

The Economic Geography of Darknet Marketplaces

Martin Dittus, Joss Wright, Mark Graham
Oxford Internet Institute 2017-2018

Presented in July 2021





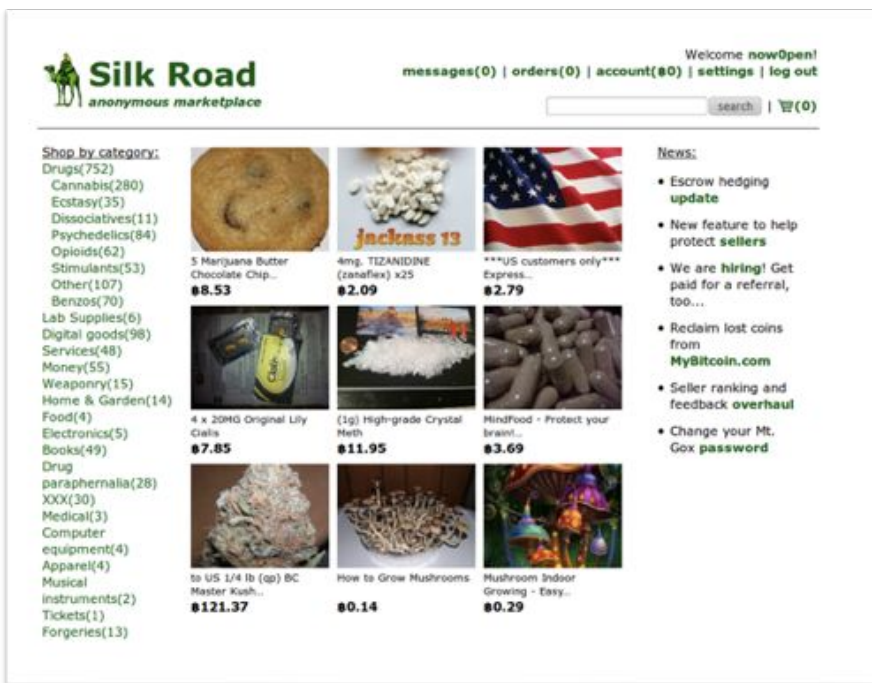
About the research

Martin Dittus, Joss Wright, Mark Graham -
The Economic Geography of Darknet Markets
Oxford Internet Institute 2017-2018

- Little is known about the geography of illicit darknet markets
- Techniques from computational social science and digital geography
- Scrape geographic information on darknet markets, at country level
- Map, visualize, analyse the geography of illicit products and services

<https://www.oii.ox.ac.uk/research/projects/economic-geog-darknet/>

Darknet markets: platforms for illicit trades, using anonymity-preserving Tor browser












Silk Road
anonymous marketplace

Welcome nowOpen!
messages(0) | orders(0) | account(80) | settings | log out

search | 🛒(0)

Shop by category:
Drugs(752)
Cannabis(280)
Ecstasy(35)
Dissociatives(11)
Psychedelics(84)
Opioids(62)
Stimulants(53)
Other(107)
Benzos(70)
Lab Supplies(6)
Digital goods(98)
Services(48)
Money(55)
Weaponry(15)
Home & Garden(14)
Food(4)
Electronics(5)
Books(49)
Drug paraphernalia(28)
XXX(30)
Medical(3)
Computer equipment(4)
Apparel(4)
Musical instruments(2)
Tickets(1)
Forgeries(13)

 5 Marijuana Butter Chocolate Chip... #8.53	 4mg. TIZANIDINE (zanaflex) x25 #2.09	 ***US customers only*** Express... #2.79
 4 x 20MG Original Lily Curls #7.85	 (1g) High-grade Crystal Meth #11.95	 MindFood - Protect your brain... #3.69
 to US 1/4 lb (ap) BC Master Kush... #121.37	 How to Grow Mushrooms #0.14	 Mushroom Indoor Growing - Easy... #0.29

News:

- Escrow hedging update
- New feature to help protect sellers
- We are hiring! Get paid for a referral, too...
- Reclaim lost coins from MyBitcoin.com
- Seller ranking and feedback overhaul
- Change your Mt. Gox password



About Tor

Tor Browser | Search or enter address

Welcome to Tor Browser
You are now free to browse the Internet anonymously.
[Test Tor Network Settings](#)

Search security with DuckDuckGo.

What Next?
Tor is NOT all you need to browse anonymously! You may need to change some of your browsing habits to ensure your identity stays safe.
• [Tips On Staying Anonymous](#) »
• [Tor Browser User Manual](#) »

You Can Help!
There are many ways you can help make the Tor Network faster and stronger.
• [Run a Tor Relay Node](#) »
• [Volunteer Your Services](#) »
• [Make a Donation](#) »

The Tor Project is a US 501(c)(3) non-profit dedicated to the research, development, and education of online anonymity and privacy. [Learn more about The Tor Project](#) »

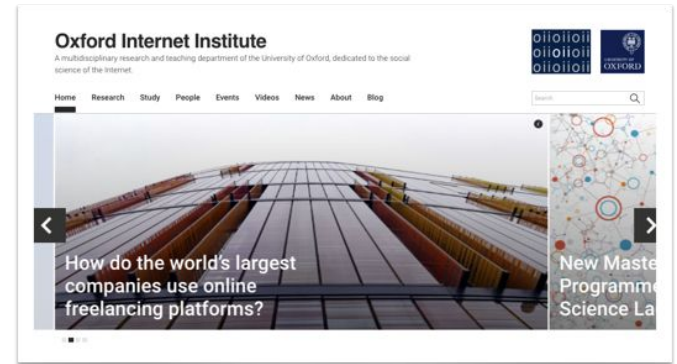
The information geography of darknet marketplaces

A 9-month research project at the Oxford Internet Institute, Univ. of Oxford

Understanding the illicit trade on darknet marketplaces:

1. Scrape **product inventories & trades**, build a reusable data set
2. **Map, visualise, analyse** the information geography: **what trading happens where?**

I was hired to execute the research, from data collection and analysis to publication.



The Oxford Internet Institute is launching a new project to map and measure trade on the darknet. Relatively little is known about the geography of this global trade. Although the strong anonymity on darknet markets severely limits data collection about the geography of consumption of products such as drugs and weapons, there is a large amount of data available about the sale of such goods and services.

This project seeks to employ techniques from computational social science and digital geography in order to achieve two primary objectives. First, we seek to scrape relevant geographic information from datasets of darknet sales, building re-usable data at the country level (e.g. 'the number of heroin sellers based in every country', 'the total number of vendors selling weapons in every country' etc.). Second, we seek to map, visualize, and analyse those data using multiple variables (the various categories of products and services) to ask 'what is the geography of illicit products and services?' We further hope to ask 'does the online trade of illicit goods and services have a significantly different geography from conventional mappings of that trade?' In other words: can data from the darknet be used as a proxy for more traditional (and much harder to collect) data about illegal economic activities?

