CYBER CRIME

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WHAT IS CYBERCRIME?

"*any criminal offence committed against or with the help of a computer network*" --Council of Europe

CYBERCRIME DEFINITION IS SWEDISH LAW

I svensk lagstiftning finns två definierade it-brott, **dataintrång** och **datorbedrägeri**. Båda riktar sig i första hand till register och system för automatisk behandling.

SOURCE: IT-RELATERADE BROTT | POLISMYNDIGHETEN (POLISEN.SE)

DATAINTRÅNG - HACKING

- 9464 Dataintrång genom överbelastningsattack
- 9465 Dataintrång med hjälp av skadlig kod i utpressningssyfte
- 9466 Dataintrång genom olovlig registerslagning
- 9467 Dataintrång i sociala medier eller e-tjänster
- 9468 Övrigt dataintrång

WHY CYBERCRIMES?

- Computers are used daily
- Private information
- Can cause physical, mental, or financial harm
- Spyware infects 80% of the personal computers (Kannan, 2017)
- Law and criminal justice lags behind
- Anyone can launch it from everywhere
    - Difficult to trace
- Feasible

WHY CYBERCRIMES?

- The costs of crime for the Swedish business community to approximately SEK 89.5 billion in 2022 (Svenskt Näringsliv, 2022).
- Global cost of cybercrimes (US$ 8.15 trillion) (Statista, 2023),
- Expected best case scenario spending in cybersecurity (US$ 223.8 billion) (Canalys, 2023)

WHO ARE THE TARGETS?

CYBER CRIMES TRENDS

- Cybercrime now accounts for more than 50% of all crimes in the UK (National Crime Agency)
- Malicious hackers are now attacking computers and networks at a rate of one attack every 39 seconds (University of Maryland)
- In 2022, organizations all around the world detected 493.33 million ransomware attempts (Statista, 2023)

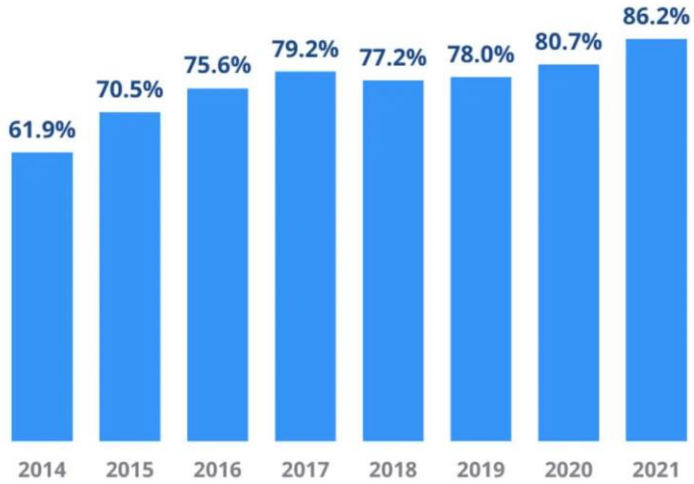


Figure 2: Percentage of organizations compromised by at least one successful attack.

SOURCES: 300+ TERRIFYING CYBERCRIME & CYBERSECURITY STATISTICS (2023) (COMPARITECH.COM) - NUMBER OF RANSOMWARE ATTEMPTS PER YEAR 2022 | STATISTA

CYBERCRIMES IN SWEDEN

IT-relaterade brott ökade mest

UPPDATERAD 25 OKTOBER 2019 PUBLICERAD 11 OKTOBER 2019

IT-relaterad brottslighet var den brottslighet som ökade mest under 2018 och undersökningar visar att kvinnor är sämre än män på att skydda sig på nätet.

it-finans

HEM | PARTNERZONE | FINANSRÖST | TEMA | PÅ STAN MED | STARTUP | FASTIGHET | FÖRS

SÄKERHET

Stor ökning av cyberbrott mot svenska bolag under 2018

REDAKTIONEN

2018-04-19 | CYBER SECURITY, CYBERBROTT, JAKOB BUNDGAARD, JOHAN WIKTORIN, PWC

2018 riskerat att bli ett mörkt år när det gäller cyberbrott.

