

Does one ad a day keep cybercrime at bay?



Asier Moneva



E. Rutger Leukfeldt



Wouter Klijnsoon

Contents

- Intro
- Definitions
- What is our research about?
- Some preliminary results
- What have we learned and what are the next steps?

(Distributed) Denial of Service attacks: DDoS

- Aim at congesting online services with massive amounts of Internet traffic, so that they become unavailable to their legitimate users

Remote Access Tools/Trojans: RAT

- Aim at remotely control a target computer by opening a backdoor to enable cybercrime (e.g. hacking, extortion)

- Entry-level cybercrimes
- Cybercrime-as-a-Service

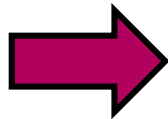
Google Ads/Adwords (online ads) campaign

LANDING PAGES

GOOGLE



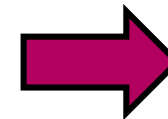
Browse



ADS

<p>Een DDoS-aanval is strafbaar Gamechangers Ad publicaties.politie.nl/DDoS/attack Het plegen van een DDoS is strafbaar in Nederland onder het Wetboek van Strafrecht.</p>
<p>DDoS verpest het voor iedereen Gamechangers Ad publicaties.politie.nl/DDoS/attack Dus je wilt dat je vrienden niet meer kunnen gamen omdat jij een grapje uithaalt?</p>
<p>Wil je een game DDoS-en? Gamechangers Ad publicaties.politie.nl/DDoS/attack Leer meer over DDoS-aanvallen en de impact hiervan op gamen.</p>
<p>Play fair; verliezers DDoS-en Gamechangers Ad publicaties.politie.nl/DDoS/attack Win eerlijk in een e-sport competitie door je gaming skills te trainen.</p>

Click!



Formal	Informal

Background



2018/2019
Google Adwords campaign

← Might work!



← Wanna join?



→ Interesting!