A survey of the largest markets

The image displays a survey of darknet markets, showing screenshots of product listings and a summary table.


Product Listings (from screenshots):

- 10 grams of Grade A+ Crystal Methamphetamine - USA DOMESTIC Glass: 347.79 EUR
- 50 Speed Paste A+ Quality: 18 EUR
- 5 x 100ug Cosmic Buddhas LSD - Booter: 22.99 EUR
- 10 Champagne MDMA PROAO: 10 EUR
- 50 Champagne MDMA 84%: 30 EUR
- 100 Speed Paste A+ Quality: 35 EUR
- Dutch Import MDMA 90%: 12.83 EUR
- 1g FREE UK NDD

Summary Table:

#	Market	Address	Type	Live?	Scripted done?	Pager done?	Needs index?	Sequential ID?	Full listings?	Using index?	Sales counter?	Feedback index?	Catalogue size		Comments		
													Stated	%			
1	Market		Market	y	y	y	n	y	y	y	y	y	347,281	18.14%	136,152	39%	Navigation counters seem to be
2	Market		Market	y	y	y	n	y	y	y	y	y	86,366	14.02%			Hard to scrape, no sequential
3	Market		Market	y	y	y	n	y	n	y	y	y	51,381	8.70%	8,224	16%	No sequential IDs, but access
4	Market		Market	y	y	y	n	y	n	y	y	y	39,953	6.61%	62,878	161%	Sequential ID! No sales coun
5	Market		Market	y	y	y	n	y	n	y	y	y	27,718	4.89%	34,741	125%	Invite link via DMG, Feedback
6	Market		Market	y	y	y	n	n	n	n	n	n	23,948	4.05%			Sequential IDs, can get a full i
7	Market		Market	y	n	y	n	y	n	n	n	n	6,000	1.02%			Russian
8	Market		Market	y	y	y	n	y	n	y	y	y	1,719	0.29%			English/German
9	Market		Market	y	y	y	n	y	n	y	y	y	1,696	0.29%			
10	Market		Market	y	y	y	n	y	n	y	y	y	1,257	0.21%			
11	Market		Market	y	y	y	n	y	n	y	y	y	905	0.15%			
12	Market		Market	y	y	y	n	y	n	y	y	y	905	0.15%			
13	Market		Market	y	y	y	n	y	n	y	y	y	819	0.14%			
14	Market		Market	y	y	y	n	y	n	y	y	y	633	0.11%			
15	Market		Market	y	y	y	n	y	n	y	y	y	480	0.08%			
16	Market		Market	y	y	y	n	y	n	y	y	y	411	0.07%			Italian
17	Market		Market	y	y	y	n	y	n	y	y	y	187	0.03%			
18	Market		Market	y	y	y	n	y	n	y	y	y	184	0.03%			
19	Market		Market	y	y	y	n	y	n	y	y	y	111	0.02%			French
20	Market		Market	n	n	n	n	n	n	n	n	n		0.00%			
21	Market		Market	y	y	y	n	y	n	y	y	y		0.00%			Invitation requested
22	Market		Market	y	y	y	n	y	n	y	y	y		0.00%			French
23	Market		Market	y	y	y	n	y	n	y	y	y		0.00%			French
24	Market		Market	y	n	n	n	n	n	n	n	n		0.00%			Down for maintenance
25	Market		Market	n	n	n	n	n	n	n	n	n		0.00%			Forum

Product metadata



You can browse products and vendors without logging in. For making purchases you'll need to [register an account](#).

10 grams of Grade A+ Crystal Methamphetamine - USA DOMESTIC Glass

342.79 EUR (0.088284 BTC)

25 pcs in stock

[United States](#) → [Worldwide](#)

This is top grade uncut and touched off the brick crystal methamphetamine. Smokes clean and burns clear. 100% satisfaction. Listing is for a 10 gram sack of glass shards.


Stealth shipping always ensured with a 1 time reship if you do not receive your package. We will be posting bulk sale opportunities once people order a few grams and realize the quality of this product.

USA domestic ships the day of if ordered Monday - Fri and will be delivered in 4 days max.

- Great communion. Great stealth. On time delivery. Decent product (over weight also) :). Thanks for your gift, bub. I will be back. (28.8.) [€100+ • 3+](#)

Shipping fee 5.9 EUR (Domestic Priority + Stealth/ Track) is included in price shown above. Other shipping options can be selected at additional cost. You only pay for shipping once when you order multiple pieces of a single product or other products from same vendor

Buyer reviews as trading indicator



You can browse products and vendors without logging in. For making purchases you'll need to **register an account**.

❄️❄️❄️ Dutch Import MDMA 90% ❄️❄️❄️ 1g FREE UK NDD

12.63 EUR (0.003254 BTC)
more than 25 pcs in stock
📊 (2326 / -24)
United Kingdom → France, Germany, United Kingdom, Ireland, Italy, Spain, Portugal

❄️❄️❄️ Dutch Import MDMA 90% ❄️❄️❄️

- Really good. Very Strong (yesterday) 📊 (€500+ • 25+)
- fab as usual :) wont be using any one else, great value, awesome product, couldn't be packaged better, NDD (25.8) 📊 (€100+ • 10+)
- Can't fault great product, the best packaging, NDD always, wouldnt use anyone else for product thanks (25.8) 📊 (€100+ • 10+)
- Love it, great vendor & love the packaging NDD again :) (23.8) 📊 (€100+ • 10+)
- fab, NDD : (23.8) 📊 (€100+ • 10+)

Custom scraper software

Crawling the largest markets.

Millions of web requests,
collecting and parsing
many GBs of raw HTML.

