Longitudinal Investigations Involving the Emergence of Novel Psychoactive Substances in the United States [NIJ Award #: 15PNIJ-22-GG-04434-MUMU]

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Overview

Novel psychoactive substances (NPS) continue to increase in prevalence in the United States and the constant turnover of these drugs is a concern due to unknown effects and toxicity. Many laboratories may not have the resources to stay current with NPS trends which means a central authority and repository is needed to provide assistance and guidance. The Center for Forensic Science Research and Education (CFSRE) developed **NPS Discovery** – an NIJ-funded open-access drug early warning system – in 2018 to streamline the identification of emerging NPS and to disseminate important information.

The CFSRE's NPS Discovery program focuses on the identification and monitoring of NPS through coupled sample-mining and data-mining analytical techniques. This is facilitated through collaborations with medical examiner and coroner offices, crime laboratories, police departments, hospitals, and public health and safety agencies, and includes drug materials and toxicology specimens. Our program also monitors online resources (e.g., gray market sites, drug use forums) for new NPS and important drug use information.

Emergence and prevalence of NPS vary greatly from jurisdiction to jurisdiction. NPS Discovery strives to provide knowledge of changing drug trends and impacts to laboratories, scientists, and stakeholders.

Life Cycle of NPS & Timeline of Testing

New Drug Discoveries Since 2018

Since 2018, NPS Discovery has reported **137** newly discovered NPS in the U.S. (Figure 1). **NPS opioids** remain the largest subclass (Figure 2). In 2022, NPS Discovery reported the discovery of **27** NPS for the first time.
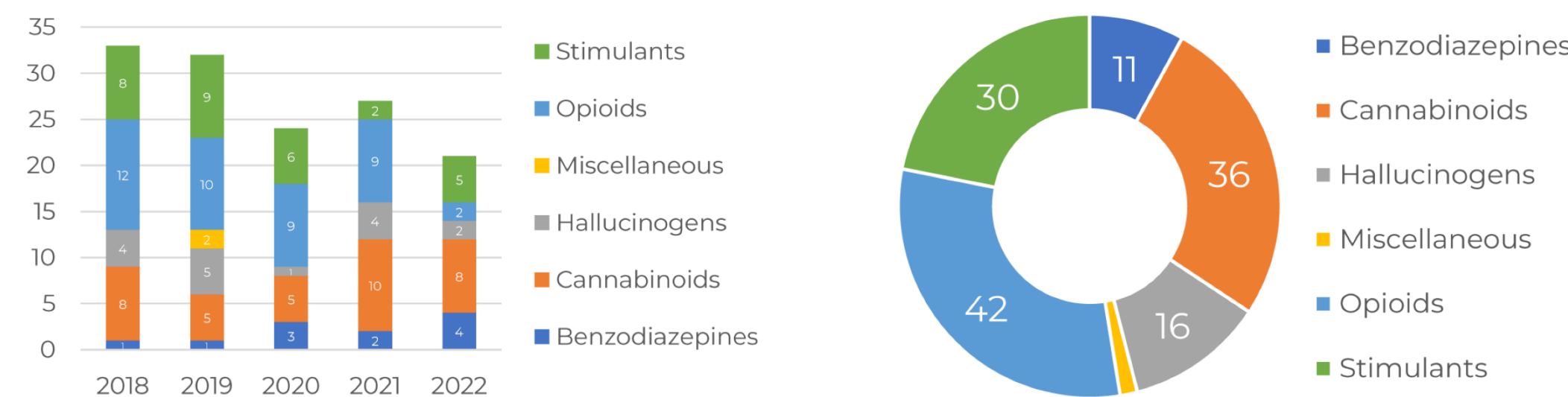

Figure 1: Newly discovered NPS reported for the first time since 2018.

Figure 2: Breakdown by subclass of newly discovered NPS, 2018-2022.

