



# Summary: Assessing the presence of novel psychoactive substances in patients

Q2 update, April – June 2025





Novel psychoactive substances (NPS) are compounds that are designed to mimic the effects of more traditional drugs of abuse, such as cocaine and marijuana.<sup>1</sup> They change frequently to evade legality, which makes up-to-date analysis methods essential to ensure clinicians know what a patient may have taken illicitly.<sup>2</sup>

To meet these challenges, Quest Diagnostics launched our **Drug Monitoring, Novel Psychoactive Substances (NPS), Qualitative, Urine** panel in November 2023. We continue to update our assay, performing monthly analyses of our total results.

This is the third in our series of quarterly reports, where we continue to provide monthly analyses identifying the presence of novel psychoactive substances in patients. As with our previous reports, this Q2 2025 report analyzes results in 6 different NPS drug classes:

- Other illicit additives (OI)
- Designer fentanyl analogs (FA)
- Designer benzodiazepines (DB)
- Synthetic cannabinoids (SC)
- Designer opioids (DO)
- Designer stimulants (DS)

In the second quarter of 2025, 3,036 specimens analyzed on the Quest Diagnostics NPS method were positive for at least 1 NPS. One of the most concerning trends observed in Q2 was the increase in carfentanil positivity in the clinical urine specimens analyzed (page 4). While 15 patient specimens tested positive for carfentanil in Q1, the number rose to 67 in Q2.



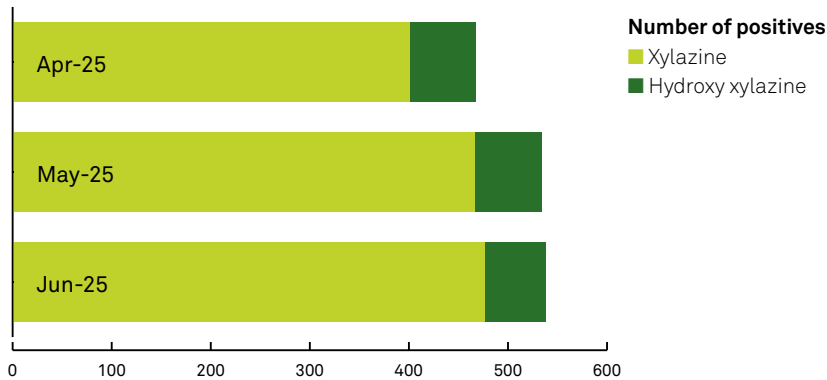
# Other illicit additives (OI)

Xylazine, a compound in the “Other illicit additives” (OI) class, continued to be the most positive analyte and was positive in 1,339 specimens. The OI class was the most positive class, with 1,468 specimens found positive.

Over 400 patient specimens were positive for xylazine each month in the second quarter of 2025.

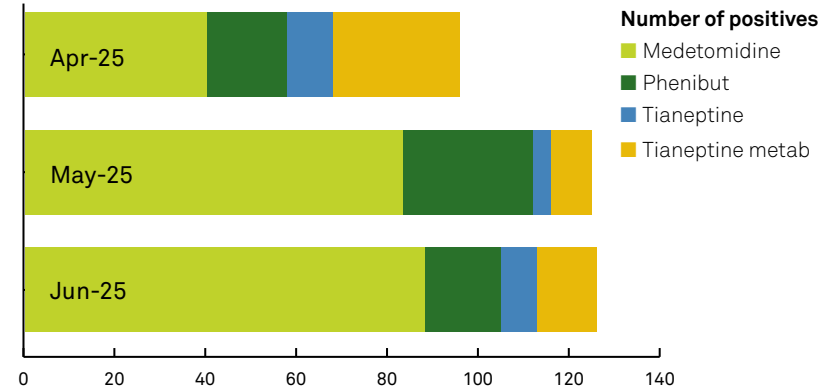
## Xylazine and hydroxy xylazine positivity

All other compounds in the OI class also saw positivity in the first quarter, the most prevalent being medetomidine. Like xylazine, medetomidine is also a veterinary tranquilizer that has emerged as an adulterant in purchased drugs.<sup>1</sup>