3,500 lines of Python, Scrapy.

```
martin@oii-harbin: ~ (ssh)
[scrapy.downloadermiddlewares.downloadermiddleware,
'dns.downloadermiddlewares.handleallhttpstatusmiddleware',
'scrapy.downloadermiddlewares.defaultheadersmiddleware',
'scrapy.downloadermiddlewares.httpproxyhttpmiddleware',
'dns.downloadermiddlewares.retryhttpmiddleware',
'scrapy.downloadermiddlewares.useragentuseragentmiddleware',
'scrapy.downloadermiddlewares.retry.retrymiddleware',
'scrapy.downloadermiddlewares.redirect.metafreshmiddleware',
'scrapy.downloadermiddlewares.httpproxyhttpcompressionhttpcompressionmiddleware',
'scrapy.downloadermiddlewares.redirect.redirectmiddleware',
'scrapy.downloadermiddlewares.cookies.cookiesmiddleware',
'scrapy.downloadermiddlewares.stats.downloaderstats',
'dns.downloadermiddlewares.requesttwistlwmiddleware']
2017-09-04 10:44:20 [scrapy.extensions.telnet] INFO: Enabled spider middleware:
['scrapy.spidermiddlewares.httpproxyhttpmiddleware',
'scrapy.spidermiddlewares.offsite.offsitemiddleware',
'scrapy.spidermiddlewares.referrer.referrermiddleware',
'scrapy.spidermiddlewares.urllength.urllengthmiddleware',
'scrapy.spidermiddlewares.depth.depthmiddleware']
2017-09-04 10:44:20 [scrapy.middleware] INFO: Enabled item pipelines:
[]
2017-09-04 10:44:20 [scrapy.core.engine] INFO: Spider opened
2017-09-04 10:44:20 [scrapy.extensions.logstats] INFO: Crawled 0 pages (at 0 pages/min), scraped 0 items (at 0 items/min)
2017-09-04 10:44:20 [scrapy.extensions.telnet] DEBUG: Telnet console listening on 127.0.0.1:6024
2017-09-04 10:44:20 [scrapy.downloadermiddlewares.cookies] DEBUG: Sending cookies to: <GET http://chudiyocq4iddj.onion/?page=1>
Cookie: MARKET_SESSIONID=59u23dn5spE5sen34f199t6
```

```
parse-traderoute-feedback.py -- code
cronstab README.md captch...lvers.py extensions.py parse-a...back.py parse-...back.py parse-t...back.py parse-v...dors.py
# =====
18
19
20 # Converting a pixel width into a start rating.~
21 # A full star is 24 pixels wide.~
22 def parse_rating(s):
23     return float(s) / 24
24
25
26 htmlp_rexp = re.compile(r'</?ps')
27 htmlbr_rexp = re.compile(r'<br[>?]>|\r\n')
28
29 # Handle some special cases~
30 def parse_comment(s):
31     if (s=='') or (s=='<p>No feedback left</p>'):
32         return None
33     return htmlp_rexp.sub('', htmlbr_rexp.sub('\n', s))
34
35 # Remove ordinal suffixes from numbers~
36 date_suffix = re.compile(r'(\st[\d|rd|th] \d+)$')
37
38 # 19th of July 2017~
39 def parse_date(datetime_str):
40     return datetime.datetime.strptime(date_suffix.sub('', datetime_str), '%d %B %Y')
41
42 # =====
43
44 # =====
45
46 if len(sys.argv) != 3:
47     sys.stderr.write('Usage: <datadir> <outfile.csv>\n')
48     sys.exit(1)
49
50
51 dtadir = sys.argv[1]
52 infilespec = '%s/items/%.html' % dtadir
53 outfilename = sys.argv[2]
54
55
56
57 fileid_rexp = re.compile(r'([a-zA-Z0-9]{16})?(?_page_\d+)?\.html')
58 soldby_rexp = re.compile(r'span style="[\"]*"><a class="greenlink" href="[""]*" title="Vendor (?>
59
60
61
62
63
64
65
66
67
68
69
70
71
72
73
74
75
76
77
78
79
80
81
82
83
84
85
86
87
88
89
90
91
92
93
94
95
96
97
98
99
100
101
102
103
104
105
106
107
108
109
110
111
112
113
114
115
116
117
118
119
120
121
122
123
124
125
126
127
128
129
130
131
132
133
134
135
136
137
138
139
140
141
142
143
144
145
146
147
148
149
150
151
152
153
154
155
156
157
158
159
160
161
162
163
164
165
166
167
168
169
170
171
172
173
174
175
176
177
178
179
180
181
182
183
184
185
186
187
188
189
190
191
192
193
194
195
196
197
198
199
200
201
202
203
204
205
206
207
208
209
210
211
212
213
214
215
216
217
218
219
220
221
222
223
224
225
226
227
228
229
230
231
232
233
234
235
236
237
238
239
240
241
242
243
244
245
246
247
248
249
250
251
252
253
254
255
256
257
258
259
260
261
262
263
264
265
266
267
268
269
270
271
272
273
274
275
276
277
278
279
280
281
282
283
284
285
286
287
288
289
290
291
292
293
294
295
296
297
298
299
300
301
302
303
304
305
306
307
308
309
310
311
312
313
314
315
316
317
318
319
320
321
322
323
324
325
326
327
328
329
330
331
332
333
334
335
336
337
338
339
340
341
342
343
344
345
346
347
348
349
350
351
352
353
354
355
356
357
358
359
360
361
362
363
364
365
366
367
368
369
370
371
372
373
374
375
376
377
378
379
380
381
382
383
384
385
386
387
388
389
390
391
392
393
394
395
396
397
398
399
400
401
402
403
404
405
406
407
408
409
410
411
412
413
414
415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457
458
459
460
461
462
463
464
465
466
467
468
469
470
471
472
473
474
475
476
477
478
479
480
481
482
483
484
485
486
487
488
489
490
491
492
493
494
495
496
497
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
513
514
515
516
517
518
519
520
521
522
523
524
525
526
527
528
529
530
531
532
533
534
535
536
537
538
539
540
541
542
543
544
545
546
547
548
549
550
551
552
553
554
555
556
557
558
559
560
561
562
563
564
565
566
567
568
569
570
571
572
573
574
575
576
577
578
579
580
581
582
583
584
585
586
587
588
589
590
591
592
593
594
595
596
597
598
599
600
601
602
603
604
605
606
607
608
609
610
611
612
613
614
615
616
617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650
651
652
653
654
655
656
657
658
659
660
661
662
663
664
665
666
667
668
669
670
671
672
673
674
675
676
677
678
679
680
681
682
683
684
685
686
687
688
689
690
691
692
693
694
695
696
697
698
699
700
701
702
703
704
705
706
707
708
709
710
711
712
713
714
715
716
717
718
719
720
721
722
723
724
725
726
727
728
729
730
731
732
733
734
735
736
737
738
739
740
741
742
743
744
745
746
747
748
749
750
751
752
753
754
755
756
757
758
759
760
761
762
763
764
765
766
767
768
769
770
771
772
773
774
775
776
777
778
779
780
781
782
783
784
785
786
787
788
789
790
791
792
793
794
795
796
797
798
799
800
801
802
803
804
805
806
807
808
809
810
811
812
813
814
815
816
817
818
819
820
821
822
823
824
825
826
827
828
829
830
831
832
833
834
835
836
837
838
839
840
841
842
843
844
845
846
847
848
849
850
851
852
853
854
855
856
857
858
859
860
861
862
863
864
865
866
867
868
869
870
871
872
873
874
875
876
877
878
879
880
881
882
883
884
885
886
887
888
889
890
891
892
893
894
895
896
897
898
899
900
901
902
903
904
905
906
907
908
909
910
911
912
913
914
915
916
917
918
919
920
921
922
923
924
925
926
927
928
929
930
931
932
933
934
935
936
937
938
939
940
941
942
943
944
945
946
947
948
949
950
951
952
953
954
955
956
957
958
959
960
961
962
963
964
965
966
967
968
969
970
971
972
973
974
975
976
977
978
979
980
981
982
983
984
985
986
987
988
989
990
991
992
993
994
995
996
997
998
999
1000
```




Data summary

In total we identified **250k listings** and **1.8 million buyer reviews** across the markets we observed.

