

## Přílohy

### Příloha 1

Článek s názvem „Analysis of the Association between Public Health and Drug Market Policing: Review of Law Enforcement Indicators“ zpracovaný v rámci této disertace a publikovaný v časopise s názvem „Adiktologie“.

Článek je volně dostupný na odkazu: <https://adiktologie-journal.eu/wp-content/uploads/2020/05/05petruzelka.pdf>.

Citace:

Petruželka, Benjamin, and Miroslav Barták. 2019. “Analysis of the Association between Public Health and Drug Market Policing: Review of Law Enforcement Indicators.” *Journal Adiktologie* 19(1):43–51. <https://doi.org/10.35198/01-2019-001-0005>.

Abstrakt:

Background: A number of studies show that an intensification of the policing of illicit drug markets has an impact on public health. The impacts are largely seen as negative.

Aims: The aim of this paper is to describe the basic characteristics of data collection and to review the aspects related to data collection and its context that might influence the law enforcement indicators (drug law offences and offenders).

Methods: This work is based on research on the literature and grey zone materials, which consisted of reviewing reports published by relevant institutions and by searching in specialized databases.

Results: Long-term indicators based on police statistics available for the Czech Republic come from the Crime Statistics System (ESSK) and from data collected by the National Drug Headquarters (NPC). The difference between the ESSK and NPC data lies in the reporting procedures and their changes and specificity as regards the substances involved in drug law offences. The review identified different aspects of data collection and its context that have the potential to influence the indicators. Nine events with such potential were identified in three areas: legislation, the reporting system, and the structure

and priorities. The events that have the greatest potential to influence the time series are related to the reporting system, structure, and priorities.

Conclusions: The review may assist and facilitate informed analysis and interpretation of drug-related law enforcement indicators individually or in combination with other indicators, using time series analysis as well as comparative approaches.

## Příloha 2

Článek s názvem „Potential Indicators for the Analysis of the Association between Public Health and Drug Market Policing in the Czech Republic: Review of Public Health Indicators“ zpracovaný v rámci této disertace a publikovaný v časopise s názvem „Adiktologie“.

Článek je volně dostupný na odkazu: <https://adiktologie-journal.eu/wp-content/uploads/2020/09/04petruzelka.pdf>.

Citace:

Petruželka, Benjamin, and Miroslav Barták. 2019. “ Potential Indicators for the Analysis of the Association between Public Health and Drug Market Policing in the Czech Republic: Review of Public Health Indicators.” *Journal Adiktologie* 19(1–2):135-143.

Abstrakt:

Background: A number of studies show that an intensification of the policing of illicit drug markets impacts on public health. The impacts are largely seen as negative.

Aims: The aim of this article is to describe the basic characteristics of available data and data collection of selected indicators and to review the aspects related to data collection and its context that might influence the selected public health time series in the Czech Republic. The secondary aim is to provide recommendations for future data collection in the Czech public health statistics.

Methods: This work is based on research of the specialised databases, reviewing reports published by relevant institutions and additional and selective literature and grey zone materials search.

Results: The article provides a review of the basic data collection characteristics and identifies different aspects of data collection and its context that have the potential to influence the time series of selected indicators in three different areas: a) treatment entrants, b) non-fatal and fatal intoxications, and c) infectious diseases.

Conclusions: The review may assist and facilitate informed analysis and interpretation of

drug-related law enforcement indicators individually or in combination with other indicators, using time series analysis as well as comparative approaches.

### Příloha 3

Článek s názvem „The Relationship between the Regulation of Licit Medications Containing Pseudoephedrine and the Illicit Methamphetamine Market in Czechia and Neighbouring Countries“ zpracovaný v rámci této disertace a publikovaný v časopise s názvem „Drugs and Alcohol Today“.

Článek je dostupný na odkazu: <https://www.emerald.com/insight/content/doi/10.1108/DAT-06-2019-0023/full/html>.

Citace:

Petruželka, Benjamin. 2019. “The Relationship between the Regulation of Licit Medications Containing Pseudoephedrine and the Illicit Methamphetamine Market in Czechia and Neighbouring Countries.” *Drugs and Alcohol Today* 20(1):6–16. <https://doi.org/10.1108/DAT-06-2019-0023>.

Abstrakt:

Purpose: The purpose of this paper is to improve the understanding of the relationship between region-specific regulations of medications used in the manufacture of illegal drugs and illegal drug markets.

Design/methodology/approach: This paper examines a case study of the relationship between the regulation of medications containing pseudoephedrine in Czechia and neighbouring countries and the illegal drug market for methamphetamine in Czechia between 2006 and 2018. The description of this case is based on a review of the literature and a review of publicly available data sources.

Findings: The tightening of the regulation of medications containing pseudoephedrine in the Czech Republic led, in the years under study, to a gradual decrease in the number of packages sold and simultaneously to the illegal import of such medications from neighbouring countries with less strict regulations. At the same time, shifts in the drug market could be observed: the internationalisation of previously primarily domestic supply chains, the increased involvement of Vietnamese organised crime groups, the emergence of large-scale methamphetamine labs and a shift in production to countries with less strict regulations. The subsequent application

of stricter controls in neighbouring countries was accompanied by further shifts in supply chains and increased imports from non-European countries.

