

Beating the Disinformation Drift

Facts about the AlphaBay Market

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Who Am I?

- Cybersecurity Researcher at GoSecure
- Background in Criminology and Economics
- CA member of NorthSec



What are we going to talk about today?

Embark in a criminology and economics

JOURNEY



Outline

1. The state of the AlphaBay marketplace as of June 2017
2. Are drug vendors rich on AlphaBay?
3. AlphaBay's self-governance
4. AlphaBay: an international market?
5. The obvious limits of online illicit marketplaces

DataCrypto Tool (Décary-Hétu, Aldridge 2016) & Flared.io Startup (Lavoie, Hallé, Décary-Hétu)

Beating the Disinformation Drift

- “[...] he [Alexandre Cazes] was the creator and administrator of AlphaBay, a website with **40,000 vendors and more than 200,000 customers.**” (CBC, July, 2017)
- “The site accused of allowing hundreds of thousands of people to buy and sell drugs, firearms, computer hacking tools and other illicit goods.” (CBC, July, 2017)
- “FBI acting director Andrew McCabe said **AlphaBay was 10 times as large as Silk Road**, a dark website the agency shut down in 2013.” (CBC, July, 2017)

Beating the Disinformation Drift

- *"The drug trade is moving from the street to online cryptomarkets." (The Economist, 2016)*
- *"In the World you created over time, democracy didn't exist. You were captain of the ship, the Dread Pirate Roberts [...]."(Judge Forrest, Federal District Court, 2014)*


The Story



December 2015



The Story



December 2015

 AlphaBay Market



USD 1191.08 CAD 1597.00 EUR 1124.59 AUD 1588.07 GBP 962.60

HOME SALES MESSAGES ORDERS LISTINGS BALANCE FEEDBACK FORUMS API SUPPORT

 Search Results 


BROWSE CATEGORIES

☐ Fraud 41178

☒ Drugs & Chemicals 223554

- ☐ Benzos 16637
- ☒ Cannabis & Hashish 74505
 - ☐ Buds & Flowers 43796
 - ☐ Shake 683
 - ☐ Concentrates 9399
 - ☐ Hash 9830
 - ☐ Prerolls 301
 - ☐ Edibles 2403
 - ☐ Topicals & Others 283
 - ☐ Seeds 1302
 - ☐ Synthetic 605

Search Results [\[Save Search\]](#)



[FE 100%] [Bulk] [Sticky] 1 Oz of Black Cherry Cheese Cake F.E. FREE TRACKING + 1 FREE Gummy pack 2 gummies, 1 Fudge or 1 Gookie pack. all edibles are 100 Mg of THC

Item # 38264 - Cannabis & Hashish / Buds & Flowers - Bud Central (8810)



Views: 385026 / Bids: Fixed price


Quantity left: Unlimited

Buy price

USD 175.00

(0.1489 BTC)





[MS] [Sticky] FB's Medical Weed - PURPLE KUSH (9.5/10) [7 GRAMS] * FREE SHIP TO U.S.A. *

Item # 12192 - Cannabis & Hashish / Buds & Flowers - ferrisbueller (5348)