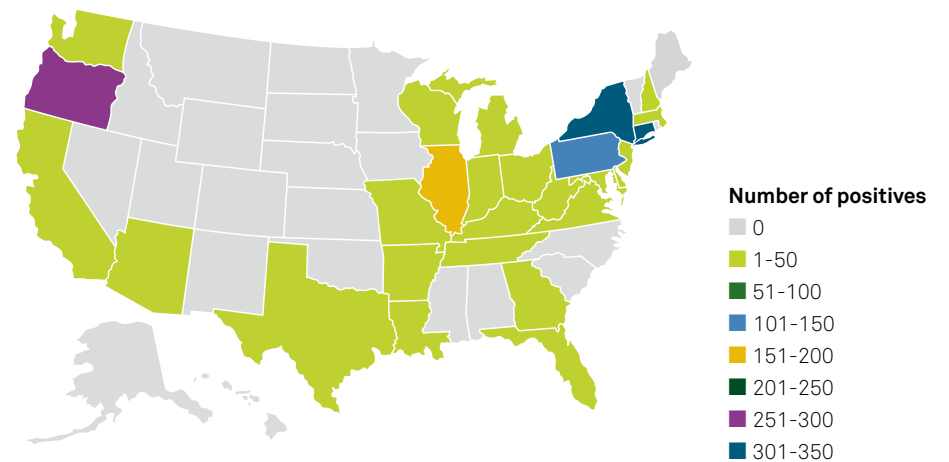
Medetomidine, another compound in the OI class, saw an increase in the number of positive specimens throughout the second quarter, with 40 positive specimens in April and 88 positive specimens in June. Other analytes in the OI class (phenibut and tianeptine) also saw positives in each month of the second quarter.

## OI positivity



## OI class number of positives by state April-June 2025

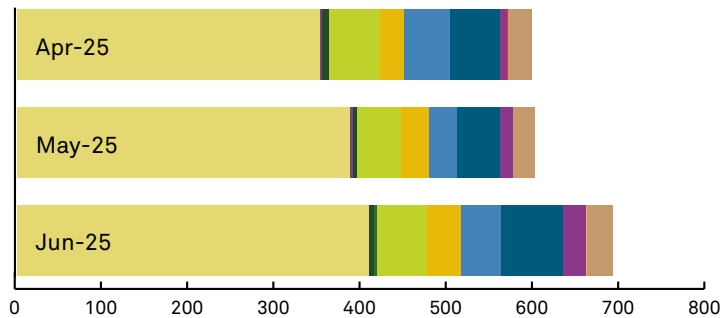
Compounds from the OI class continued to be prevalent across the United States. New York and Connecticut were the states with the highest number of positive specimens.



# Designer fentanyl analogs (FA)

Acetyl fentanyl continued to have the most positives in the designer fentanyl analog (FA) class, being seen in at least 350 specimens each month during the second quarter. Chlorofentanyl and fluorofentanyl were also positive in at least 50 specimens each month of the second quarter.

## FA class number of positives

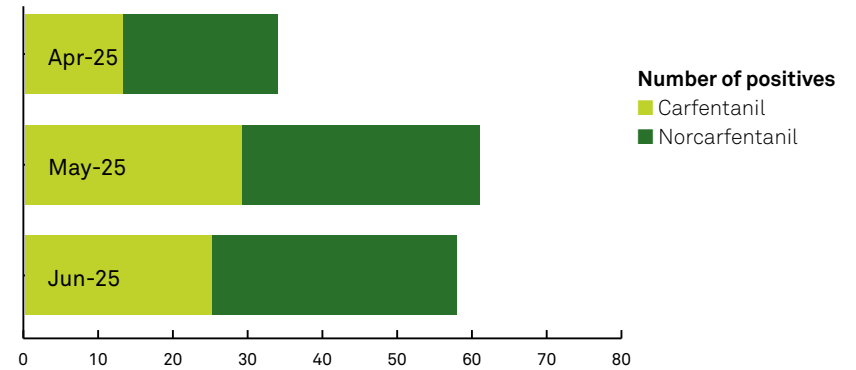


### Number of positives

- Acetyl fentanyl
- Acryl fentanyl
- Benzyl fentanyl
- Butyryl fentanyl COOH metab
- Chlorofentanyl
- Despropionyl bromofentanyl
- Despropionyl fluorofentanyl
- Fluorofentanyl
- Isobutyryl fentanyl/o-methyl fentanyl
- Norsufentanil
- Sufentanil
- Valeryl fentanyl
- Valeryl fentanyl COOH metab