According to our estimates, this accounts for 80-90% of the global offerings on darknet markets at the time of data collection.

It is a rich corpus: market-specific product categories, spatial & temporal data, freeform text, ...

Market	Title	Vendor	ISDG	CC
	2 OZ Crystal Methamphetamines 50 Grams		USA	NA
	3g Power Plant (★★★ Quality) - Free Shipping		DEU	EU
	Anavar - 50mg Winstrol - 50mg Anadrol - 50mg		USA	NA
	BudgetBudsExpress Shatter Pack 50g		USA	NA
	Modvigil 200mg - Generic Provigil Modafinil 2...		USA	NA
	AsiaMoviePass - [PORN LIFETIME ACCOUNT]		Undeclared	Undeclared
	seduce-fast-food-girl XXX PC Game		Undeclared	Undeclared
	100 HIGH QUALITY DOUBLE DOSED 4MG YELLOW R039...		CAN	NA
	Rapidgator Premium Account		undeclared	Undeclared
	The Designers Guide to the Cortex M Processor ...		Undeclared	Undeclared
	CANNABIS OIL AND TOP MEDICAL MARIJUANA STRAINS...		Undeclared	Undeclared
	10 x Orange Rolls Royce 200MG		NLD	EU
	Unknown		Unknown	Unknown
	LSD - 1 Trip (200 µg/		DEU	EU
	Digital Counting Scale Grain Kitchen Jewelry B...		USA	NA
	XTC Pillen 210mg 500ct		DEU	EU
	XANAX (ALPRAZOLAM) 1 mg x 100 by PFIZER-		HUN	EU
	Special OFFER - 14g - MDMA 84% Dutch Import 10...		GBR	EU
	Videos/in		Undeclared	Undeclared
	QIRP2, 10mg/vial, Bio Peptide, 100% Quality		Undeclared	EU

Developing a simple product taxonomy

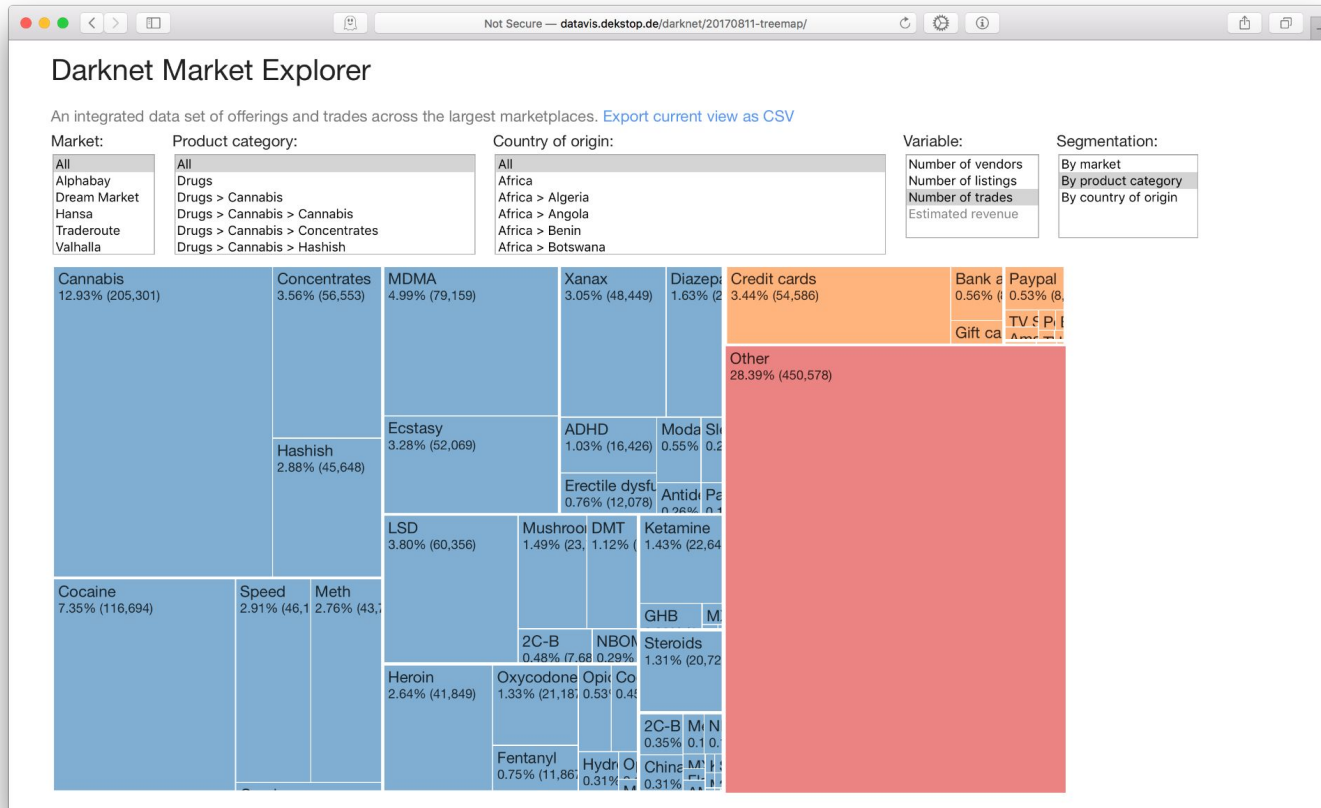
... derived from existing product categories used by markets, as well as our specific research interests.

- **Drugs: Cannabis** (Marijuana, Concentrates, Hashish), **Dissociatives** (GBL, GHB, Ketamine, MXE, MXP, PCP), MDMA, Ecstasy, **New Psychoactive Substances** (2C-B, 2C-E, 2C-I, 4-MEC, AMT, China White, DMAA, Flakka, Kratom, M1, MXE, MXP, Mephedrone, NBOMe, Spice/K2), **Opioids** (Codeine, Fentanyl, Heroin, Hydrocodone, Morphine, Opioid detoxification, Opium, Oxycodone), **Pharmaceuticals** (ADHD, Antidepressants, Diazepam, Erectile dysfunction, Modafinil, Painkillers, Sleeping pills, Xanax), **Psychedelics** (2C-B, DMT, LSD, Mushrooms, NBOMe), **Steroids, Stimulants** (Cocaine, Crack, Meth, Speed).
- **Information goods: Accounts** (Amazon, Ebay, Paypal, Porn, TV & Cable, TV Streaming, Uber), **Malware** (Botnets, Malware, Ransomware), **Money** (Bank drops, Credit cards, Gift cards).
- **Physical goods: Weapons** (Ammunition, Explosives, Hand weapons, Long-range weapons).