Practical implications: The tightening of regulations of medications within a single country or single region might lead to significant and undesirable changes in drug markets and supply chains.

Originality/value: This paper provides a novel case study of the development of region-specific regulations of medications and their influence on illegal drug markets and supply chains in the Czech Republic and in the European context.

## Příloha 4

Článek s názvem „The Impact of Methamphetamine Drug Market Policing on Public Health in Czechia: Interrupted Time Series Analysis of Selected Public Health Indicators“ zpracovaný v rámci této disertace a v recenzním řízení v časopise s názvem „International Journal of Drug Policy“.

S ohledem na etické a publikační zvyklosti a normy je text podaný do recenzního řízení možnost vyžádat přímo u autora práce. Dále je text také přístupný na tomto odkazu: <https://drive.google.com/file/d/13SlwPkS5jiFBqBVJq0mrjCofaQg54gLL/view?usp=sharing>.

### Abstract

**Background:** In Czechia, methamphetamine market policing increased substantially between 2013 and 2015. Evidence suggests that an increase in the illicit drug market policing negatively impacts public health. **Aims:** The aim of this study is to estimate the impact of increased methamphetamine drug market policing in Czechia on selected public health indicators: infectious diseases (hepatitis A, B, C and syphilis) and non-fatal and fatal intoxications (opioid and methamphetamine related).

**Methods:** We conducted an interrupted time series analysis of monthly aggregated public health time series. The intervention was identified based on police statistics and on information from official documents. The time series were used for the 2004-2016 period, if not limited to shorter periods due to data limitations.

**Results:** We identified ARIMA models with significant intervention parameters, showing an increase in the indicators during the intervention, for chronic hepatitis C (parameter estimate=0,112, SE: 0,55), methamphetamine non-fatal intoxication (parameter estimate=1,971, SE: 0,354) and methamphetamine fatal intoxication (parameter estimate=0,555, SE: 0,107). The models with significant parameters were not identified for opioid related fatal and non-fatal intoxications, hepatitis A, hepatitis B, acute hepatitis C and syphilis.

**Conclusions:** Our results indicate that in Czechia, increased methamphetamine market policing had an impact on public health. To address the unwanted effects of increased drug market policing, we suggest focusing on the harm reduction potential of drug market policing, building trust within the community, and cooperation with health services and the community.

Keywords: Methamphetamine, Drug market policing, Public health, Law Enforcement, Supply Control, Czechia

## **Příloha 5**

Článek s názvem „The Identification of Artefacts in Drug-induced Deaths Time Series Statistics: Introduction of Structural Breaks Analysis“ zpracovaný v rámci této disertace a zpracovaný v rámci této disertace a v recenzním řízení v časopise s názvem „Drug and Alcohol Review“.

S ohledem na etické a publikační zvyklosti a normy je text podaný do recenzního řízení možnost vyžádat přímo u autora práce. Dále je text také přístupný na tomto odkazu: [https://drive.google.com/file/d/1K\\_NPh\\_7IYuGIb4DLpq3a8IArw5mxMgvy/view?usp=sharing](https://drive.google.com/file/d/1K_NPh_7IYuGIb4DLpq3a8IArw5mxMgvy/view?usp=sharing).

**Introduction and Aim:** Drug-related mortality is a key epidemiological indicator that is collected nationally and internationally. Significant efforts were made in 2006-2007 to improve the quality of data concerning drug-related mortality in the Czech Republic. The aim of this article is to demonstrate how to identify, quantify and interpret changes in drug-induced mortality data collection and extraction based on the example of the Czech Republic.

**Methods:** We extracted data on illicit drug-induced deaths from the Czech Republic General Mortality and Special Mortality registries for the years between 2004 and 2012, and aggregated monthly and quarterly time series. We applied a new procedure to identify structural breakpoints in time series based on dating structural changes in standard linear regression models.

**Results:** In the General Mortality Registry, the analysis identified one breakpoint in opioid-related, other stimulants-related and total drug-induced deaths and increases in the intercepts in the different segments. In the Special Mortality Registry, the structural breaks were identified for opioids, volatile substances and selection D time series. In each of these time series, the analysis identified a decrease in the intercepts in the different segments.

**Discussion and conclusion:** The structural breaks identified and quantified in the General Mortality Registry time series are plausibly caused by the improvement efforts that started in 2006. These results demonstrate that it is critical for the analysis and use of drug mortality data collected in the registries to identify practice changes in the relevant registries, to quantify their influence, and to adjust mortality estimates accordingly.

Keywords: drug-induced deaths, overdose, drug-related mortality, time series, structural change

## Příloha 6

Článek s názvem „The Identification of Precursor Regulation Impact on the Methamphetamine Market and Public Health Indicators in the Czech Republic: Time Series Structural Break Analysis“ zpracovaný v rámci této disertace a publikovaný v časopise s názvem „International Journal of Environmental Research and Public Health“.