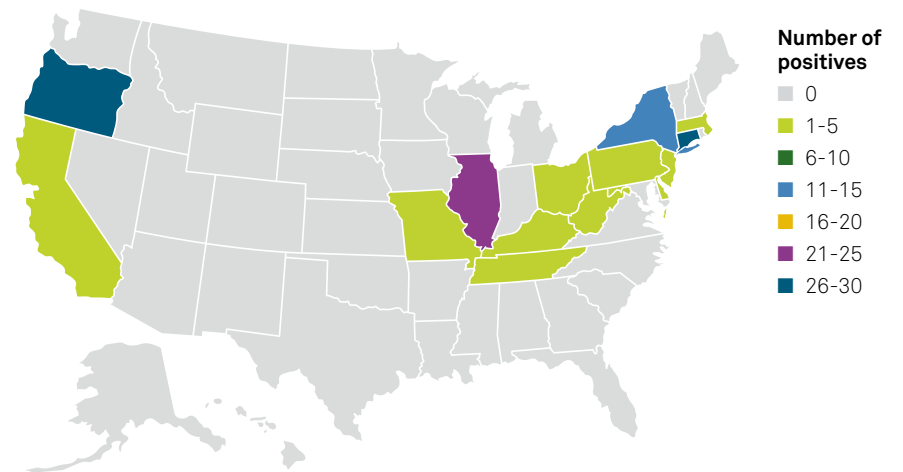
Further, the presence of carfentanil and norcarfentanil (the urinary metabolite of carfentanil) continued to increase through the second quarter, with at least 20 positive specimens each month. Carfentanil was originally designed to be a large animal tranquilizer and was never meant for human consumption. It is 100 times more potent than fentanyl and 10,000 times more potent than morphine, making its presence in clinical specimens concerning. It was always mixed with fentanyl in the clinical specimens analyzed at Quest Diagnostics.

## Carfentanil and norcarfentanil positivity



## Carfentanil number of positives by state April-June 2025

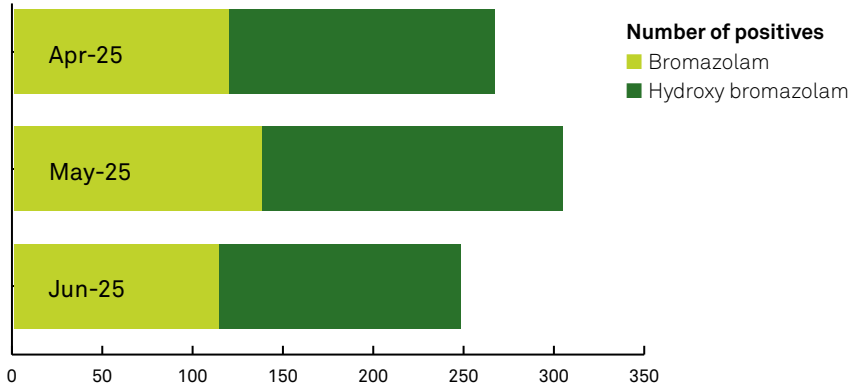
Carfentanil has been seen in specimens from across the country with higher prevalence seen in Connecticut and Oregon. New York and Illinois have also had multiple carfentanil positive patients.