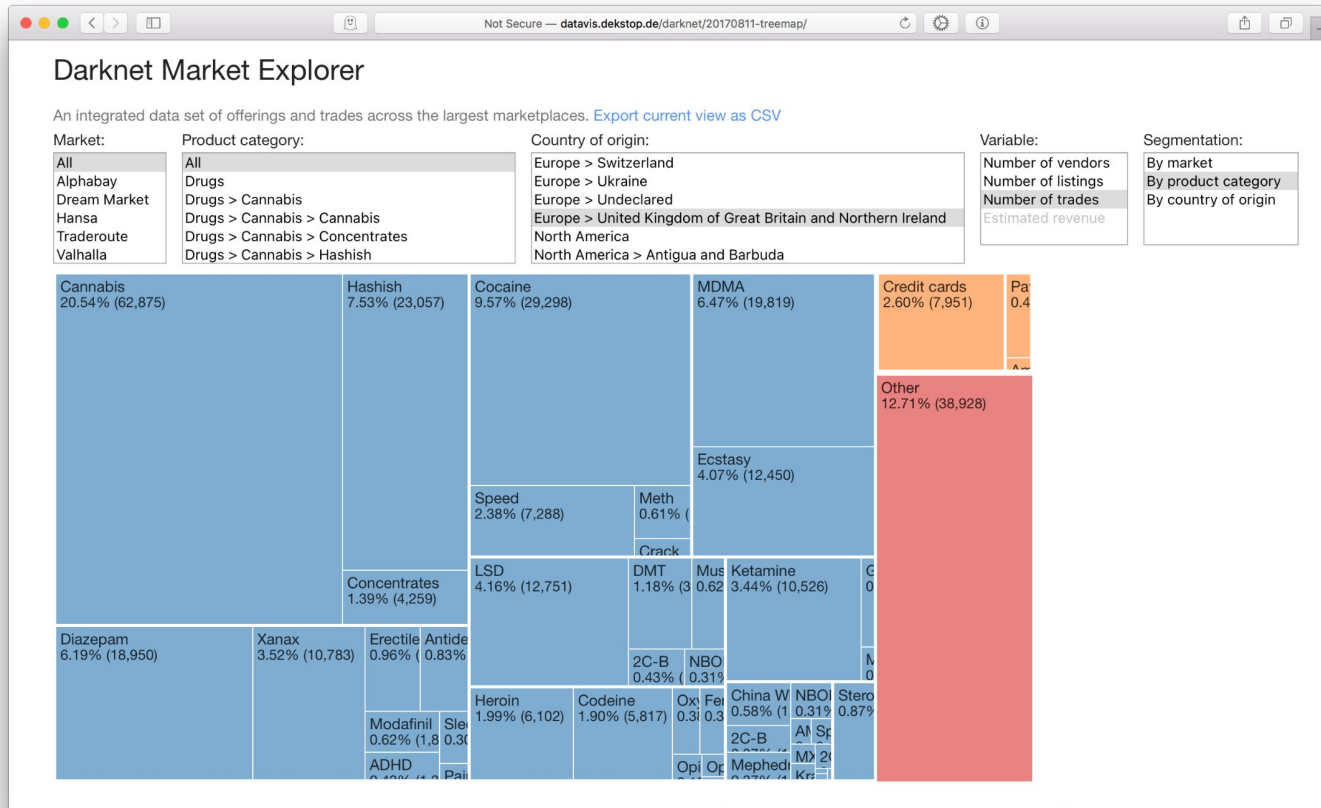
Shop by category:

Drugs(752)
Cannabis(280)
Ecstasy(35)
Dissociatives(11)
Psychedelics(84)
Opioids(62)
Stimulants(53)
Other(107)
Benzos(70)
Lab Supplies(6)
Digital goods(98)
Services(48)
Money(55)
Weaponry(15)
Home & Garden(14)
Food(4)
Electronics(5)
Books(49)
Drug
paraphernalia(28)
XXX(30)
Medical(3)
Computer
equipment(4)
Apparel(4)
Musical
instruments(2)
Tickets(1)
Forgeries(13)

