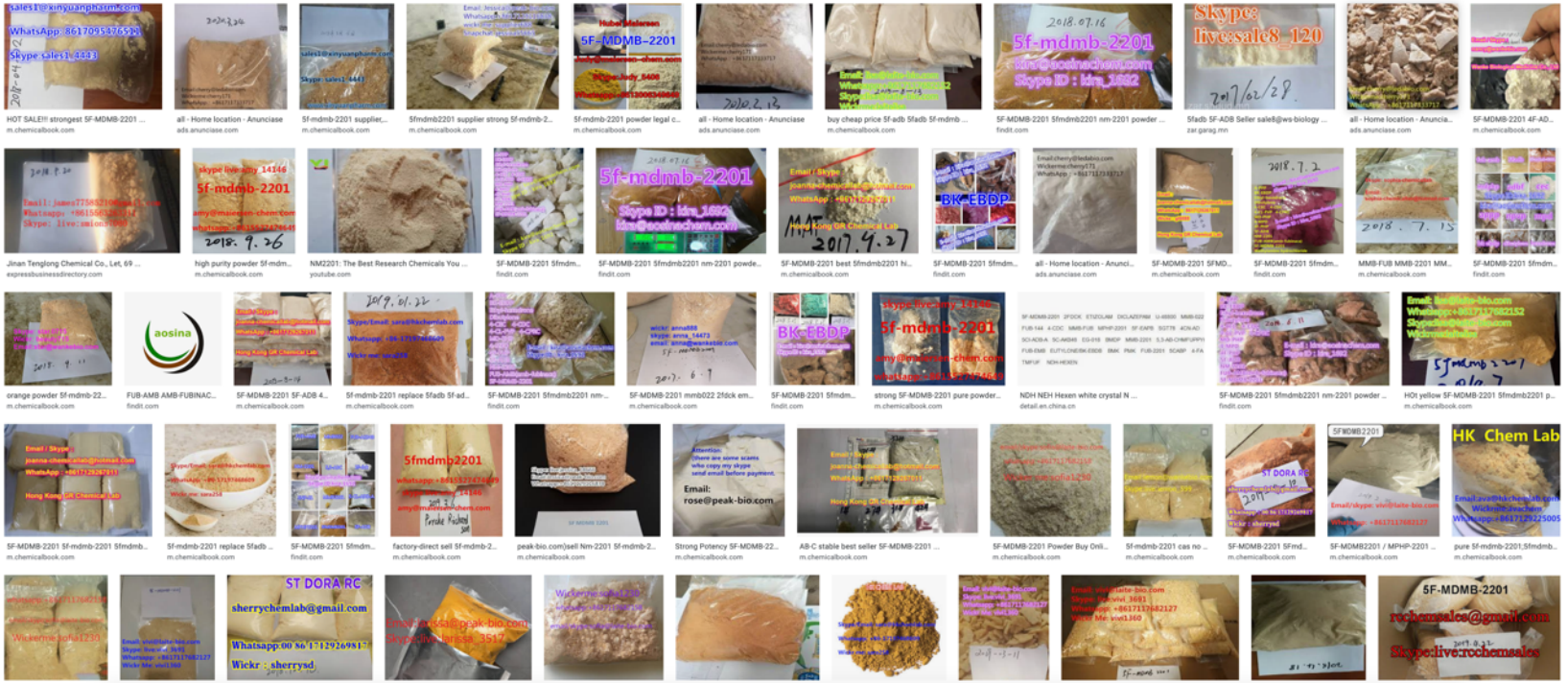
- Pinterest
- LinkedIn
- Facebook
- Reddit
- YouTube

Distribution digital platform:

- AdZone
- Jumore Global
- The POTDOT
- Tuugo.biz
- Midbiznis
- EC21

(Total : 43 platforms)

Signals detected with extended keywords (Fentanyl precursors)