Views: 218978 / Bids: Fixed price

Quantity left: Unlimited

Buy price

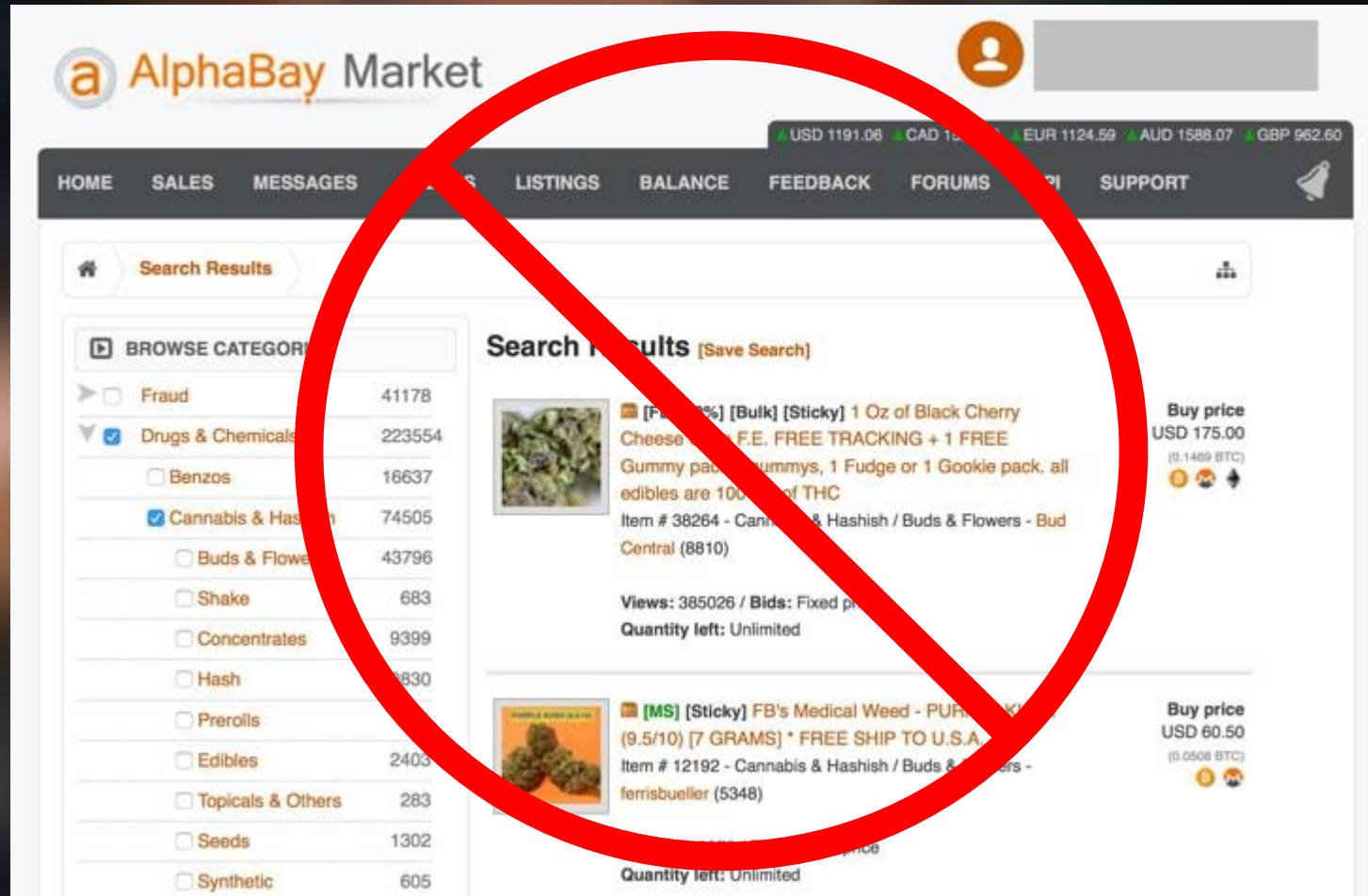
USD 60.50

(0.0508 BTC)



The Story

June 2017



The Story

July 2017

Notice

THIS HIDDEN SITE HAS BEEN SEIZED

and controlled since June 20

by the Dutch National Police in conjunction with the Bundeskriminalamt, Lietuvos Policija, Federal Bureau of Investigation and Europol, under the authority of the Dutch National Prosecutor's Office and the Attorney General's office of the Federal State of Hesse (Germany).



The Dutch National Police have located Hansa Market and taken over control of this marketplace since June 20, 2017. We have modified the source code, which allowed us to capture passwords, PGP-encrypted order information, IP-addresses, Bitcoins and other relevant information that may help law enforcement agencies worldwide to identify users of this marketplace. For more information about this operation, please consult our hidden service at politie.nl/secret.

This seizure was part of **Operation Bayonet**, which includes the takeover of Hansa Market by the National Police of the Netherlands and the takedown of AlphaBay Market by the Federal Bureau of Investigation of the United States of America on July 4, 2017.

 **HANSA**  **AlphaBay Market**

OPENBAAR MINISTERIE  **POLITIE**  **EUROPOL**



THIS HIDDEN SITE HAS BEEN SEIZED

Since July 4, 2017

as a part of a law enforcement operation by the Federal Bureau of Investigation, the Drug Enforcement Administration, and European law enforcement agencies acting through Europol

in accordance with the law of European Union member states and obtained pursuant to a forfeiture order by the United States Attorney's Office for the Eastern District of California and the U.S. Department of Justice's Computer Crime & Intellectual Property Section.



This seizure was part of **Operation Bayonet**, which includes the takeover of Hansa Market by the National Police of the Netherlands on June 20, 2017, and the takedown of AlphaBay Market by the Federal Bureau of Investigation of the United States of America on July 4, 2017.