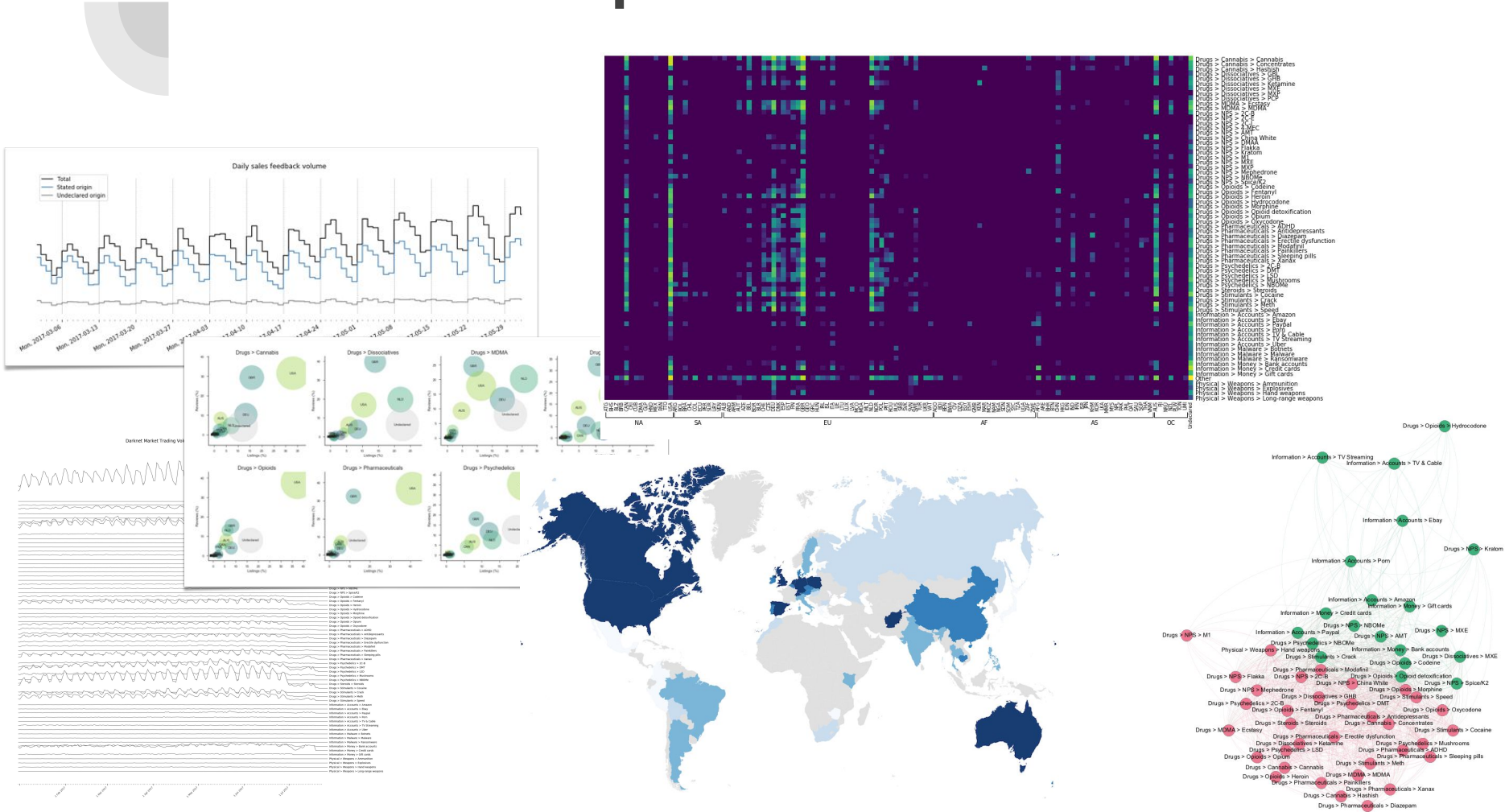
A first overview of the global trade



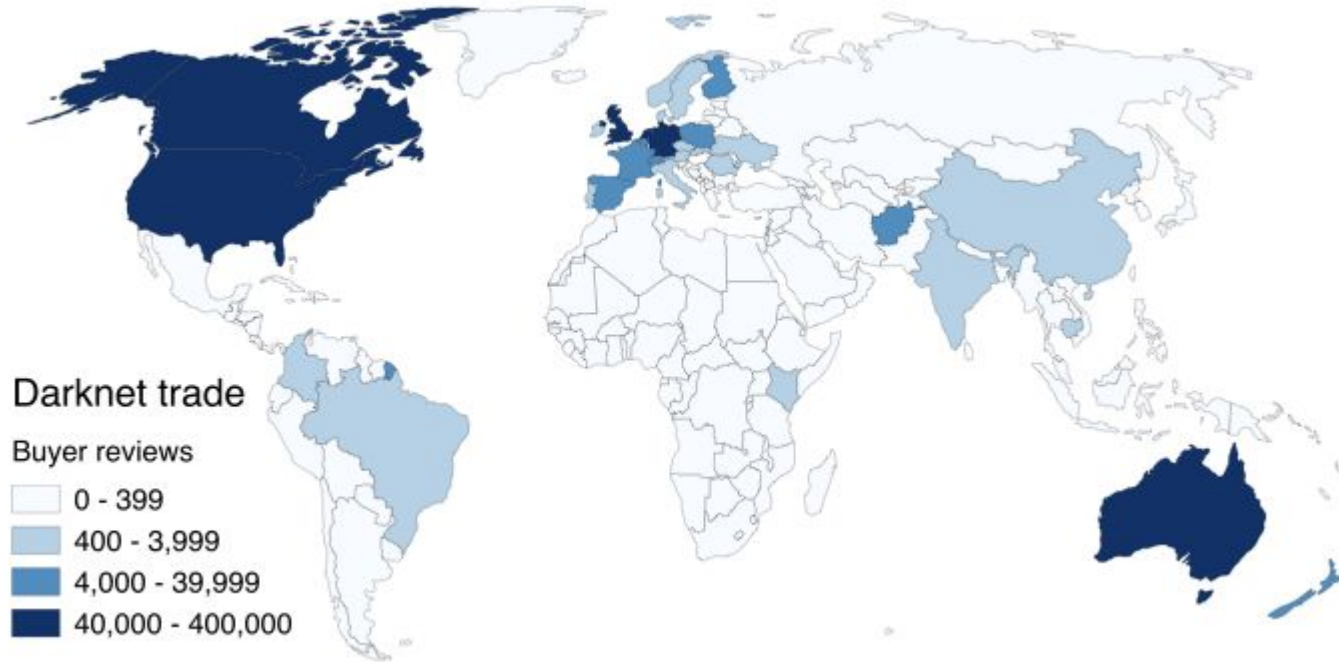
A first overview of the U.K. trade



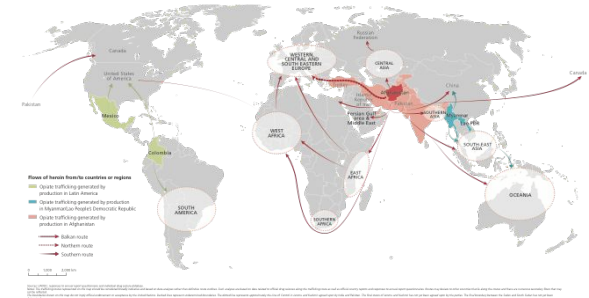
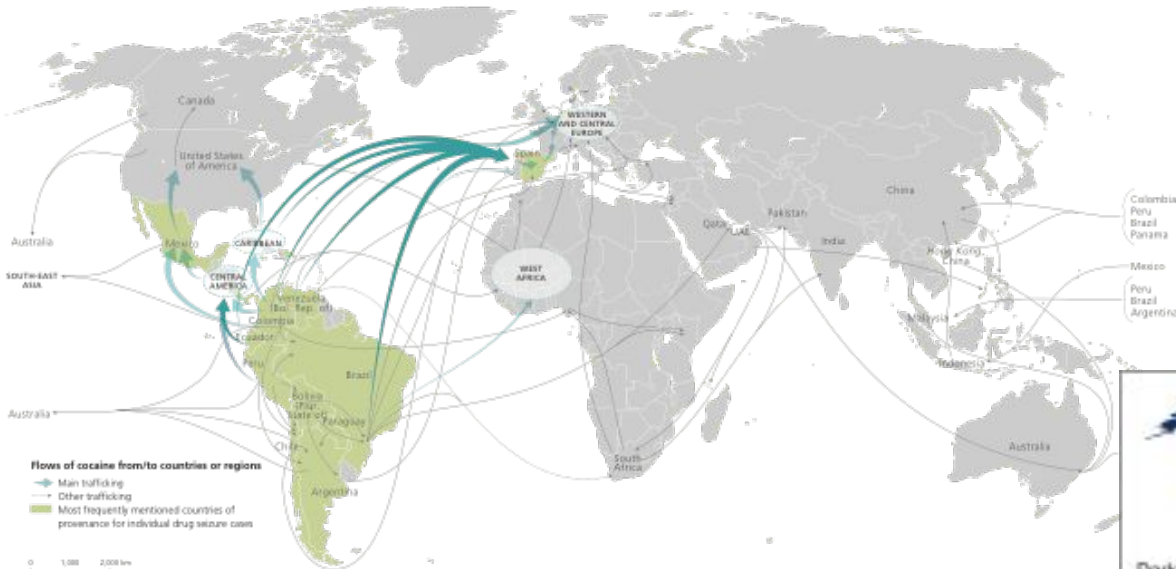
Initial data exploration