Since 2018, NPS Discovery has identified **218** NPS in forensic samples (Figure 3). **NPS opioids, stimulants**, and **cannabinoids** represent the largest subclasses. In 2022, **76** total NPS were detected (Figure 4).
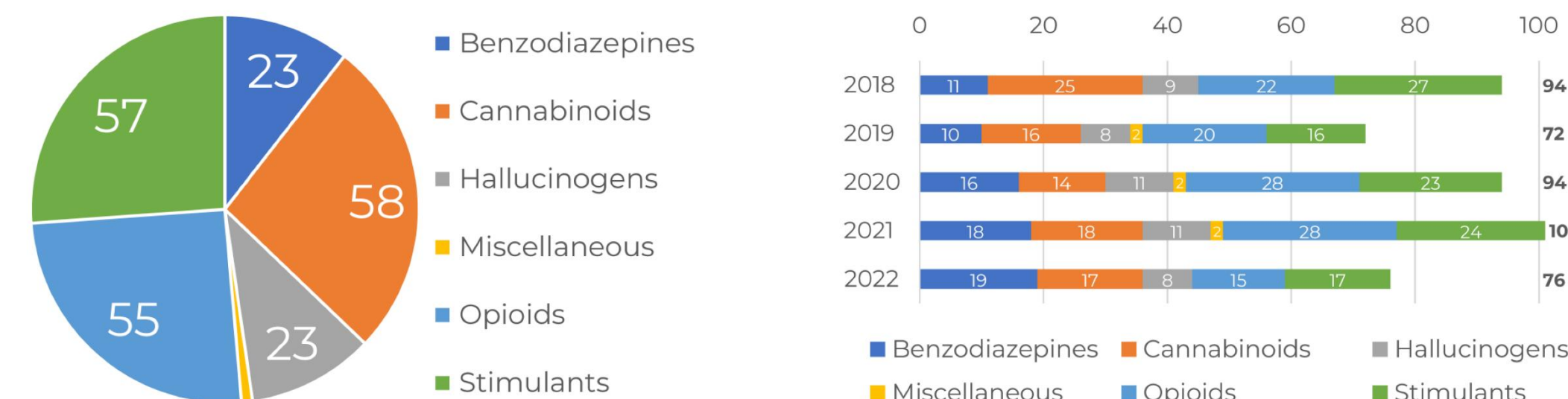

Figure 3: Breakdown by subclass of individual NPS detected, 2018-2022.

Figure 4: Individual NPS detected each year, cumulative since 2018.

In 2022, NPS Discovery observed over **2,200** total NPS detections within examined sample populations (Table 5), a portion of more than **10,000** total NPS detections since our program launched in 2018 (Figure 6).
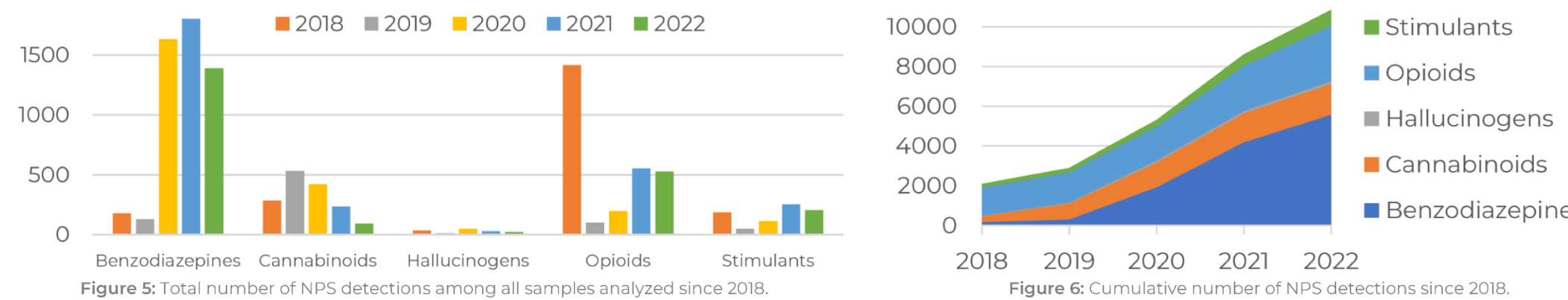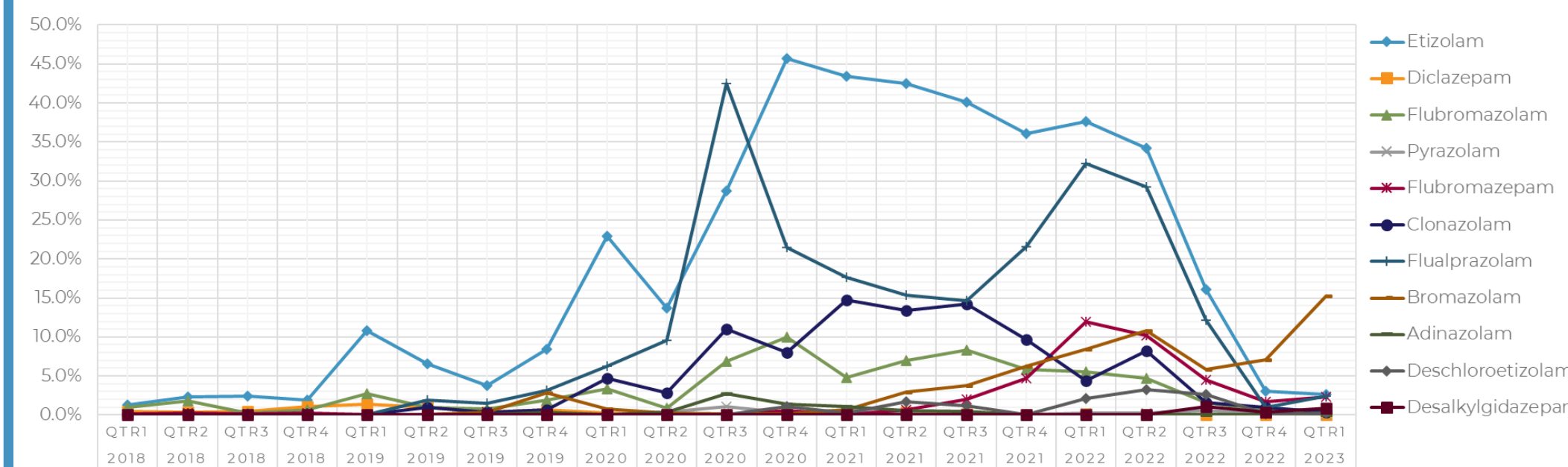

