

**Analysing [Cyber]crime:
Data, Methods, and Perspectives**

Wednesday 8h30 to 11h00

Thursday 11h15 to 12h00

Masarah Paquet-Clouston
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This course offers an exploration of statistical techniques and tools frequently used in criminology to analyse criminal data, with an emphasis on cybercrime. Participants will see how quantitative methods have been used to understand and dissect criminal trends, networks, and behaviors. They will also learn about the challenges of working with crime (and cybercrime) data, including ethical considerations, data limitations, and crime as a socially constructed concept.

Throughout the course, students will:

- Understand and apply quantitative methods in criminology
- Work with cybercrime datasets
- Develop critical analytical skills

The course is designed for computer science students who wish to dip a toe in a social science topic. Students need to be ready to read articles, write a term paper and reflection notes. It is assumed that students know how to conduct basic data analyses with R and/or Python.

Pedagogical method: The course will be delivered **in person** and supporting documents will be made available online prior to the class. Attendance is essential for successfully completing the course, **as it will not be recorded**. If someone cannot attend a class, their peers can share their notes.

Course Outline*

**Courses are subject to changes at the discretion of the professor. The final course outline will be presented during course 1.*

Course 1.1 (May 7, 2025) – Introduction to analysing crime: basic principles, data sources and challenges

- The quantitative approach: inductive, deductive and abductive approaches
- The limits of crime data and crime as a socially constructed concept
- Case and dataset examples

Course 1.2 (May 8, 2025) – In-class exercise or in-class discussion: to be determined

Course 2.1 (May 14, 2025) – **The Online Shift: The Rise of cybercrime**

- The rise of technology and its effect on crime
- Data sources : strengths and weaknesses
- Useful data analysis techniques

Course 2.2 (May 15, 2025) – In-class exercise or in-class discussion: to be determined

Course 3.1 (May 21, 2025) – **Exploratory data analysis (EDA) and data visualisation**

- Foundations and principles of EDA
- Common techniques in criminology (factorial analysis, principal component analysis)
- New, rising techniques for EDA to understand cybercrime
- Case examples

Course 3.2 (May 22, 2025) – In-class exercise or in-class discussion: to be determined

Course 4.1 (May 28, 2025) – **Illicit network analysis and sociological perspective on crime**

- Overview of Illicit network field
- Key concepts and measures in illicit network analysis
- Case examples with cybercrime

Course 4.2 (May 29, 2025) – Public Holiday

Course 5.1 (June 4, 2025) – **Cryptocurrencies and crime**

- Overview of cryptocurrencies as crime facilitators
- Data analytics with cryptocurrencies

Course 5.2 (June 5, 2025) – In-class exercise or in-class discussion: to be determined

Course 6.1 (June 11, 2025) – **Labeling and making sense of qualitative data**

- Traditional methods: content analysis, thematic analysis
- Using AI to code (cyber) content: strength and weaknesses
- Case examples

Course 6.2 (June 12, 2025) – In-class exercise or in-class discussion: to be determined

Course 7.1 (June 18, 2025) – **Ethical Challenges when using crime data**

- Legal and ethical issues in analysing crime (and cybercrime) data
- Case examples
- Balancing security and privacy

Course 7.2 (June 19, 2025) – Public Holiday

Course 8.1 (June 25, 2025) – Presentations

Course 8.2 (June 26, 2025) – Presentations

Course Evaluation

1. Reflection notes (30%)

Students will have mandatory reading assignments. They need to pick any reading assignment and write a reflection note on the reading (max 2 pages), based on the material presented in the course.

2. Written Project (40%)

Students have to use and/or find a crime dataset and conduct a data analysis with it. They must follow the guideline that will be presented in class (about 15 written pages).

3. Oral presentation (10%)

Oral presentations will take place the last class of the semester. The format (videos or in-person) will be determined based on the number of registered students.

4. In-class participation (20%)

Course presence and active participation is necessary.

References

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Stockemer, D. (2019). *Quantitative Methods for the Social Sciences: A Practical Introduction with Examples in SPSS and Stata*. Springer International Publishing. <https://doi.org/10.1007/978-3-319-99118-4>

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Tewksbury, Richard (2009). Qualitative versus Quantitative Methods: Understanding Why Qualitative Methods are Superior for Criminology and Criminal Justice. *Journal of Theoretical and Philosophical Criminology*, 1(4). <https://scholars.indianastate.edu/jtpcrim/vol1/iss1/4>