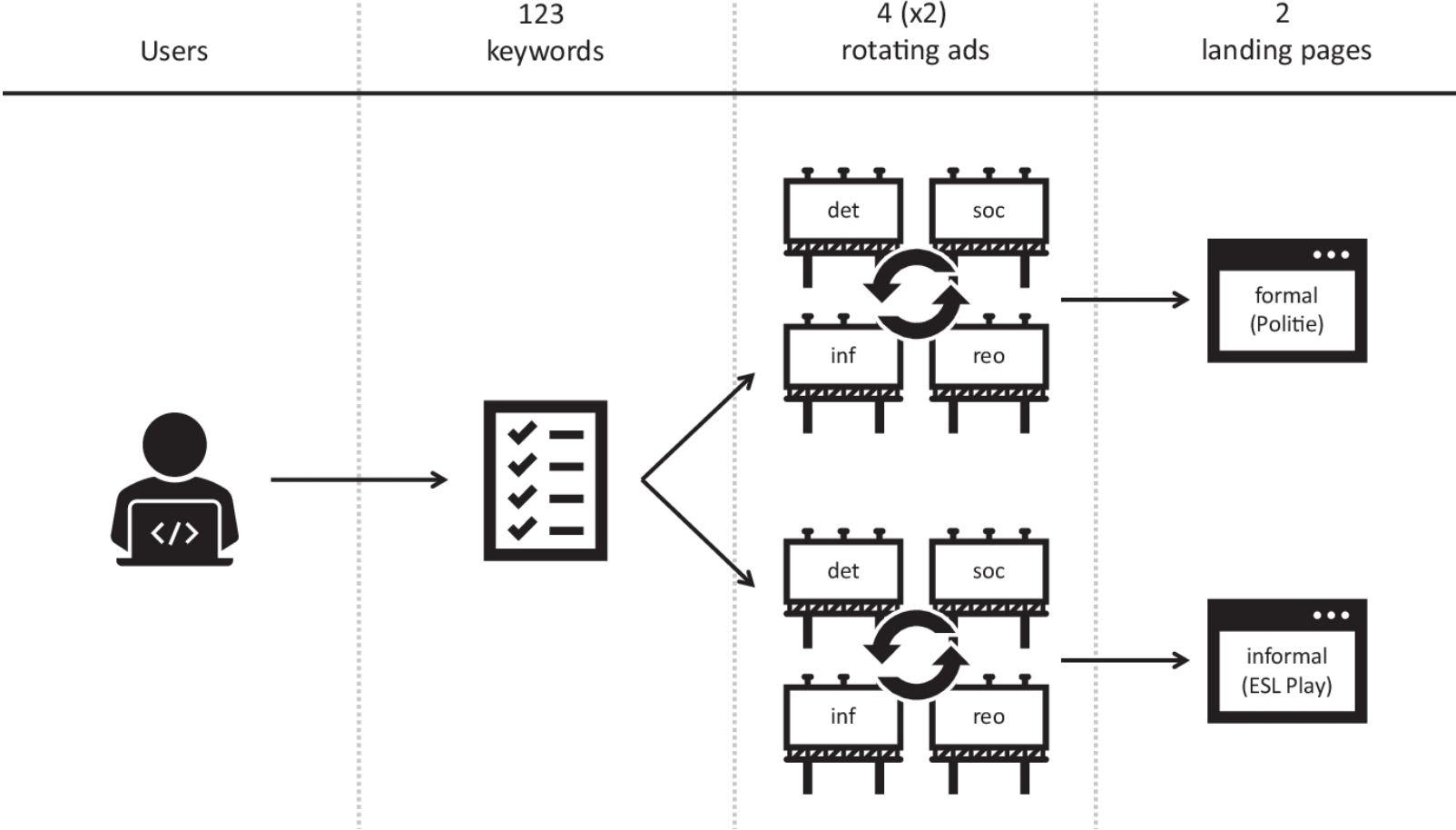
The Google Ads Project

1. What is the best communication strategy in the NL?

2. International expansion

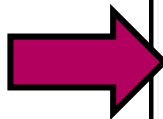
3. Does this strategy work?

A quasi-experimental design



What is the best way of alerting conscience?

- Social messages may be a better alternative than deterrent ones to engage with cyber offenders



Een DDoS-aanval is strafbaar | Gamechangers
[Ad](#) publicaties.politie.nl/DDoS/attack
Het plegen van een DDoS is strafbaar in Nederland onder het Wetboek van Strafrecht.

DDoS verpest het voor iedereen | Gamechangers
[Ad](#) publicaties.politie.nl/DDoS/attack
Dus je wilt dat je vrienden niet meer kunnen gamen omdat jij een grapje uithaalt?

Wil je een game DDoS-en? | Gamechangers
[Ad](#) publicaties.politie.nl/DDoS/attack
Leer meer over DDoS-aanvallen en de impact hiervan op gamen.

Play fair; verliezers DDoS-en | Gamechangers
[Ad](#) publicaties.politie.nl/DDoS/attack
Win eerlijk in een e-sport competitie door je gaming skills te trainen.

Journal of Experimental Criminology
https://doi.org/10.1007/s11292-022-09504-2

Alerting consciences to reduce cybercrime: a quasi-experimental design using warning banners

Asier Moneva^{1,2} · E. Rutger Leukfeldt^{1,2} · Wouter Klijnssoon³

Accepted: 2 March 2022
© The Author(s), under exclusive licence to Springer Nature B.V. 2022

Abstract
Objective Aiming to reduce distributed denial-of-service (DDoS) attacks by alerting the consciences of Internet users, this paper evaluates the effectiveness of four warning banners displayed as online ads (deterrent—control, social, informative, and social) and the contents of their two linked landing pages. We implement a 4 × 2 quasi-experimental design on a self-selected sample of users to measure the engagement generated by the ads and the pages. Engagement is measured on the ads as the ratio of clicks to impressions and on the landing pages as the percentage of page scrolled, average session duration, video interaction rate, and the landing page click rate. Social ads generate significantly more engagement than the rest with low to medium effect sizes. Data reveal no differences in engagement between both landing pages. Social messages may be a better alternative for engaging with potential offenders than the traditional deterrent messages.