Článek je volně dostupný na odkazu: <https://www.mdpi.com/1660-4601/17/21/7840>.

Citace:

Petruželka, Benjamin, and Miroslav Barták. 2020. “The Identification of Precursor Regulation Impact on the Methamphetamine Market and Public Health Indicators in the Czech Republic: Time Series Structural Break Analysis.” *International Journal of Environmental Research and Public Health*, 17(21):7840.

Abstrakt:

**Background:** This study provides insight into the impact of methamphetamine precursor regulation, which is considered to be one of the most important tools of supply reduction and a tool with potential public health impact.

**Methods:** It is based on a longitudinal and quasi-experimental design and it investigates the changes of methamphetamine precursor regulation in Czech Republic, which is treated as a natural experiment. The statistical analysis uses features from the generalized fluctuation test framework as well as from the F test framework to estimate structural changes in the methamphetamine-related arrests and nonfatal intoxications time series.

**Results:** The analysis identified structural breaks in the majority of the methamphetamine drug market-related time series in the period related to the tightening of regulation. The results of this study show that methamphetamine precursor regulation was associated with the proliferation of international and organized crime groups and with no change in the overall number of arrests and nonfatal intoxications.

**Conclusions:** The precursor regulation *ceteris paribus* plausibly leads to the change in drug supply towards more organized groups and to an increasing involvement of foreign nationals at the drug market and is not effective in suppressing the methamphetamine market and in reducing the public health indicator of nonfatal methamphetamine intoxications.

## Příloha 7

Článek s názvem „Primary Drug-related Crime in the Czech Republic from a Geographical Perspective: Study of Urban, Suburban and Rural Differences“ zpracovaný v rámci této disertace a publikovaný v časopise s názvem „Geoscape“.

Článek je volně dostupný na odkazu:

<https://content.sciendo.com/view/journals/geosc/14/2/article-p134.xml>.

Citace:

Petruželka, B., & Barták, M. (2020). Primary Drug-related Crime in the Czech Republic from a Geographical Perspective: Study of Urban, Suburban and Rural Differences. *Geoscape*, 14(2):134-142.

Abstrakt:

Introduction: Illicit drug use and drug-related crime constitute a significant issue and create large economic and societal costs both at national and regional level. The aim of this article is to examine the differences in primary drug-related crime between urban, suburban and rural local police departments in Czechia.

Methods: The primary drug-related crime rate in local police departments was constructed from the data collected in the national crime database and the geographical classification of these departments was taken from previous research. To analyze the differences among urban, suburban and rural departments, we used the general linear model.

Results: The models with measures that were not standardized for the population were all significant, while not all the models with standardized measures were significant. Overall primary drug-related crime, unauthorized production and other handling of illicit drugs and possession of illicit drugs models with standardized measures showed no significant differences between departments. The cultivation of plants model with standardized measure shows an increase in the predicted values of independent variables in suburban and rural departments compared to urban departments.

Discussion: Our research results show that local urban police departments are not related to higher rates of standardized primary drug-related crime, although there are differences in

specific drug law offences. It suggests that drug-related issues are prevalent in all types of departments, however, the specific issues differ between them.

Conclusions: The research showed that standardized primary drug-related crime rate in urban departments is not higher than in suburban or rural local police departments.

## Příloha 8

Článek s názvem „Databáze spravovaná Evropským monitorovacím centrem pro drogy a drogové závislosti a její využitelnost pro odhad společenských nákladů užívání ilegálních drog“ zpracovaný v rámci této disertace a publikovaný v časopise s názvem „Ekonomie ve zdravotnictví“.

Článek je volně dostupný na odkazu: <https://ezcr.cz/databaze-spravovana-evropskym-monitorovacim-centrem-pro-drogy-a-drogove-zavislosti-a-jeji-vyuzitelnost-pro-odhad-spolecenskych-nakladu-uzivani-ilegalnich-drog/>.

Citace:

Petruželka, Benjamin. 2017. „Databáze spravovaná Evropským monitorovacím centrem pro drogy a drogové závislosti a její využitelnost pro odhad společenských nákladů užívání ilegálních drog.“ *Ekonomie ve zdravotnictví* 3(2)19-27.

Abstrakt:

Cílem tohoto textu je představit veřejně dostupnou databázi provozovanou Evropským monitorovacím střediskem pro drogy a drogové závislosti (dále EMCDDA) a potenciál její využitelnosti pro vyhodnocení společenských nákladů na užívání ilegálních drog, potažmo k hodnocení účinnosti evropských veřejných protidrogových politik. Zmíněná databáze obsahuje data o různých aspektech spojených s užíváním ilegálních drog v Evropské unii a v několika dalších přidružených zemích. Článek uvádí vybrané ekonomické přístupy k hodnocení drogových politik, základní charakteristiky databáze a jejího současného využití. Možnosti jejího využití jsou vztaženy k výpočtu společenských nákladů užívání ilegálních drog.