

Elsevier Editorial System(tm) for International Journal of Drug Policy  
Manuscript Draft

Manuscript Number:

Title: A response to Dolliver's "Evaluating drug trafficking on the Tor Network: Silk Road 2, the sequel"

Article Type: Response

Corresponding Author: Ms. Judith Aldridge,

Corresponding Author's Institution:

First Author: Judith Aldridge

Order of Authors: Judith Aldridge; David Décary-Héту, PhD

**Title:** A response to Dolliver’s “Evaluating drug trafficking on the Tor Network: Silk Road 2, the sequel”

**Corresponding author:**

Judith Aldridge<sup>a</sup>

David Décary-Hétu<sup>b</sup>

<sup>a</sup>School of Law, University of Manchester, UK, [judith.aldridge@manchester.ac.uk](mailto:judith.aldridge@manchester.ac.uk)

<sup>b</sup>School of Criminology, University of Montreal, Canada, [david.decary-hetu@umontreal.ca](mailto:david.decary-hetu@umontreal.ca)

The leading aim of Dolliver's (2015) paper "Evaluating drug trafficking on the Tor Network: Silk Road 2, the sequel" is to document changes in the size and structure of cryptomarkets following the demise of SILK ROAD 1 (SR1) using data she collected from SILK ROAD 2 (SR2), which she casts as successor to its namesake.

There are undoubted strengths in Dolliver's study. She should be commended for the use of automated collection of 'digital traces' (Décary-Hétu & Aldridge, forthcoming). This methodology allows researchers access to full populations rather than to the more limited samples generated by self-disclosures of market participants (e.g. Caulkins, Gurga, & Little, 2009). We also applaud Dolliver for having thoroughly cleaned and recoded her data. Although this is standard good practice, the 'big data' generated from Internet-derived data can make doing so exceptionally resource intensive. As we've discovered, the categories into which cyprotmarket vendors place their products for sale do not always correspond to their own product descriptions. The analysis we produced for a working paper on SR1 (Aldridge & Décary-Hétu, 2014), without recoding, resulted in occasional erroneous estimation of the revenue generated by different drug types, which we identified only after cleaning and recoding the nearly 12,000 listing dataset. These strengths aside, we identify two main problems with the paper.

First, we see the utility of making comparisons between SR1 and SR2 as potentially misleading. SR2 was not 'the' replacement market for SR1 but rather a market that capitalized on the original SILK ROAD branding while other marketplaces were simultaneously vying for dominance. SHEEP, for example, quickly grew to a size comparable to that of SR1, but was shut a few weeks later (Robertson, 2013).

Throughout 2014, over 40 marketplaces (Branwen, 2015a) like PANDORA, AGORA and EVOLUTION grew and competed to win the trust of vendors and buyers, with most eventually shutting down. The more appropriate comparison, therefore, would be between SR1 and the range of new markets that proliferated since its closure. Dolliver (p.4) states that EVOLUTION and AGORA were “arguably the market leaders at the time of this study”, perhaps implicitly acknowledging that the comparison between SR1 and SR2 is an arbitrary one. Comparing the SR2 marketplace to SR1 may be especially problematic, however, considering the hack of SR2 in February 2014 that resulted in substantial losses to marketplace participants, alongside persistent rumours that the site was a law enforcement sting operation. Even if it were appropriate to select one market to make the comparison to SR1, therefore, SR2 would be the less-than-ideal choice.

Second, Dolliver’s findings demonstrated such radical *discontinuity* between SR1 and SR2 that questions should be raised regarding data collection methods. Dolliver’s crawl produced 1,834 listings, only 348 of which were for drugs. This led her to conclude that SR2 was a smaller and not primarily drug-oriented marketplace, compared to SR1 (see Aldridge & Décary-Héту, 2014; Christin, 2013). Other researchers who conducted of drug listings on SR2 netted numbers closer to SR1: nearly 20 times Dolliver’s number in our case (6,411 listings of drugs, July 2014) and over 3,200 drug listings on any given week in September 2014 – the same month of Dolliver’s data collection - in Branwen’s (2015b). A further radical discontinuity between Dolliver’s results and published SR1 findings relates to the frequency of types of drugs listed for sale. Dolliver found the most common on SR2 to be

stimulants and hallucinogens, in marked contrast to SR1, which primarily listed cannabis and prescription drugs for sale (Aldridge & Décary-Hétu, 2014).

The level of discontinuity Dolliver found between the SR1 and SR2 marketplaces might have given her pause to consider whether these findings resulted from a problem with her crawler; for example, not indexing all the listings. This discontinuity should have been a signal to re-crawl SR2 and/or carry out manual validation checks. Instead, Dolliver acknowledged that her listings were vastly fewer than the number totals displayed on the SR2 site itself, but concluded that marketplace administrators “grossly inflated” listing numbers, perhaps in an attempt to demonstrate popularity and reassure customers. In light of Dolliver’s characterization of SR2 as having changed so radically from SR1, one would expect to see compelling evidence of validity checks having been carried out before resorting to this kind of bold explanation.

The preliminary data we report here suggests substantial continuity between SR1 and SR2. Though these data were not publicly available at the time of Dolliver’s writing, our contention is that her sample size and findings should nevertheless have encouraged her to undertake more rigorous validity checks.

### **References:**

Aldridge, J., & Décary-Hétu, D. (2014). Not an ‘Ebay for Drugs’: The Cryptomarket “Silk Road” as a Paradigm Shifting Criminal Innovation. *Available at SSRN: <http://ssrn.com/abstract=2436643>.*

- Branwen, G. Black-market risks. Retrieved 20 May 2015 from <http://www.gwern.net/Black-market%20survival>.
- Branwen, G. Silk Road 2 scrape torrent released. Retrieved 20 May 2015 from [https://www.reddit.com/r/SilkRoad/comments/36jmp2/silk\\_road\\_2\\_scrape\\_torrent\\_released/](https://www.reddit.com/r/SilkRoad/comments/36jmp2/silk_road_2_scrape_torrent_released/).
- Caulkins, J. P., Gurga, B., & Little, C. (2009). Economic analysis of drug transaction ‘cycles’ described by incarcerated UK drug dealers. *Global Crime, 10*, 94-112.
- Christin, N. (2013). Traveling the Silk Road: A measurement analysis of a large anonymous online marketplace. In *Proceedings of the 22nd International Conference on World Wide Web* (pp. 213-224): International World Wide Web Conferences Steering Committee.
- Décary-Héту, D., & Aldridge, J. (forthcoming). Sifting Through The Net: Monitoring Of Online Offenders By Researchers. *European Review of Organised Crime*.
- Dolliver, D. S. (2015). Evaluating Drug Trafficking on the Tor Network: Silk Road 2, the Sequel. *International Journal of Drug Policy*, doi:10.1016/j.drugpo.2015.1001.1008.
- Robertson, A. Online Black Market Members Hunt Down \$100 Million in Bitcoins, Blame Site Owners for Theft. Retrieved 20 May 2015 from <http://www.theverge.com/2013/12/2/5167670/sheep-marketplace-bitcoin-heist-nets-at-least-5-million-owners-blamed>.