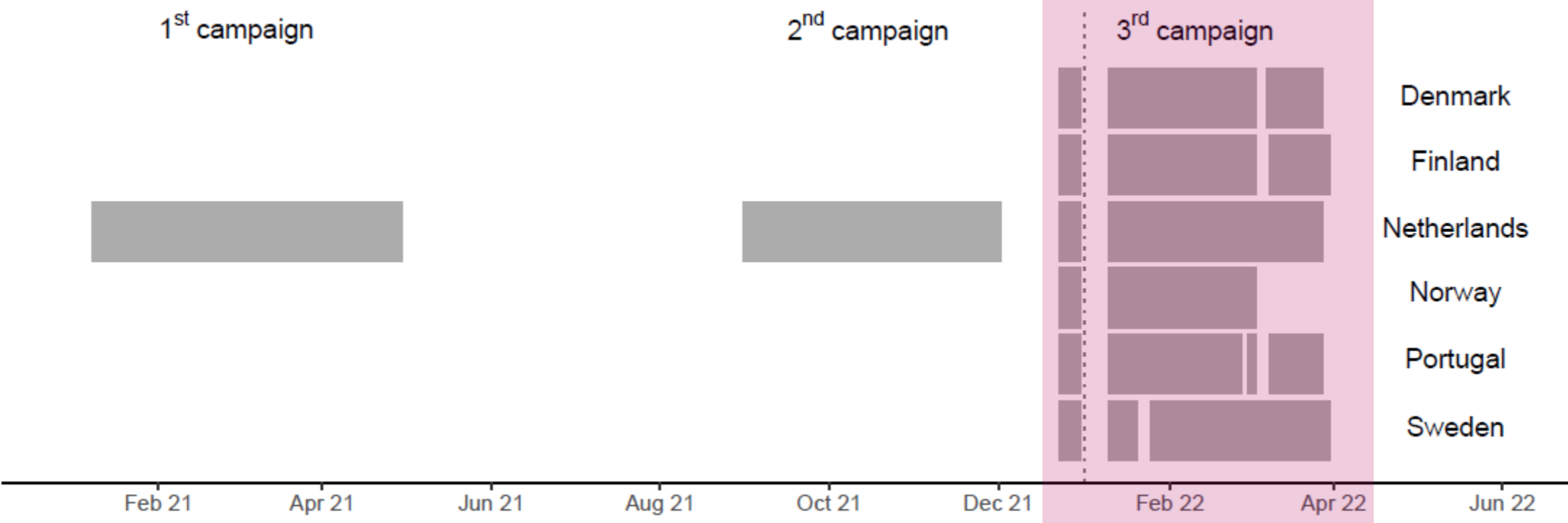
Cybercrime · DDoS · Situational crime prevention · Warning banners · Quasi-experiment · Factorial design

Moneva
@nscr.nl
Leukfeldt
@nscr.nl
klijnssoon
w.klijnssoon@politie.nl

Institute for the Study of Crime and Law Enforcement (NSCR), De Boelelaan 1077, Amsterdam, The Netherlands
Expertise Cyber Security, The Hague University of Applied Sciences (THUAS), The Netherlands
Tech Crime (THTC), Dutch National Police, Driebergen, The Netherlands