7 av 10 bolag som ingår i en ny undersökning från PwC räknar med att fler cyberattacker kommer att drabba den egna organisationen under 2018. Nu vill bolagen se krafttag från politikerhåll och efterlyser bland annat större

DAGENS NYHETER. Nyheter | Ekonomi | Kultur | Sthlm | Gbg | Sport | Ledare | DN Debatt

Ekonomi

Ny rapport: Cyberbrott kostar snart 50.000 miljarder

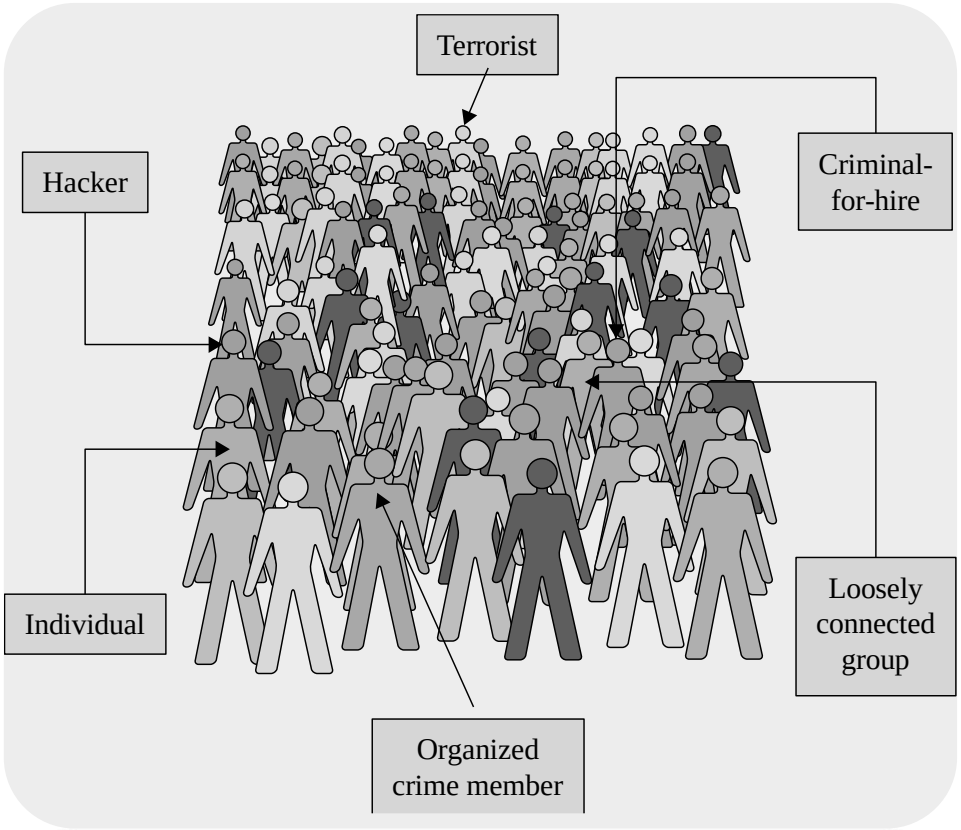
PUBLICERAD 2018-03-25

Näringsliv | Börs | Motor | Sök företag | Näringsliv debatt

SvD NÄRINGSLIV Nyheter | Näringsliv | Kultur | Ledare | Debatt | Tidningen

Nätbrott kostade svenskarna 32 miljarder 2017

WHO ARE THEY?