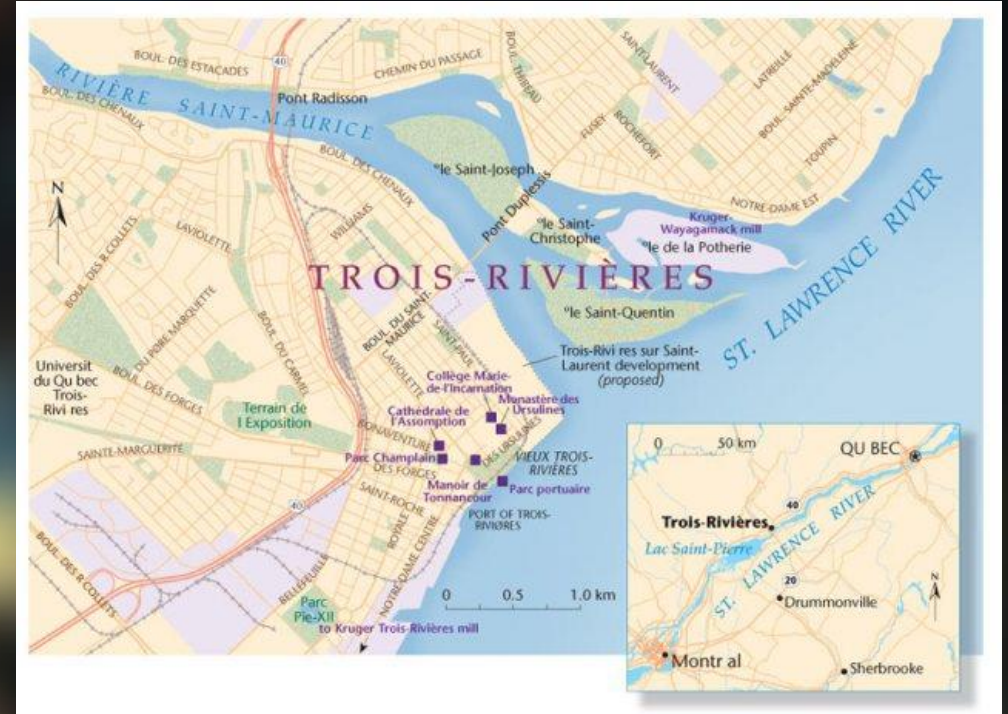
 **HANSA**  **AlphaBay Market**

 **POLITIE** 

July 2017



pimp_alex_91@hotmail.com

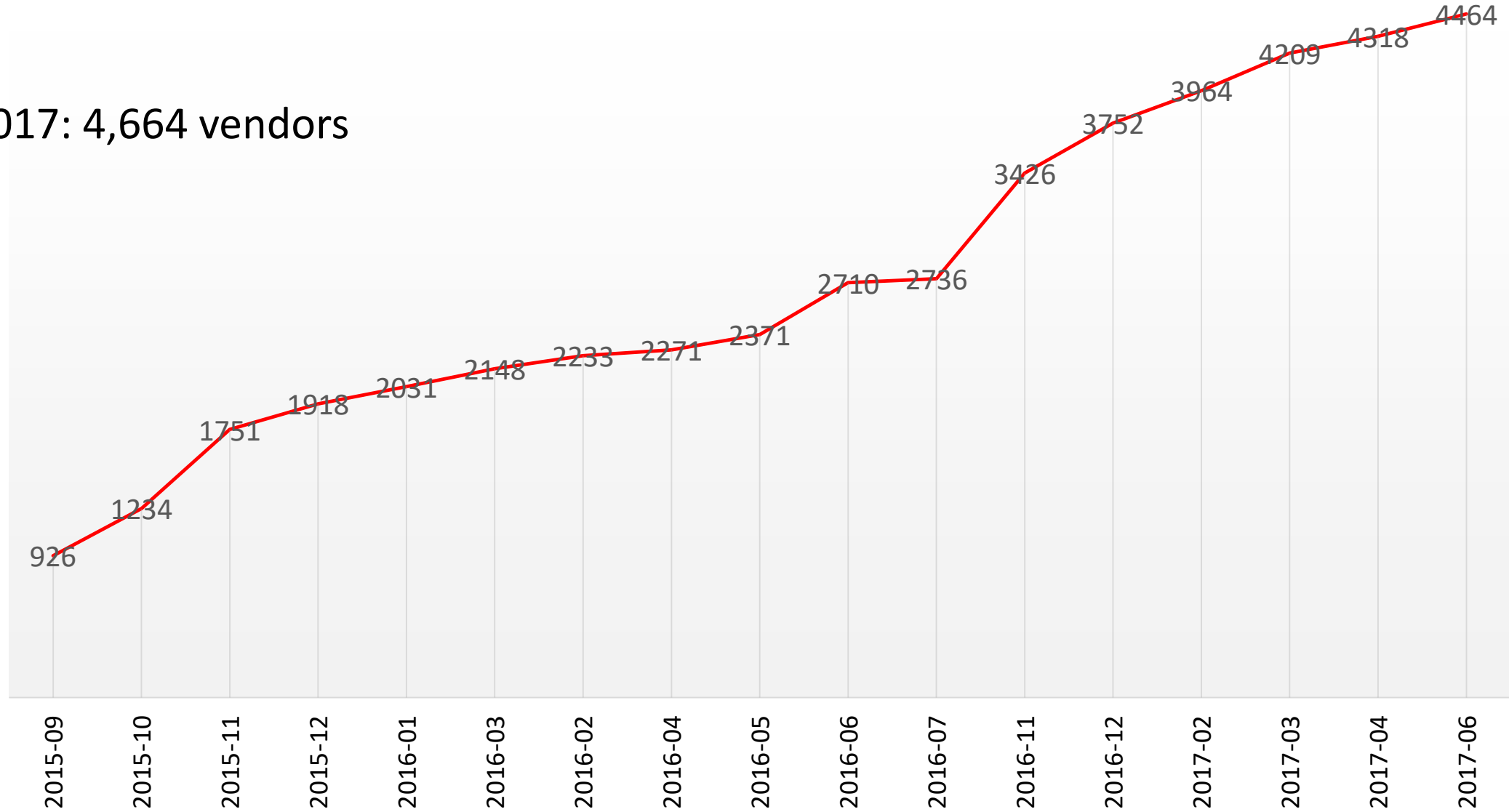


The state of AlphaBay as of June 2016

*"[...] he [Alexandre Cazes] was the creator and administrator of AlphaBay, a website with **40,000 vendors** and more than 200,000 customers."* (CBC, July, 2017)

The state of AlphaBay as of June 2016

June 2017: 4,664 vendors



The state of AlphaBay as of June 2016

"McCabe said AlphaBay was 10 times as large as Silk Road, a dark website the agency shut down in 2013." (CBC, July, 2017)

ALPHABAY (2015-2017)

- 4,464 vendors
- 46,651 listings
- 1,304,382 feedbacks

SILK ROAD (2011-2013)

- 1,087 vendors (4X)
- 26,209 listings (2X)
- 338,543 feedbacks (4X)

What was sold on AlphaBay?