# Designer benzodiazepines (DB)

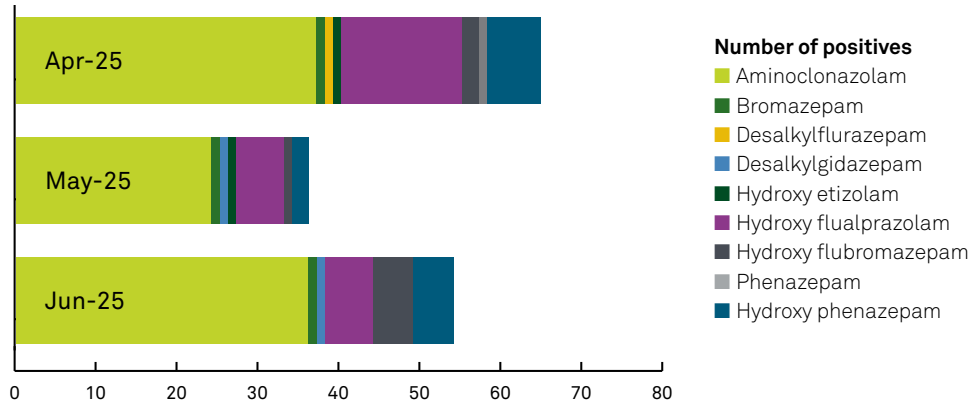
In the designer benzodiazepines (DB) class, bromazepam and its metabolite, hydroxy bromazepam, continued to be the most positive analytes, with over 100 specimens positive each month for both of these compounds.

## Bromazepam and hydroxy bromazepam positivity



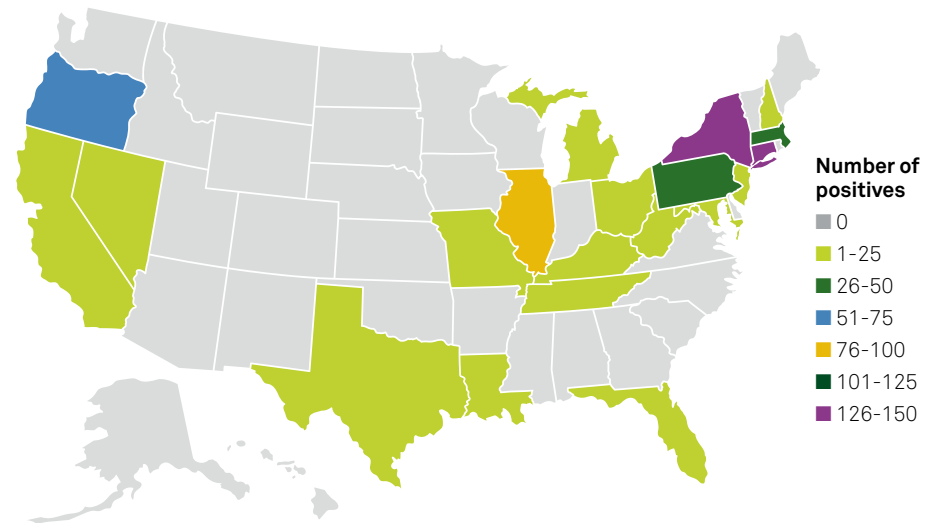
## DB positivity

Nine other benzodiazepines and/or metabolites were also seen in tested specimens throughout the second quarter, with aminoclonazepam being the next most positive analyte.



## DB class number of positives by state April-June 2025

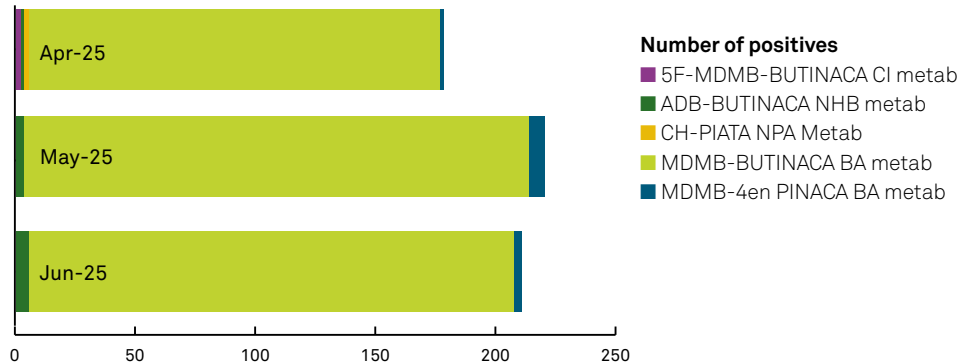
Most designer benzodiazepine-positive specimens were from the East Coast and Midwest, with New York and Connecticut seeing the highest number of positives. Oregon continued to have a higher prevalence of specimens positive for designer benzodiazepines than other states on the West Coast.