Terrorist
Hacker
Criminal-for-hire
Individual
Loosely connected group
Organized crime member

CYBERCRIMES

- Child pornography
- Cyber hate speech
- Cyber offenses against Intellectual Property
- Cyberbullying
- Cyberespionage
- Cyberextortion
- Cyberfraud
- Cybergrooming

SOURCE: SABILLON, R., CANO, J., CAVALLER REYES, V., & SERRA RUIZ, J. (2016). CYBERCRIME AND CYBERCRIMINALS: A COMPREHENSIVE STUDY. *INTERNATIONAL JOURNAL OF COMPUTER NETWORKS AND COMMUNICATIONS SECURITY, 2016, 4 (6).*

CYBERCRIMES

- Cyberheist
- Cybering
- Cyberlaundering
- Cyberstalking
- Cyberterrorism
- Cybertheft
- Cybervandalism
- Cyberwarfare
- Data breach

SOURCE: SABILLON, R., CANO, J., CAVALLER REYES, V., & SERRA RUIZ, J. (2016). CYBERCRIME AND CYBERCRIMINALS: A COMPREHENSIVE STUDY. *INTERNATIONAL JOURNAL OF COMPUTER NETWORKS AND COMMUNICATIONS SECURITY, 2016, 4 (6).*

CYBERCRIMES CONT.

- Disgruntled employees and former employees
- Hacking
- Identity theft
- Phishing
- Spear phishing
- Racism and Xenophobia cyber offenses
- Religion cyber offences
- Revenge porn
- Spam

SOURCE: SABILLON, R., CANO, J., CAVALLER REYES, V., & SERRA RUIZ, J. (2016). CYBERCRIME AND CYBERCRIMINALS: A COMPREHENSIVE STUDY. *INTERNATIONAL JOURNAL OF COMPUTER NETWORKS AND COMMUNICATIONS SECURITY, 2016, 4 (6).*

CYBERCRIMES CONT.

- Hacking
- Fake profile
- Black mailing
- Financial fraud
- Stolen devices
- Data theft
- ID theft
- Phishing
- Spear phishing

SOURCE: SABILLON, R., CANO, J., CAVALLER REYES, V., & SERRA RUIZ, J. (2016). CYBERCRIME AND CYBERCRIMINALS: A COMPREHENSIVE STUDY. *INTERNATIONAL JOURNAL OF COMPUTER NETWORKS AND COMMUNICATIONS SECURITY, 2016, 4 (6).*

CYBERCRIMES CONT.

- Cyber Pornography
- Cyber Stalking
- Marketing Strategy for Illegal Articles
- Intellectual Property Crimes
- Email Spoofing
- E-murder
- Political Crime
- Theft of Telecommunication Services
- Information Piracy and Forgery
- Money Laundering and Evasion

SOURCE: SABILLON, R., CANO, J., CAVALLER REYES, V., & SERRA RUIZ, J. (2016). CYBERCRIME AND CYBERCRIMINALS: A COMPREHENSIVE STUDY. *INTERNATIONAL JOURNAL OF COMPUTER NETWORKS AND COMMUNICATIONS SECURITY, 2016, 4 (6).*

CYBERCRIMES CONT.

- Cyber Terrorism
- Electronic Funds Transfer Fraud
- E-Mail/Logic Bombs
- Hate/Communal Crimes
- Altering Websites
- Spreading Computer Virus
- Cyber bulling
- Cyberwarfare
- Cybervandalism

SOURCE: SABILLON, R., CANO, J., CAVALLER REYES, V., & SERRA RUIZ, J. (2016). CYBERCRIME AND CYBERCRIMINALS: A COMPREHENSIVE STUDY. *INTERNATIONAL JOURNAL OF COMPUTER NETWORKS AND COMMUNICATIONS SECURITY, 2016, 4 (6).*

HOW DO THE CRIMINALS CONDUCT CYBERCRIMES?

Automated

Worm

Spyware

Virus

HOW DO THE CRIMINALS CONDUCT CYBERCRIMES?