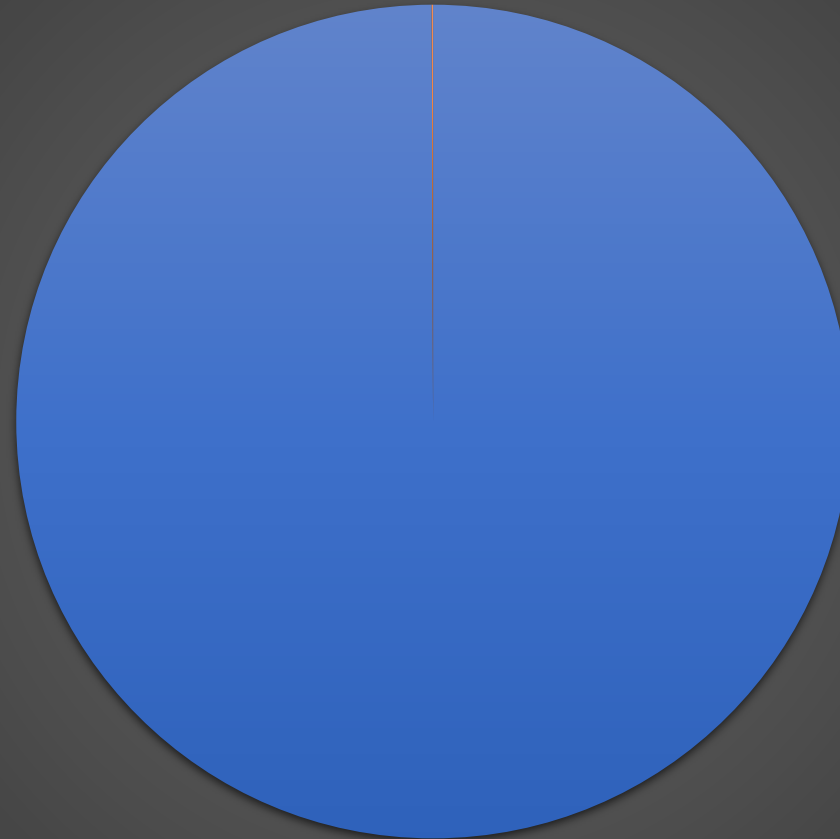
Based on all listings posted in 2015 and 2016

Ecstasy, Prescription Pills	28%
Cannabis	21%
Ebooks	13%
Stimulants (cocaine)	9%
Others	8%
Fraud	7%
Psychedelics	7%
Counterfeit products	4%
Software	2%
Digital information	1%
Weapons	1%

A cartoon illustration of a robbery in a store. A man in a white tank top and green pants is holding a knife, threatening a man in a white shirt who is holding a 'TACO' t-shirt. Other people are in the background, and a sign above the counter says 'DISCOUNTS'.

The state of AlphaBay as of June 2016

AlphaBay VS the Global Drug Trade



■ Global Drug Trade ■ Alphabay

Are drug vendors rich on AlphaBay?

"The drug trade is moving from the street to online cryptomarkets." (The Economist, 2016)

Are drug vendors rich on AlphaBay?



Assess competition on the market

Paquet-Clouston, M. C. (2017). Are Cryptomarkets the Future of Drug Dealing? Assessing the Structure of the Drug Market Hosted on Cryptomarkets. Master Thesis, School of Criminology, University of Montreal.

Dataset

Month of data collection	Number of Vendors	Number of Listings	Number of Feedbacks
September 2015	692	6,923	21,749
October 2015	813	10,734	34,303
November 2015	1,210	16,139	51,972
December 2015	1,369	20,112	87,616
January 2016	1,416	22,040	121,708
February 2016	1,582	25,395	153,331