Figure 5: Total number of NPS detections among all samples analyzed since 2018.

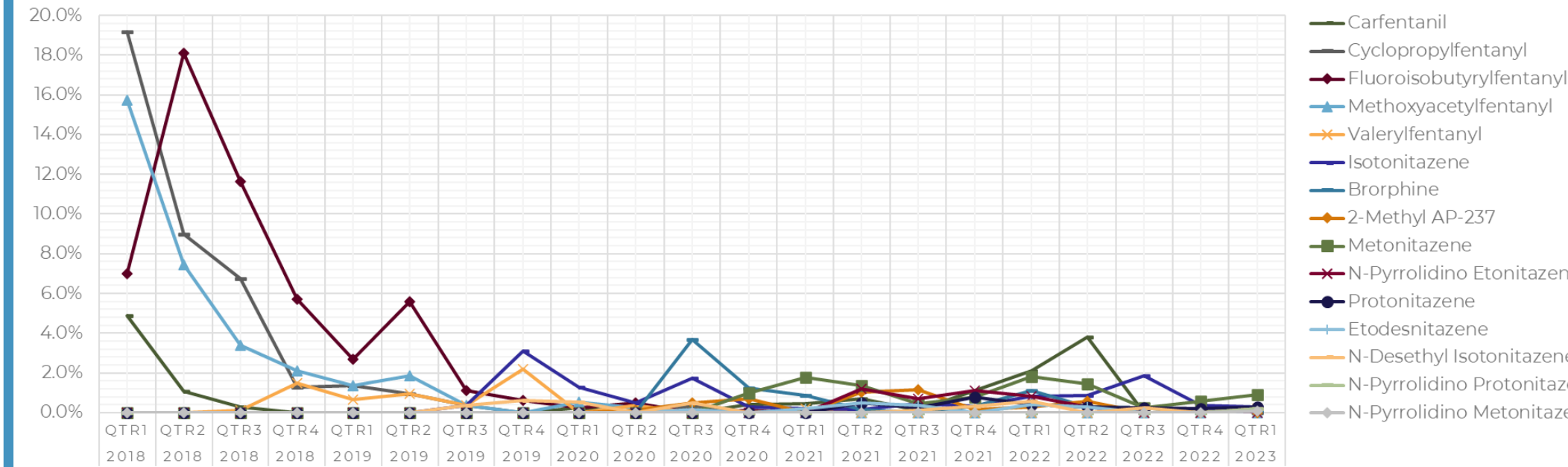**Figure 6:** Cumulative number of NPS detections since 2018.