Manual

© Knowbe4.com

EXAMPLES

- Clicking on fake/malicious website links in messages, emails or social media
- Writing login credentials after clicking on suspicious/unknown links
- Downloading and installing applications or programs from third parties
- Downloading a driver from an untrusted source
- Adding an extension to the web browser from an untrusted source
- Installing a fake anti-virus from a pop-up or a third party
- Visiting websites full of bloatware
- Following a malicious ad

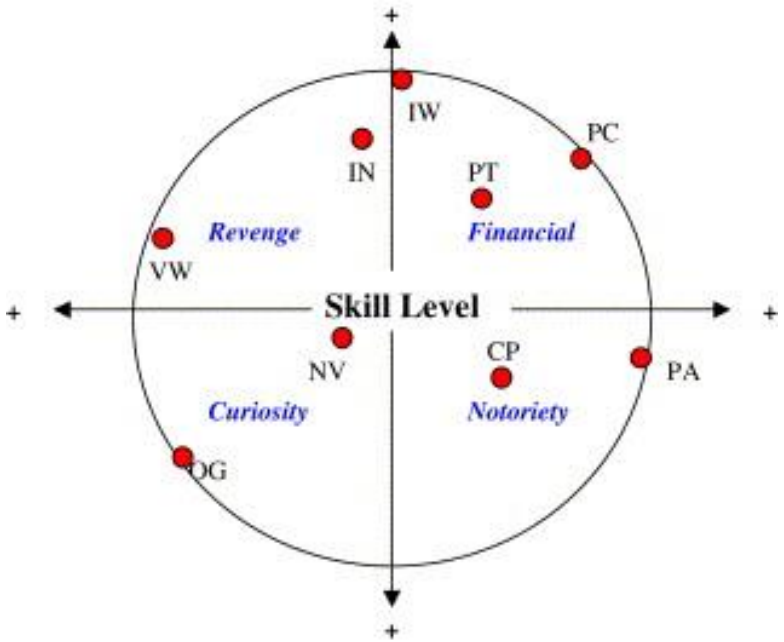
CYBERCRIME MOTIVATIONS

SOME RISK FACTORS

- Little empirical knowledge is available of offenders
- Extraversion as a significant variable for predicting criminal/deviant computer behavior (Rogers et al., 2006)
- On average, cybercriminals tend to be male, white, and young (Koops, B. J. 2010)
- Technical savvy, have a disregard for the law or a feeling of being above or beyond the law, have an active fantasy life, be a control freak or risk-taking, and have strong–if differing–motivations (Cross, 2008)
- Many personal and socio-economic characteristics are the same among online and offline criminals (Leukfeldt, 2010)
- Computer addiction (possibly in the form of Internet Addiction Disorder or Pathological Computer Use) is a risk factor for *insider* cybercrime (Nykodymetal., 2008)

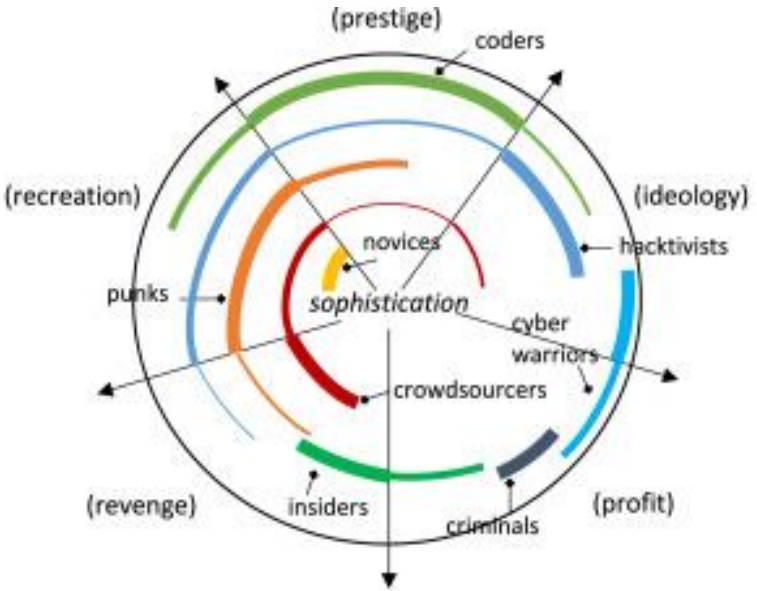
SOURCES FOUND IN: KOOPS, BERT-JAAP, THE INTERNET AND ITS OPPORTUNITIES FOR CYBERCRIME (DECEMBER 1, 2010). TRANSNATIONAL CRIMINOLOGY MANUAL