Method

Distribution and concentration of market shares

$$\textit{Market share}_i = \left(\frac{TS_i}{TMS} \right) * 100$$

Based on the number of feedbacks left two weeks prior to data collection

Concentration of market shares

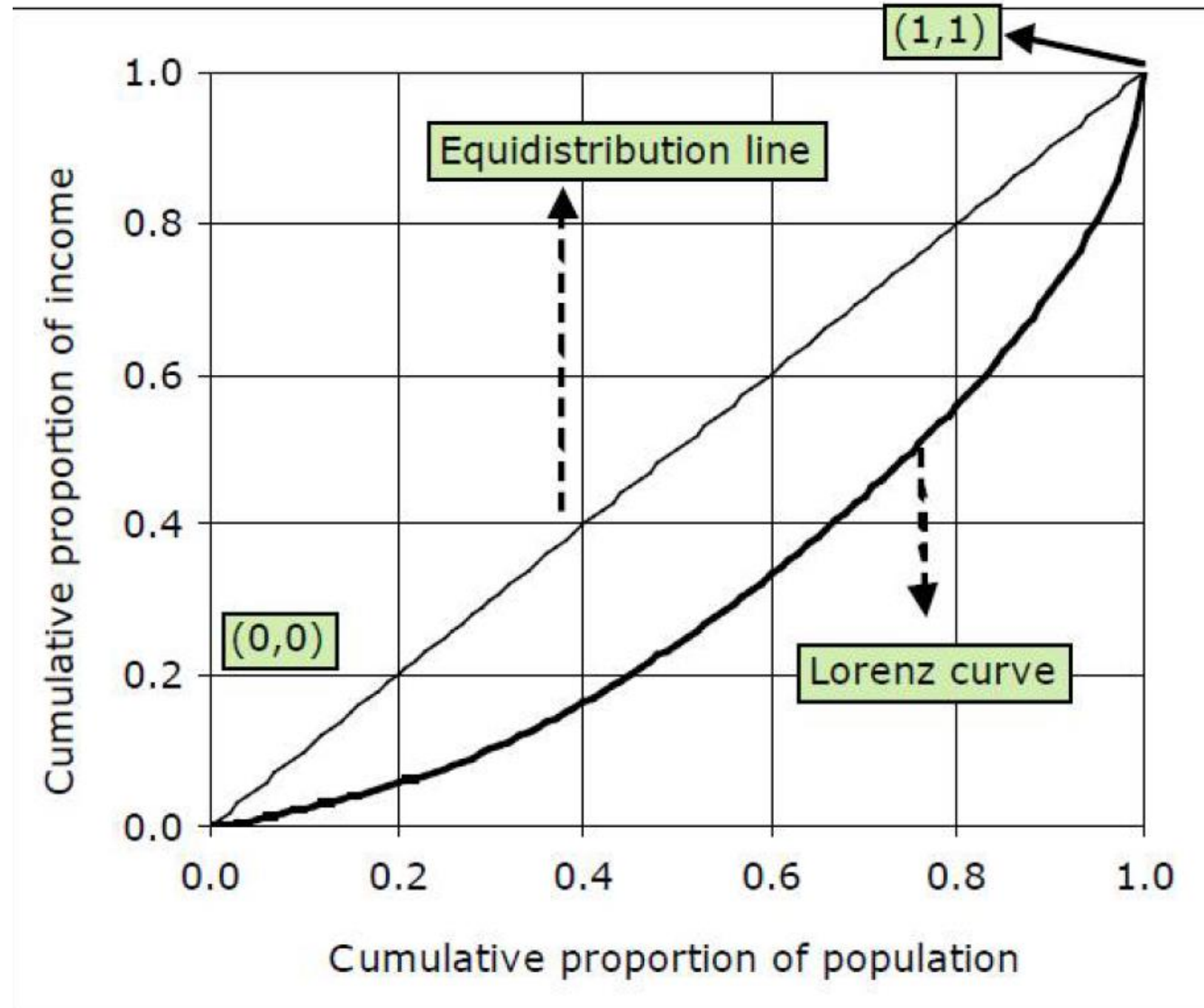
Herfindhal Hirshmann Index (HHI)