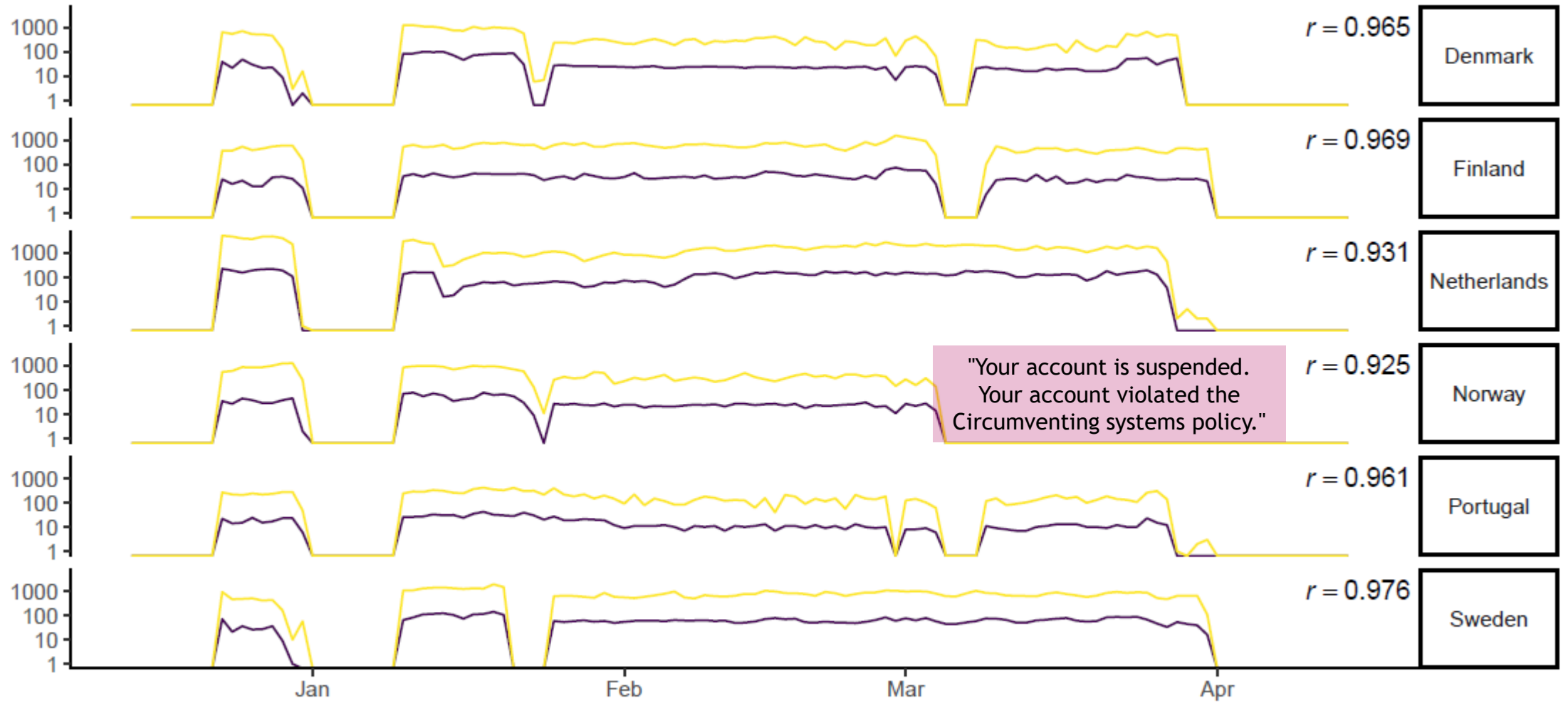
March 2022 Springer

Three online ads campaigns to reduce cybercrime



3rd campaign

Logged interaction (log10)



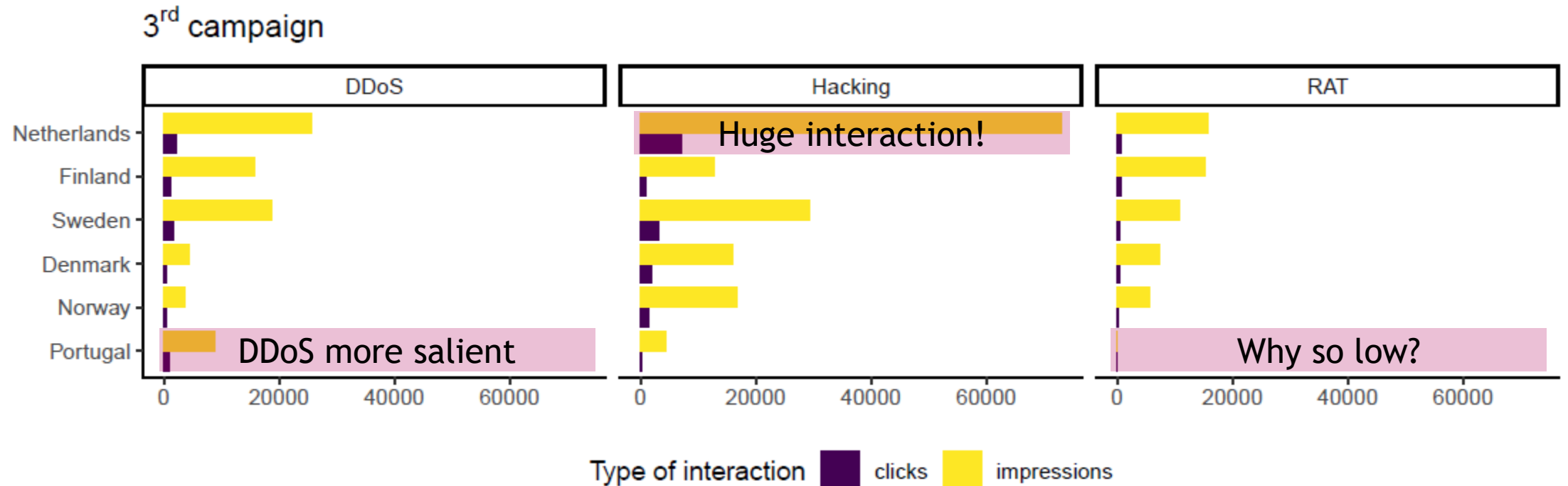
Type of interaction — clicks — impressions