HACKER CIRCUMPLEX



SOURCE: ROGERS, M. K. (2006). A TWO-DIMENSIONAL CIRCUMPLEX APPROACH TO THE DEVELOPMENT OF A HACKER TAXONOMY. *DIGITAL INVESTIGATION*, *3*(2), 97-102.

ARC CIRCUMPLEX MODEL



Notes: Thick arc segments indicate primary motivations; correspondingly thinner arc segments indicate secondary, tertiary, or quaternary motivations; notes from Figure 1 still apply.

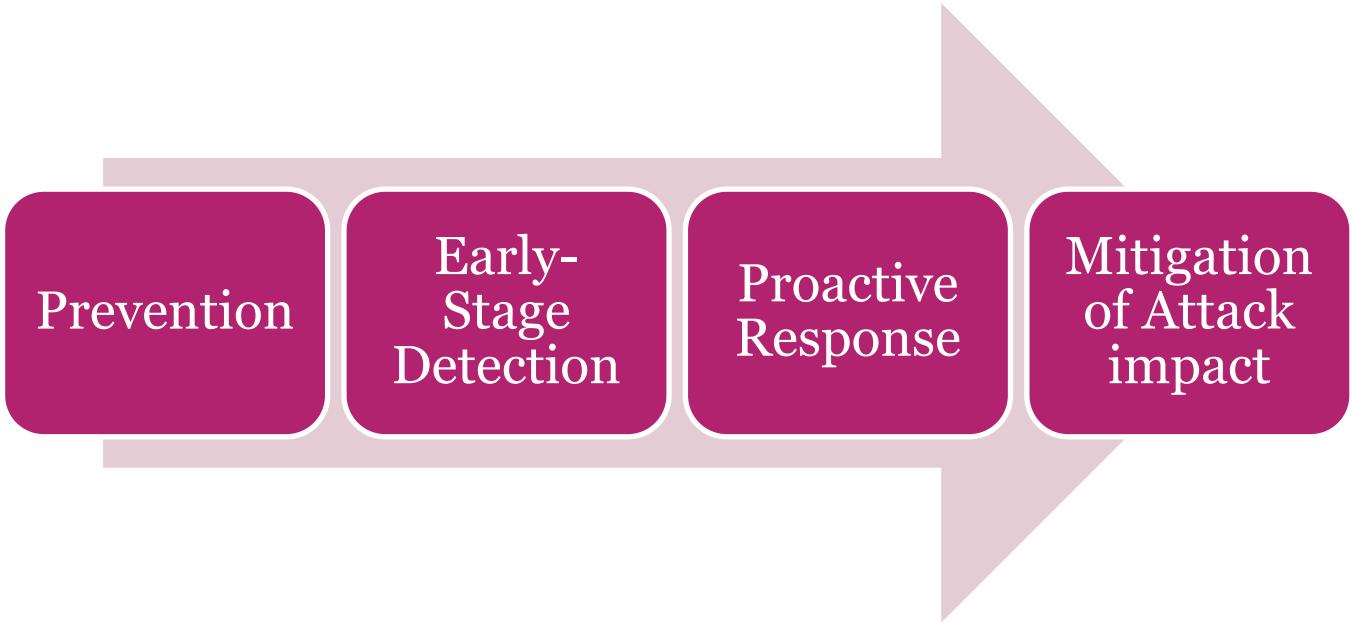
SEEBRUCK, R. (2015). A TYPOLOGY OF HACKERS: CLASSIFYING CYBER MALFEASANCE USING A WEIGHTED ARC CIRCUMPLEX MODEL. *DIGITAL INVESTIGATION*, *14*, 36-45.