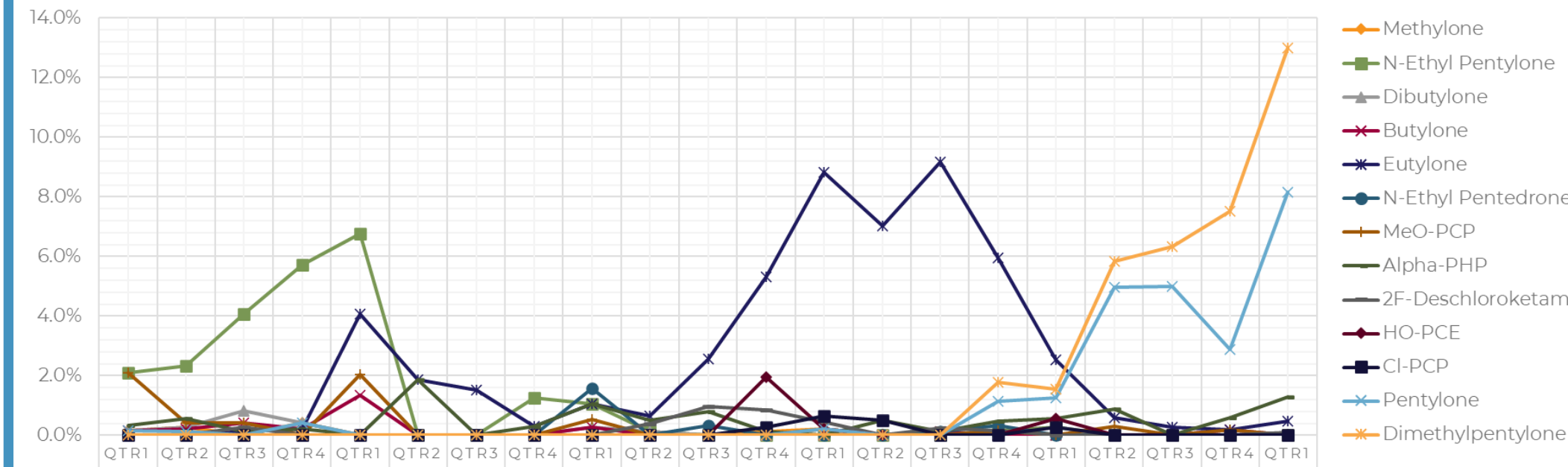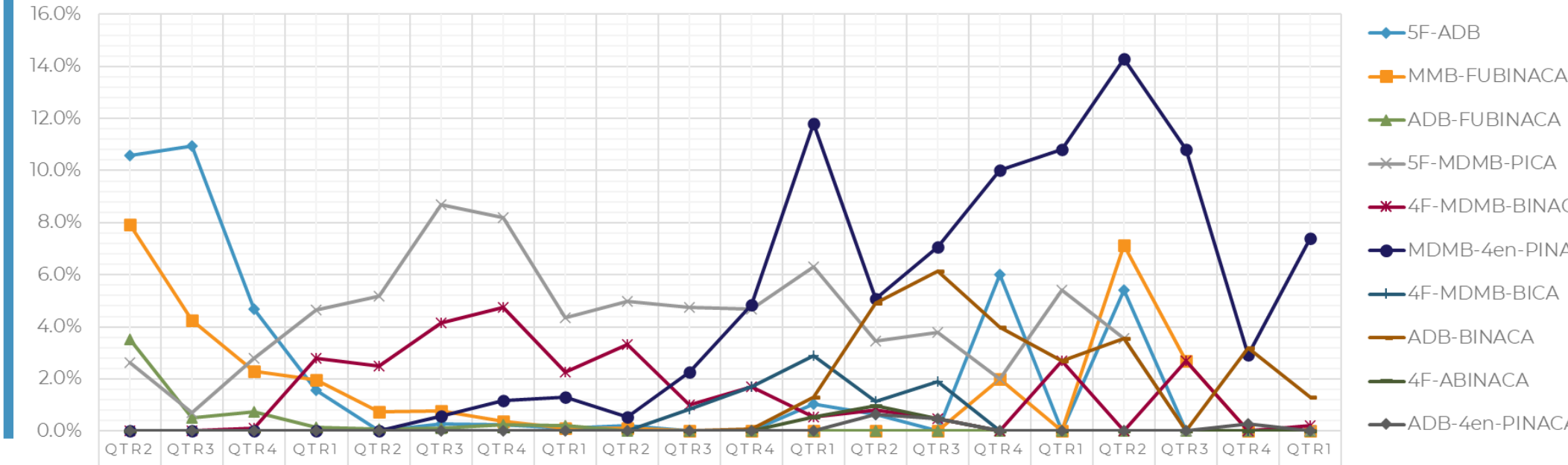## NPS Trends in the United States

NPS Benzodiazepines ▾

NPS Opioids ▾

NPS Stimulants & Hallucinogens ▾

Synthetic Cannabinoids ▾

NPS on the Horizon

Opioids	Benzodiazepines
N-Pyrrolidino Protonitazene *N*-Pyrrolidino Protonitazene *N*-Desethyl Isotonitazene	Desalkylgidazepam

Stimulants/Hallucinogens	Synthetic Cannabinoids
N-Cyclohexyl Butylone *N*-Propyl Butylone Fluorexetamine	ADB-5'Br-PINACA CH-FUBBMPDORA

Outcomes & Impacts of NPS Discovery

Visit our **open-access** website for new drug monographs, public alerts, trend reports, clinical reports, drug checking reports, and more!