So... what's new?

- New crime types
- Cross-national

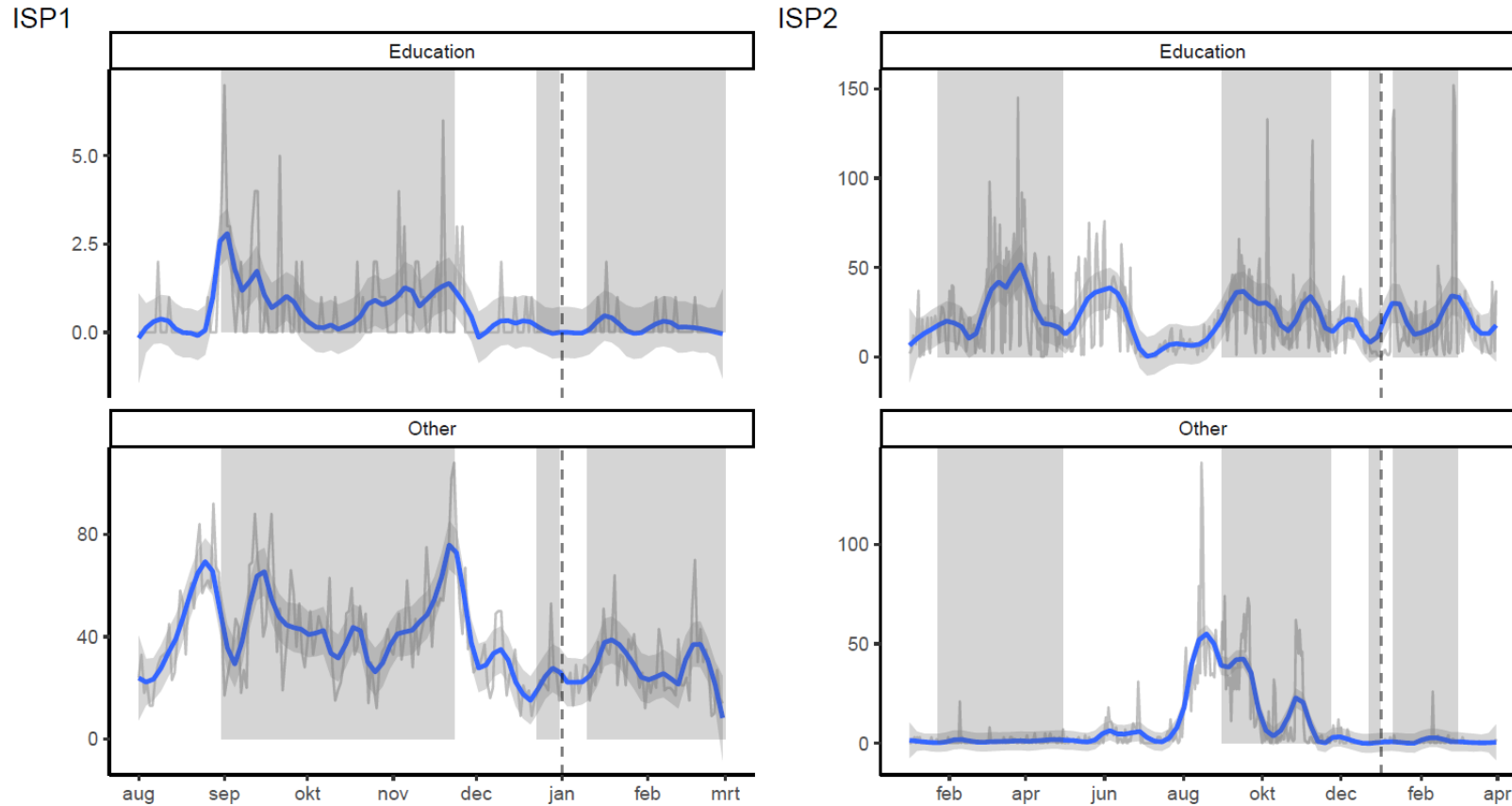
Crime	Headline	Description
Denmark		
DDoS	DDoS ødelægger det for alle	Det er strafbart i Danmark at udføre et Ddos angreb
Hacking	Ulovlig hacking er indbrud	Du vil få en bøde, samfundstjeneste eller en fængselstraf
RAT	Brug af RAT tools er tyveri	Du vil få en plettet straffeattest. Det vil gøre det sværere at finde elevplads eller job
Finland		
DDoS	DDoS pilaa kaikkien ilon	Palvelunestohyökkäyksen tekeminen on Suomen lakien mukaan rangaistava teko
Hacking	Laiton hakkerointi on rikos	Laiton hakkerointi on Suomen lain mukaan rangaistavaa
RAT	RAT = kyberrikos = ei vitsi	Haittaohjelman käyttö on Suomen lain mukaan rangaistavaa
Netherlands		
DDoS	DDoS verpest het voor iedereen	DDoS-aanvallen veroorzaken ernstige schade aan organisaties, bedrijven en individuen
Hacking	Illegaal hacken is inbreken	Illegaal hacken kan ernstige schade toebrengen aan organisaties, bedrijven en individuen
RAT	Een RAT inzetten is inbraak	De politie pakt cybercriminaliteit aan. In welke vorm en waar dan ook.
Norway		
DDoS	ddos ødelegger for alle	DDoS-angrep er straffbart i Norge etter straffeloven, og kan medføre fengselsstraff
Hacking	Hacking er datainnbrudd	Ulovlig hacking (datainnbrudd) er straffbart i Norge, og kan medføre fengselsstraff
RAT	Bruk av RAT er et datainnbrudd	Politiet bekjemper alle former for datakriminalitet
Portugal		
DDoS	DDoS prejudica toda a gente	Ficas com um registo criminal e vai ser mais difícil conseguires um estágio ou um emprego.
Hacking	Hacking é ilegal	A Polícia investiga qualquer tipo de cibercrime sob qualquer forma