Vendor geography on darknet markets

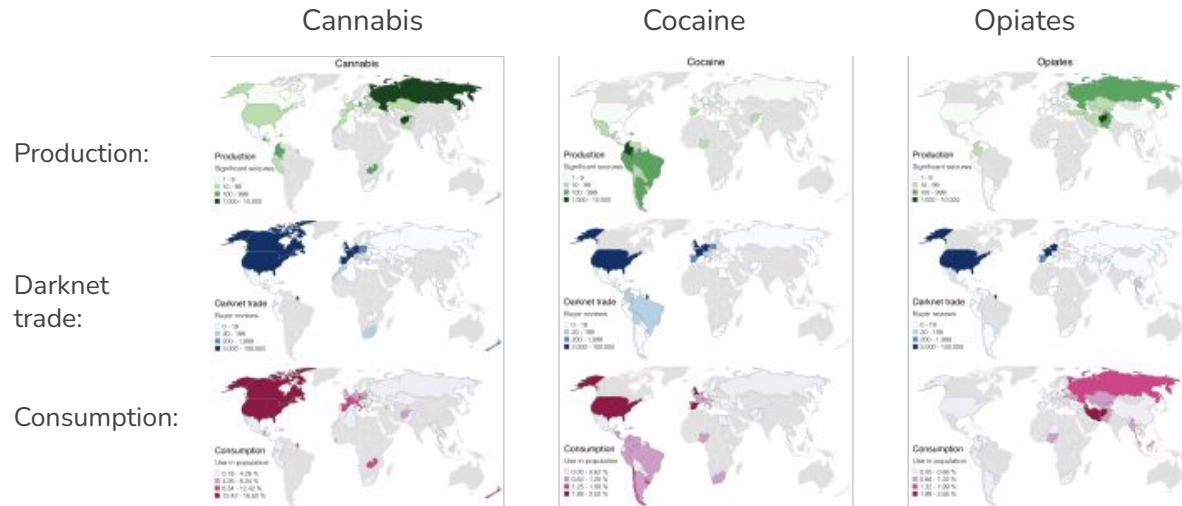


Vs. known production of cocaine, opium



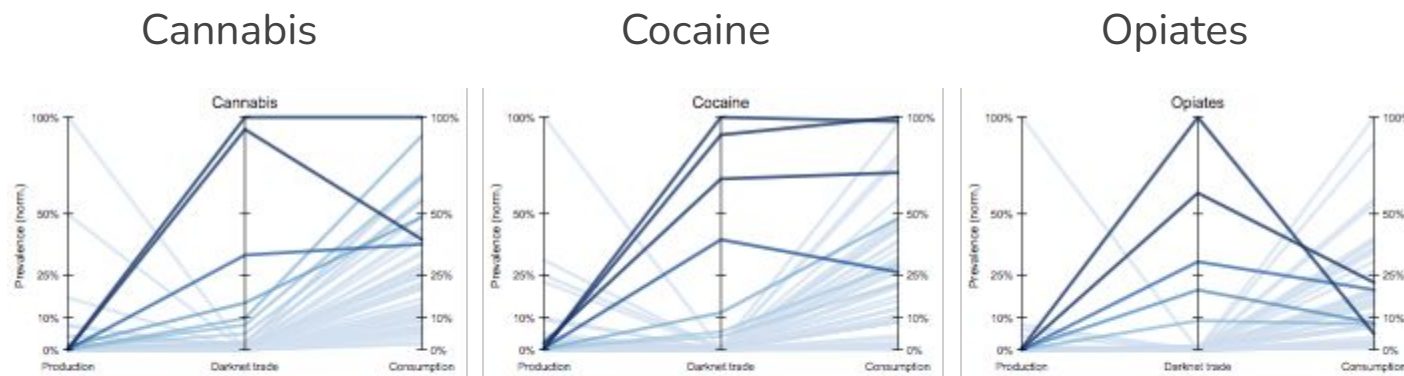
Paper: the 'last-mile' geography of darknet markets

Seized production, darknet trade, and population demand for three plant-based drug types:



Dittus, Wright, Graham (2018). *Platform Criminalism: The 'Last-Mile' Geography of the Darknet Market Supply Chain*. ACM WWW 2018. <https://arxiv.org/abs/1712.10068>

For cocaine and cannabis, darknet vendors are situated on the *demand side*



Aspect	Variable	Cannabis	Cocaine	Opiates
Production	<i>Seizures</i>	(-0.08)	(-0.11)	(0.02)
Consumption	<i>UseInPop</i>	0.38	0.48	(-0.08)
	<i>Intercept</i>	(-0.05)	(-0.07)	(0.06)

Table 2: Regression coefficients for three drug models to explain national trading volumes (*Trades*) based on national production (*Seizures*) and consumption (*UseInPop*) of each drug. Coefficients in bold are significant with $p < 0.001$, those in brackets are not significant.



Serving the 'last mile' of the global drug trade...

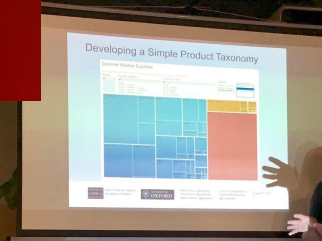
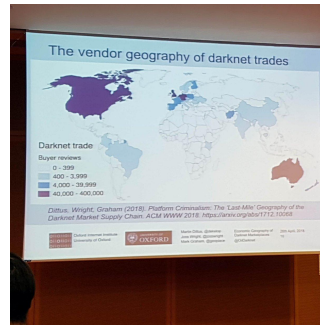
The common prior assumption was that online trading platforms will disintermediate existing distribution channels, cutting out the middleman.

Yet, darknet markets don't appear to replace existing drug traffickers. **Vendors likely rely on existing trafficking channels for supply, and then use darknet markets for regional retail distribution.**

In other words, **these are not fully globalised markets!**

This may in part be a risk management strategy: all shipment happens by mail, and international delivery is risky.