Synthetics

Data collected from **https://www.drugs.com/article/csa-schedule-1.html**

Brand	Heroin	LSD	Marijuana	Mescaline	MDMA	GHB	Ecstasy	Psilocybin	tic Marijuana and A	Methaqualone	Khat	Bath Salts
Generic	Diacetylmorphine	sergic Acid Diethlami	Cannabis	Peyote	oxymethamphetamin	mma-hydroxybutyric a	MDMA	Magic mushrooms	Spice	Quaalude	Cathinone	thylenedioxypyroval one
Generic			THC	4-met	lenedioxymethamph	amine	3-Met lenedioxymethamph amine		K2		Cathine	thylenedioxypyroval one
Generic					ecstasy		4-Met lenedioxymethamph amine					MDPV
Slang Words												
1	Black Pearl	Battery Acid	Weed	Big Chief	X, E, or XTC	Geeb	X	Shroom	20-4月	Rorer	Abyssinian Tea	Arctic Blast
2	Black Sheep	Orange Sunshine	Pot	Blue Caps	Dancing Shoes	Georgia Home Boy	E	Magic Mushrooms	Abyss	Lemmon	African Salad	Bayou Ivory Flower
3	Black Tar	California Sunshine	Grass	Buttons	Disco Biscuits	Scoop	XTC	Little Smoke	Ace of Spades	Furies	Oat	Bloom
4	Brown Crystal	Amber Windowpane	Dope	Cactus	Doves	Soap	Molly	Purple Passion	Ak-47	Mandrakes	Kat	Blue Magic
5	Brown Rhone	Delysid	Reefer	Media Luna	E-bomb	Goop	Disco Biscuit		Amnesia	Quas	Chat	Blue Silk
6	Brown Sugar	Yellow Sunshine	Ganja	Mescal	Egg Rolls	Grievous Bodily Harm	Hug Drug		Atomic Blast	Quacks	Catha	Bolivian Bath
7	Diesel	Bloomers	Hash	Mezcakuba	Happy Pill	Liquid Ecstasy	STP		Big Bang	Quads		Bonsai Winter Boost
8	Dirt	Daffy Duck	Herb	Moon	Hug Drug	Liquid X	Lover's Speed		Blaze	Soaps		C Original
9	Golden Girl	Back Breaker	Chronic	San Pedro	Love Drug				Black Magic smoke	Soapers		Cloud 10
10	Red Chicken	LaLa	Toking	Topi	Malcolm (or Malcom X				Buzz Haze	Sopes		Cloud 10 Ultra
11	Red Eagle	Grape Parfait	Poking		Molly				Cherry Bomb	Super Soper		Cloud 9
12	Salt	Acido	Blazing		Scooby Snacks				Clockwork Orange			Cotton Cloud
13	Spider Blue	Crystal Tea	Cheeching		Smartees				Cloud 10			ynamite Dynamite Pl
14	White Junk	Big D	Smoking Trees		Thizz				Cowboy Kush			Ener zing Aromatherapy P wder
15	White Nurse	Black Sunshine	Mowing the Grass		Vitamin E or Vitamin				Cystla Skull			Euphoria
16	White Stuff	Mellow Yellow	Biting one's lips		Vowels				Devil's Venom			Hurricane Charlie
17	Chinese Red	Yin Yang	Blasting		Drop, Double Drop				FakeBake			Ivory Fresh
18	Mexican Horse	Purple Dot	Burning one down		Thizzing				Fruit Candy Flavors			Ivory Wave
19	Mexican Mud	Micro Dot	Chasing		Flip or Flipping				Funky Buddha			Ivory Wave Ultra
20	Dead on Arrival	Black Star	Getting the wind		Roll, Rolling				Funky Monkey			Lady Bubbles
21	Hard Candy	Grey Shields	Woola		uddle Puddle, E-Pud				Jungle Juice			Lunar Wave
22	Hard one	Pink Blotters	Woolie		E-tard				Krazy Kandy			Mr. Nice Guy
23	Hell Dust		Canade		Raver, Raving				Kryp2nite			Mystic
24	Joy Flakes								Layer Cake			Ocean Snow
25	Big Bag								Mile High			Pure White
26	Blue Hero								Spike Diamond			Red Dove
27	Brick Gum								Voodoo Child			Route 69
28									Wazabi			Scarface
29									Xtreme			Snow Leopard
30												Tranquility

What's Next?

UC San Diego

S-3 Research

A big data, machine learning and blockchain company

KCRA 3

‘These are killer counterfeits’: Parents warn about fake pills made with fentanyl

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Canon

Next Steps?

Continued Innovation and Pilot Projects

- Innovation: We are currently conducting surveillance on all popular social media platforms, dark web, search engine results (including algorithms to detect illicit online pharmacies), select e-commerce engines (Alibaba group, Mercado Libre, Chinese e-commerce, etc.) and developing tools for other emerging platforms (e.g. Snapchat).
- Second Generation Data Dashboards: Building out new intelligence tools (pricing analysis, social network analysis, more geospatial resolution, benchmarking data, etc.) on second generation illicit drug S-3 data dashboards
- Pilot Projects: As part of SBIR project, we will be working on pilot projects with pharmaceutical company segment, law enforcement/regulator segment, and technology industry segment to better iterate on the solution for specific intelligence requirements

CONTACT INFORMATION

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Challenge.gov Government Challenges, Your Solutions
FDA U.S. Food & Drug Administration