$$HHI = \sum_{i=1}^n (MS_i)^2$$

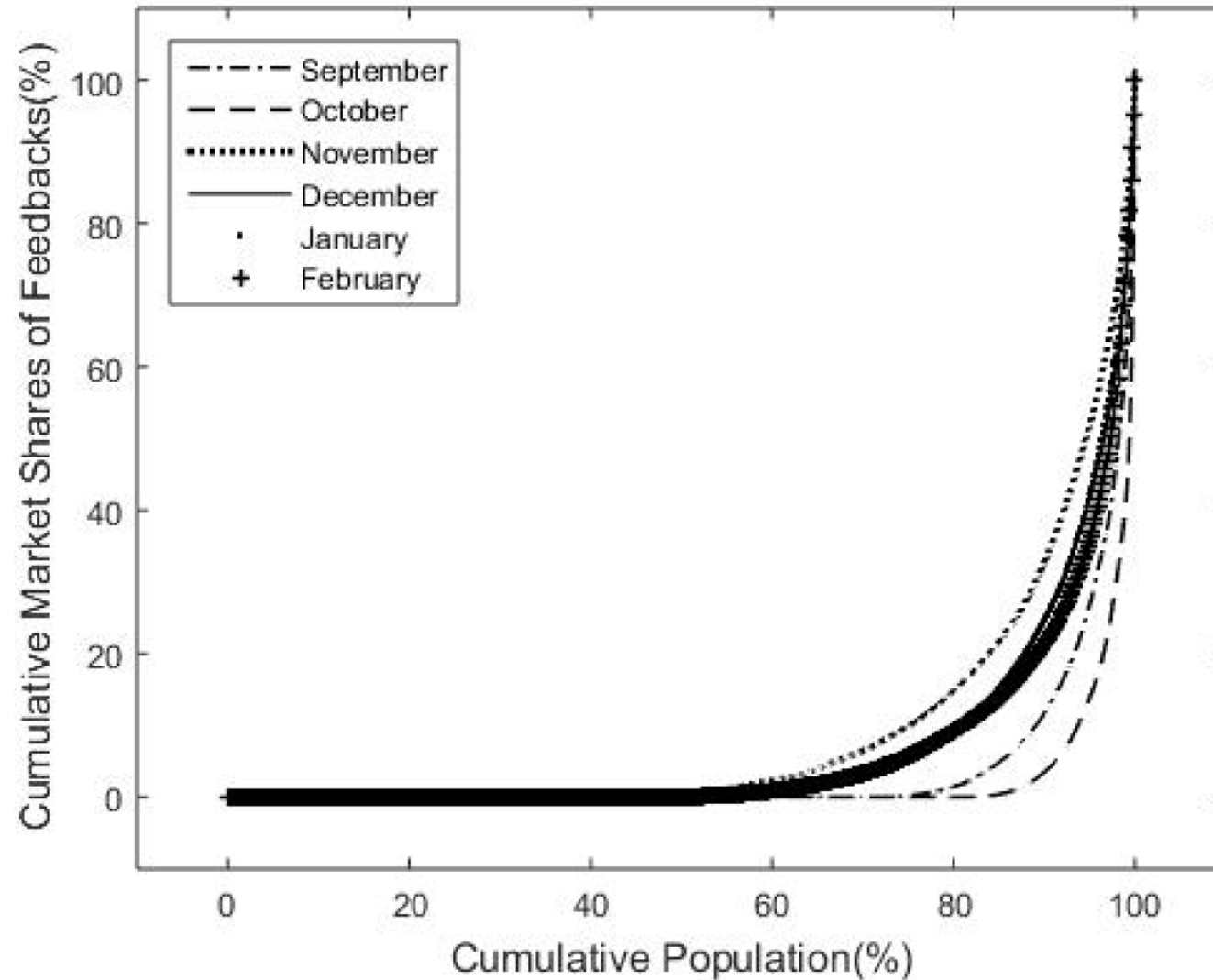
Concentration of market shares

	Number of vendors	Total market feedbacks	HHI
September 2015	692	2,176	0.006614
October 2015	813	3,462	0.007397
November 2015	1,210	5,356	0.004366
December 2015	1,369	4,389	0.001832
January 2016	1,416	7,312	0.001871
February 2016	1,582	6,134	0.001343

Distribution of market shares



Distribution of market shares



What do we find...

Highly competitive setting ✓

But...

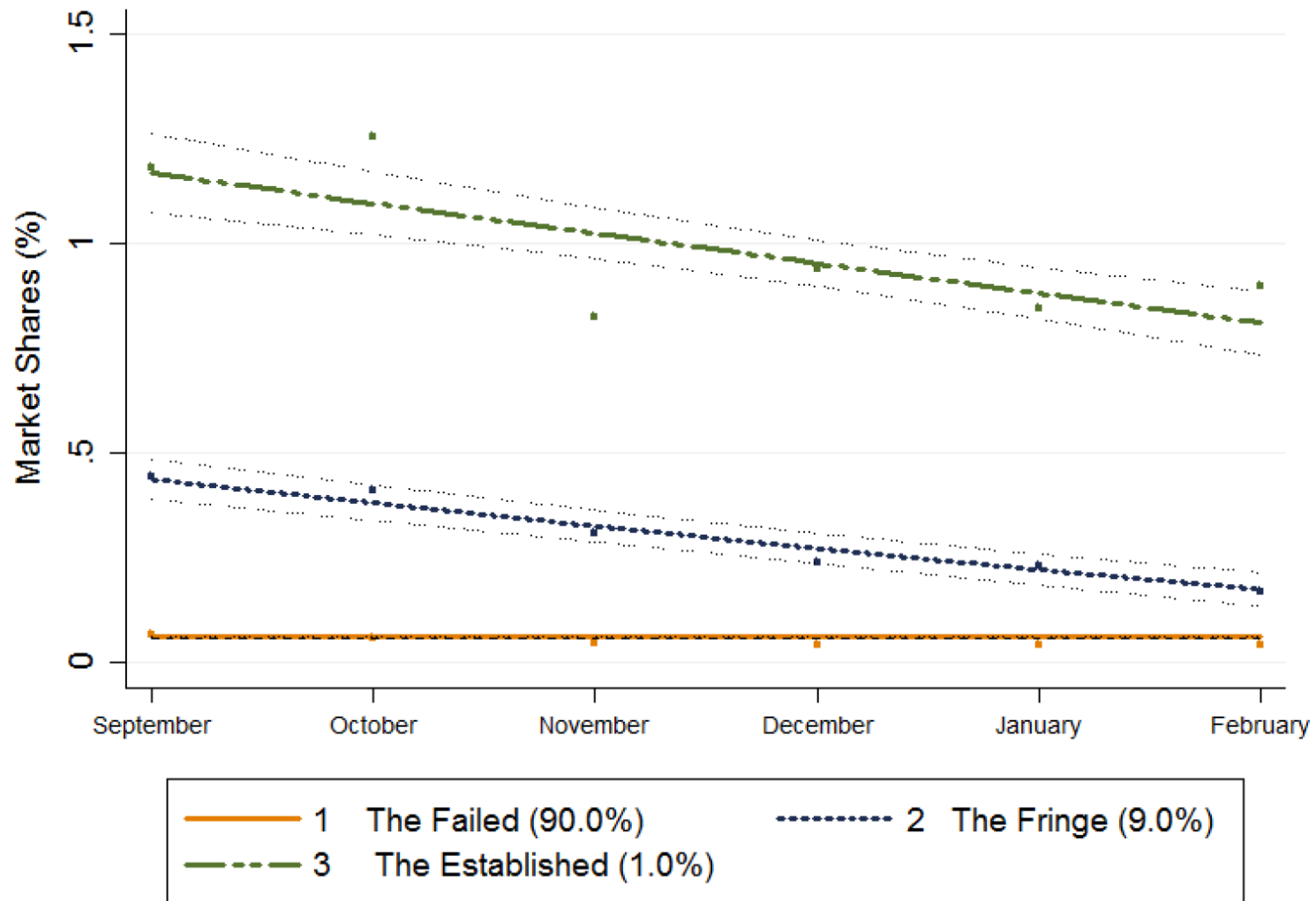
Lots of vendors making little to no sale(s)

Long-term success of each drug vendor

Group-Based Trajectory Modeling

See if similar market share trajectories emerge among vendors

Group-based trajectory modeling



Alphabay's self-governance

"In the World you created over time, democracy didn't exists. You were captain of the ship, the Dread Pirate Roberts [...]." (Judge Forrest, Federal District Court, 2014)

Conflict managements

- Evaluated the “Rules and Conditions” of 10 markets



- Read and analyzed more than 200 conflict threads on AlphaBay forums

Morselli, C., Décary-Hétu, D., Paquet-Clouston, M., & Aldridge, J. (2017). Conflict Management in Illicit Drug Cryptomarkets. *International Criminal Justice Review*, 1057567717709498.