RAT	Instalar um RAT é como roubar	A Polícia investiga qualquer tipo de cibercrime sob qualquer forma!
Sweden		
DDoS	DDoS förstör för alla	DDoS-attacker är straffbara enligt svensk lag
Hacking	Olovlig hacking = dataintrång	Att hacka någon en enda gång kan göra att du hamnar i straffregistret
RAT	Använda en RAT = dataintrång	Så du vill hindra dina kompisar från att spela på grund av ditt "skämt"?

Interaction by ad group and country



Do online ads actually reduce DDoS (NL)?

DDoS attacks recorded by Internet Service Providers (ISP) by type of target institution:



Data from the
Cambridge
Cybercrime
Centre

Part of the data that led to this research was provided by SURF, the National Research and Education Network in The Netherlands, <https://www.SURF.nl/en/>

Lessons learned

Measuring cyber attacks is challenging

- We need high quality data from actual cybercriminals
- This requires infrastructure (e.g. honeypots, defense systems)

Proper evaluations require proper designs

- Correlation doesn't imply causation
- Effects may be nuanced

Evaluations are complex

- These require resources (e.g. time, infrastructure)
- Cybercrime is multifactorial and transnational

Future directions

Data collection infrastructures

- In the public and private sectors
- Transparent, co-designed

Methodological improvements

- From case studies to randomized control trials

Interdisciplinary, intersectoral research

- Social and computer scientists
- Academics and stakeholders

Intervention evaluation: what works (and also what doesn't)?



Questions?

Email: amoneva@nscr.nl

Twitter: [@crimoneva](https://twitter.com/crimoneva)