EVOLUTIONARY WAVES OF HACKING UNDERGROUND

Wave	Time period	Main driver	Historical events
First	1955-1979	The counterculture	First PDP-1 hack Homebrew Computer Club Captain Crunch The personal computer
Second	1979-2000	Democratization of technology	Cheap hardware Bulletin Board Systems World Wide Web Hacker crackdowns Network security industry FLOSS
Third	2000-	Political activism, cyber warfare, and digital crime	Wikileaks and hacktivism Hacking for profit The dark web Cyber warfare

CRITICAL INFRASTRUCTURE

IDEAL SOLUTION



COMPUTER AIDED CRIME PREVENTION – FUTURE RESEARCH

- Proactive dimensions needs to be developed
- Prediction and intervention in real time
- Citizens' perception of security needs to be improved – new end user tools

FUTURE OF CYBERCRIMES

- Research focusing on people in addition to the technology
- Current models need to be matured and validated
- A need to construct taxonomies and profiles for computer criminals
- “If you know the enemy and you know yourself, you need not fear the result of a hundred battles (Sun Tzu, *The Art of War,* pp. 18).”
- Research in a variety of fields such as sociology, psychology, and criminology is needed to continually refine hacker typologies (Seebruk, 2015)

OUR VR PROJECT

- Cybercrime: a longitudinal register-based study on demographic, socio-economic and technological determinants
- 3 years – 2023-2025
- 4,8 Msek
- Umeå universitet
  - Department of Social Work
  - Police Research
- Högskolan i Skövde
  - PICS
- Högskolan i Gävle
  - Department of Criminology

PURPOSE AND AIMS

1. Identify **demographic** and **socioeconomic** predictors of cybercrime *offenders* and *victims* in Sweden and analyse how the pattern of cybercrime predictors has changed over time.
2. Looking at cybercrimes from 2002-2022
3. Uncover technological specifications of cybercrimes

RESEARCH QUESTIONS

1. What characterises cybercrime offenders and victims in terms of demographic and socioeconomic status, and how has cybercrime predictors changed over the past two decades?
2. What is the demographic and socioeconomic composition of repeat victims and repeat offenders?
3. What are the technological specifications of the cyber- and information security threats that lead to cybercrimes?
4. How can the strategies that are designed to reduce cyber security threats be refined to account for victims' vulnerabilities?

YEAR 1 & 2

- Population of offenders (2000-2021)
- Data from administrative population registers from Statistics Sweden (SCB)
- Demographic and socioeconomic variables are age, gender, marital status, education, type of residential city, income, occupation and living arrangement (cohabit vs alone).

YEAR 1 & 2

- Criminal records, including type and number of crimes, will be extracted from The Swedish National Register of Persons Found Guilty of Offences (Lagföringsregistret)
- The Swedish National Register of Persons Suspected of Criminal Offenses (Misstankeregistret)
- Both stored by The Swedish National Council for Crime Prevention (Brottsförebyggande rådet, BRÅ)

YEAR 1 & 2

- Population of victims (2006-2021)
  - The Swedish Crime Survey (Nationella trygghetsundersökningen: NTU)
- A sample of 100 IT forensic protocols will be analysed
  - Technological determinants, methods, techniques, etc
  - Data from courts

YEAR 3

- Combining analysis
- Delphi study with experts
  - Panel from the Police authority, the Swedish Security Police, the Swedish Civil Contingencies Agency and international researchers
- Identify most relevant threats against Swedish society
- Propose strategies to tackle the issues

SO FAR

- Writing ethical approval Jan-April 2023
  - Approved June 2023
- Requesting data from different authorities Aug-December 2023
- Conducting SLR on cybercrimes research within Nordic countries Sep-Dec 2023

DISCUSSION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"I'm no expert, but I think it's some kind of cyber attack!"