Rules and conditions

9/10 marketplaces → prohibited particular products and services (such as child pornography, assassination services, and banned weapons) to be listed on the market for sale.

Rules and conditions

Information AlphaBay Market rules (self.AlphaBayMarket)

submitted 1 year ago by [deleted]

Please remember the following key points when registering on the marketplace:

The following rules apply for trading:

- When you place an order, you can't cancel it, unless you come to a mutual agreement with the seller.
- When the order is Finalized, the funds are released to the vendor and there is nothing else we can do.
- Do not send funds outside of Escrow. If you do so, it is entirely at your own risk.
- Do not finalize the order if you did not receive the product, no matter what the vendor says.
- Anything related to prostitution, child pornography, and murder / assassination is prohibited on the marketplace.
- Orders that are not marked as shipped within 72 hours are automatically declined and refunded.

Conflict resolution strategies

Most common conflict → Transaction failures or scams

Tolerance

“wait a little more” or “be a little more patient and report back.”

“I understand your frustration but take it from me, he is not a scammer. I have been doing business with [vendor name] since he started and he has delivered 100%”

Avoidance

“IS ANYBODY LISTENING HERE?”

Ostracism

“Believe what you like, but this fucking bastard [vendor name] scammed me”

“[vendor name] IS A SCAMMER, NO QUESTION!”

“Do not do business with [vendor name]. He is a selective scammer.”

Conflict resolution strategies

Third-Party Intervention

“Scamwatch, can you talk to him please?”

ScamWatch response: “Please add me to those conversations that you’re having with the vendor. If allegations are confirmed, I’ll fuck the vendor up”

Negotiation

“I’m not calling scam here, but want to discuss my options since [vendor name] hasn’t yet responded to me”

“I don’t want to dispute, but I haven’t received my package. Can anyone advise? I don’t want to name the vendor.”

Threat

“If [vendor name] doesn’t address this, I won’t finalise so he doesn’t get paid AND will leave bad feedback.”

“I WILL KILL YOU MY FRIEND. DON’T WORRY, THE WORLD IS A SMALL PLACE, AND YOU DON’T KNOW WHO I AM:).”

Conflict resolution strategies

- Public nature of conflicts
- Participants' duty : reporting problems

Alphabay: an international market?

Alphabay : an international market?

The study looked at the extent to which online drug vendors undertook risks when selling at the international level.

“Packages have a higher chance of being inspected internationally, and therefore higher probability of seizure”

“The worst thing about international sales is that buyers can more easily claim they did not receive the package”

Décary-Hétu, D., Paquet-Clouston, M.-C, and Aldrige, J., (2016). Going international. Risk taking and the willingness to ship internationally among drug cryptomarket vendors. *International Journal of Drug Policy*, 35, 69-76.

Alphabay : an international market?

Table 2: Hierarchical generalized linear model predicting if a listing ships internationally (1) or not (0)*

Variables	Coefficient	Odds ratio	95% Confidence interval	p-value
Level 1 – Listings				
Weight (logged)	-0.315	0.969	0.946-0.993	0.010
Competitive advantage (logged)	-0.024	0.975	0.939-1.014	0.207
Level 2 – Vendors				
Yearly revenues (logged)	-0.020	0.980	0.934-1.028	0.413
Vendor rating	-0.314	0.730	0.611-0.873	0.000
Product diversity	-0.011	0.989	0.927-1.055	0.728
Number of listings	0.389	1.476	1.221-1.785	0.000
Level 3 – Environment				
National drug expenditure (logged)	-2.115	0.121	0.052-0.281	0.000
Perceived effectiveness of law enforcement	-16.712	0.001	0.000-0.009	0.008
GDP per capita (logged)	-3.358	0.035	0.012-0.102	0.000
Domestic competition per 1,000,000 inhabitants (logged)	-0.029	1.029	0.756-1.401	0.849

* Results are with robust standard error estimates and are extracted from the population-average model. The population average model is better suited for the aims of this study because it relates to the overall chance of an event occurring in a population (Nzeko, 2011, p.53). For more information on these specificities, see Baudenbush et