Public outreach: blog posts, social media, media interviews, public speaking



A downloadable data set

ORA
OXFORD UNIVERSITY
RESEARCH ARCHIVE

UNIVERSITY OF
OXFORD

NEW SEARCH DEPOSIT HELP

Back to Search

ACTIONS Dataset Darknet market trade of three plant-based drug types Export

ACCESS DOCUMENT

AUTHORS/CREATORS Actions Email Cite Tweet Print

FUNDING

BIBLIOGRAPHIC DETAILS

ITEM DESCRIPTION

RELATED ITEMS

TERMS OF USE

STATS

Access Document

Files: info.txt (plain, 1.7KB)
OIIDarknet_Opiates_201... (comma-separated-values, 3.8KB)
OIIDarknet_Cocaine_201... (comma-separated-values, 4.4KB)
OIIDarknet_Cannabis_20... (comma-separated-values, 5.2KB)

Authors/Creators

Martin Dittus More by this author/creator
Joss Wright More by this author/creator
Mark Graham More by this author/creator

Funding

Bibliographic Details

Item Description

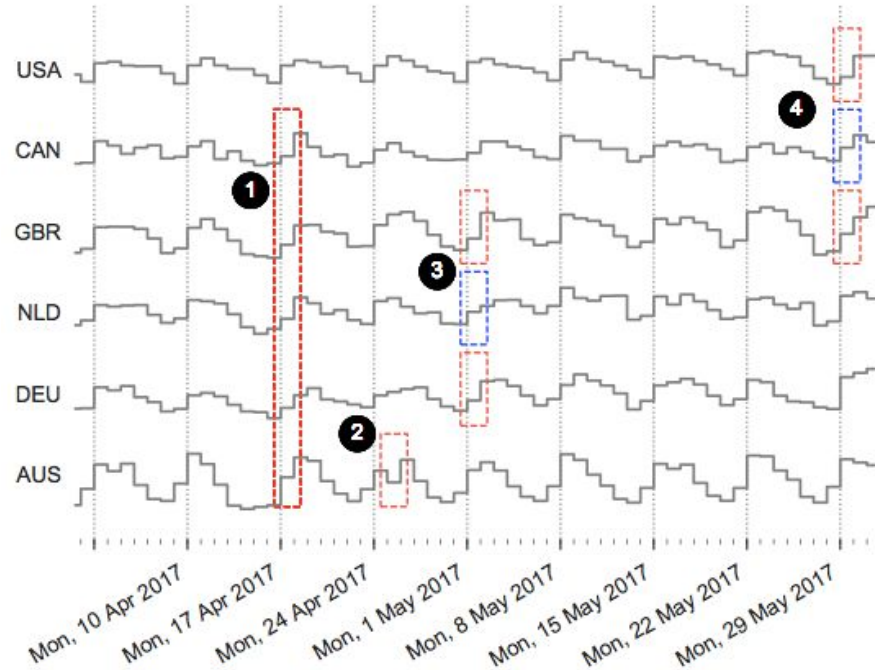
Format: Digital

Documentation: This data release provides country-level data about the global production, darknet trade, and consumption of three plant-based drugs: cannabis, cocaine, and opiates. We provide one CSV file per drug type. Each file contains the following columns: ISO3 - an ISO 3166 country code (the primary key for this record) Vendors - number of darknet vendors of this drug type in this country Items - number of darknet listings of this drug type in this country Reviews - number of darknet buyer reviews... Expand documentation

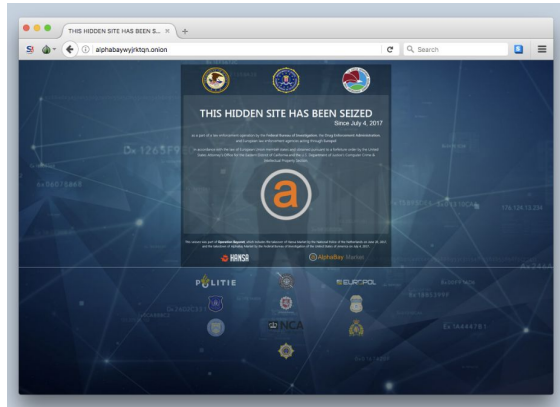
Dittus, M., Wright, J., & Graham, M. (2018). Darknet market trade of three plant-based drug types. University of Oxford. <https://ora.ox.ac.uk/objects/uuid:84f77672-4593-4aa7-8dec-b1d890aedf54>



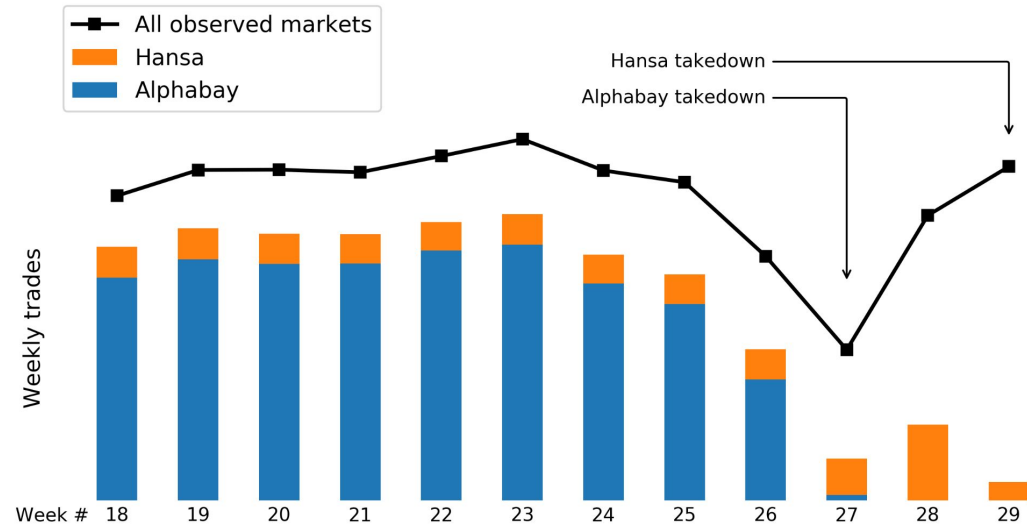
Further investigations: trading slumps during *public holidays*



Further investigations: a distributed resilience after police takedowns



Trading volume on darknet markets



Estimated from buyer reviews. Data collected in July 2017.
By Martin Dittus, Joss Wright, Mark Graham · @OiiDarknet · Oxford Internet Institute



Aside: a custom captcha solver using image analysis and OCR...

DDOS Protection

Please solve the following challenge:

Challenge 1 + 0

Result

 (?)

Solve

Original:



Boundary box
detection:



Text isolation:



OCR:

Guess: W50, correct answer: kM5Q



Thank you!

"From zero to publication in 6 months..."

The Economic Geography of Darknet Marketplaces

Oxford Internet Institute

www.oii.ox.ac.uk/research/projects/economic-geog-darknet

@OiiDarknet

Dr. Martin Dittus

Dr. Joss Wright, Oxford Internet Institute

Prof. Mark Graham, Oxford Internet Institute