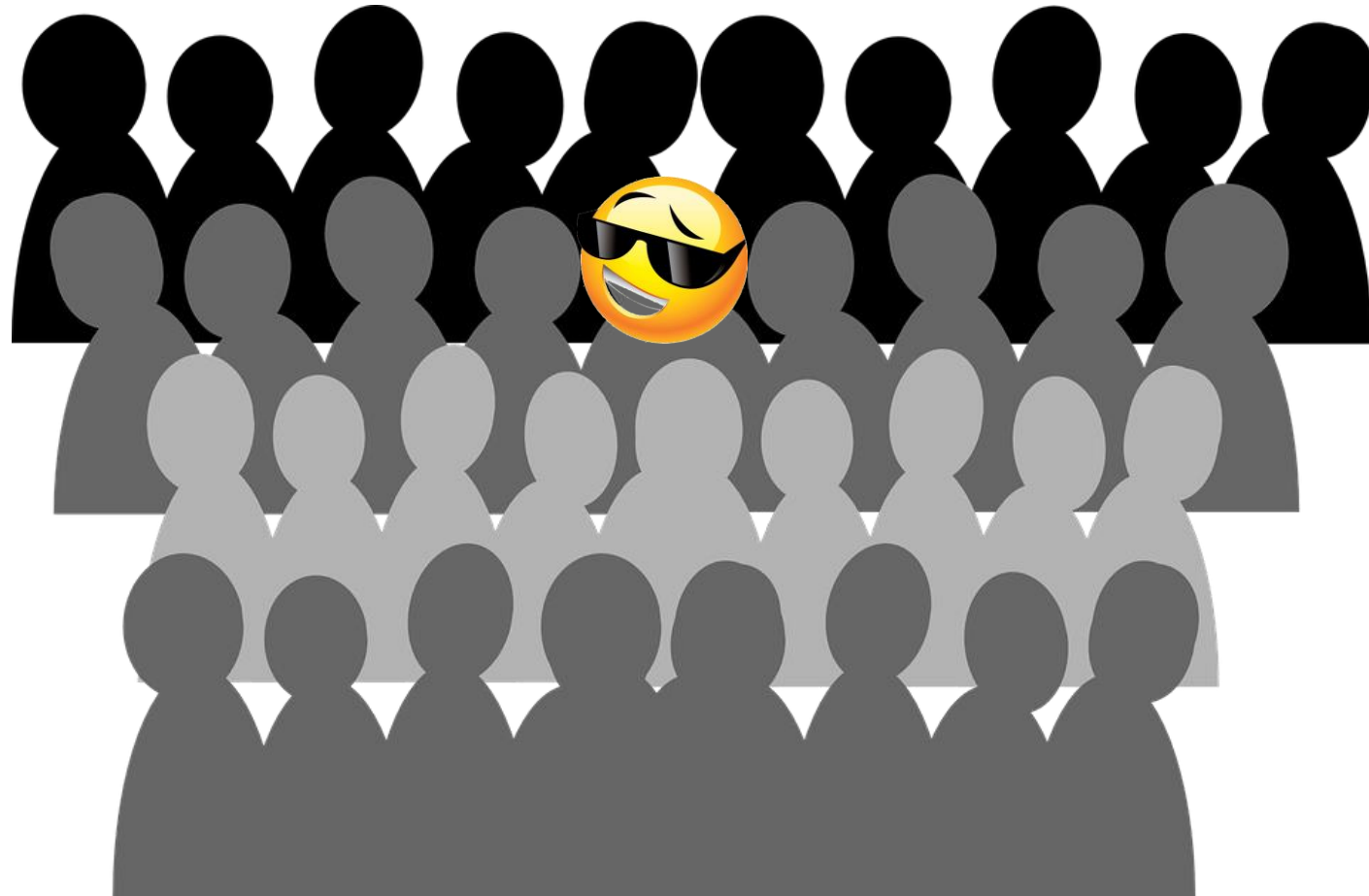
The obvious limits of illicit online marketplaces

The obvious limits of illicit online marketplaces



The obvious limits of illicit online marketplaces

Vendor's reputation matters



The obvious limits of illicit online marketplaces

Anonymous online transactions are risky



The obvious limits of illicit online marketplaces

Anyone can sell on these markets !

Yet, there are high barriers to sales

What's up now ?

“We are facing a DDoS attack atm [at the moment] and I guess many other markets as well,” a Reddit moderator for the site dubbed Wall Street, one of the affected marketplaces, told The Daily Beast. A DDoS, or distributed-denial-of-service attack, is when someone bombards a website with so many requests that it becomes overwhelmed, and stops letting in its usual users.

Thank you!

@masarahclouston



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References

- Décary-Hétu, D. and Aldridge, J. (2015). *DATACRYPTO: A Dark Net Crawler and Scraper*. Montreal, Quebec: University of Montreal
- Lavoie, M. Hallé, I. Décary-Hétu, D. Flare Systems <http://flared.io/>
- Global Drug Trade Estimates: <http://www.gfintegrity.org/report/transnational-crime-and-the-developing-world/>
- Lorenz Curve figure: http://www.fao.org/docs/up/easypol/302/charting_income_inequality_000en.pdf
- Paquet-Clouston, M. C. (2017). Are Cryptomarkets the Future of Drug Dealing? Assessing the Structure of the Drug Market Hosted on Cryptomarkets. Master Thesis, School of Criminology, University of Montreal.
- Morselli, C., Décary-Hétu, D., Paquet-Clouston, M., & Aldridge, J. (2017). Conflict Management in Illicit Drug Cryptomarkets. *International Criminal Justice Review*, 1057567717709498.
- Décary-Hétu, D., Paquet-Clouston, M.-C, and Aldrige, J., (2016). Going international. Risk taking and the willingness to ship internationally among drug cryptomarket vendors. *International Journal of Drug Policy*, 35, 69-76.
- Paquet-Clouston, M, Décary-Hétu D. and Morselli C. (Revise and resubmit). Assessing Market Competition and Vendors' Size and Scope on AlphaBay. *International Journal of Drug Policy*.