# Synthetic cannabinoids (SC)

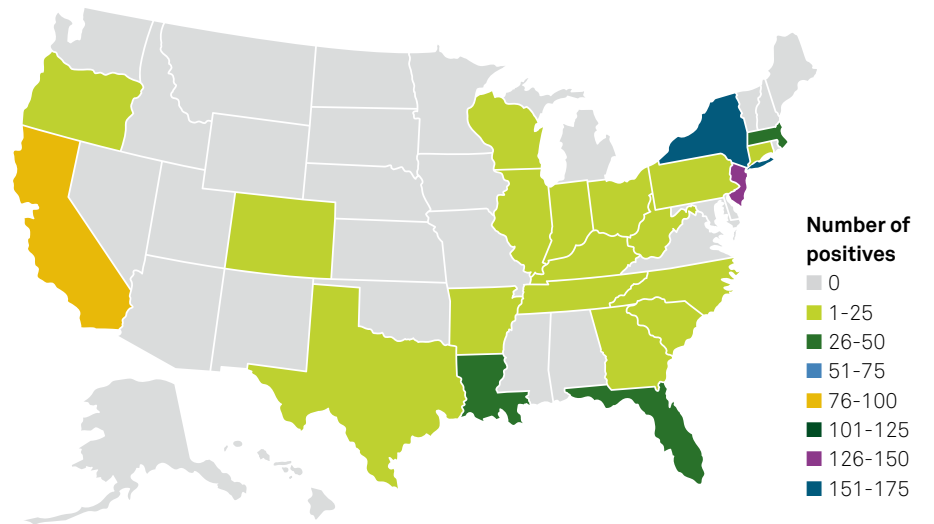
The metabolite for MDMB-4en-PINACA continued to be the most positive synthetic cannabinoid in the second quarter, with at least 170 specimens positive each month. Four other synthetic cannabinoids were seen in specimens analyzed during the second quarter, including an analyte that was positive for the first time at Quest Diagnostics: the CH-PIATA metabolite.

## Synthetic cannabinoid positivity



## SC class number of positives by state April-June 2025

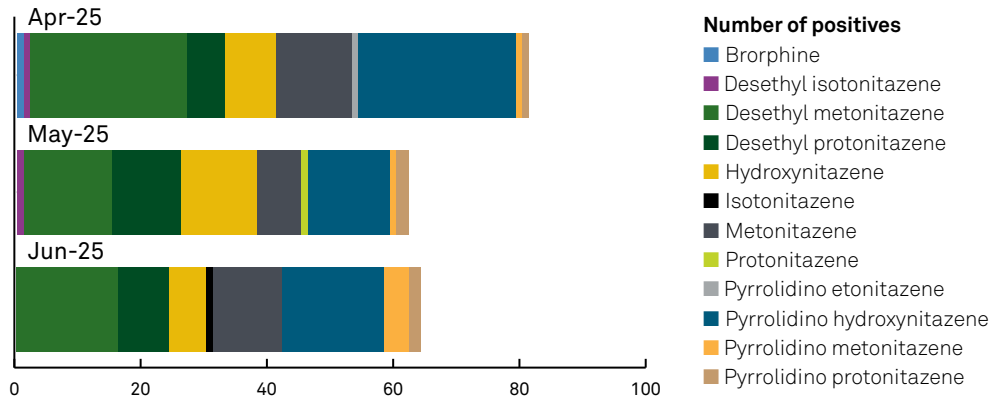
Specimens positive for synthetic cannabinoids were positive in states from across the United States, with a higher prevalence of positives from the Northeast.



# Designer opioids (DO)

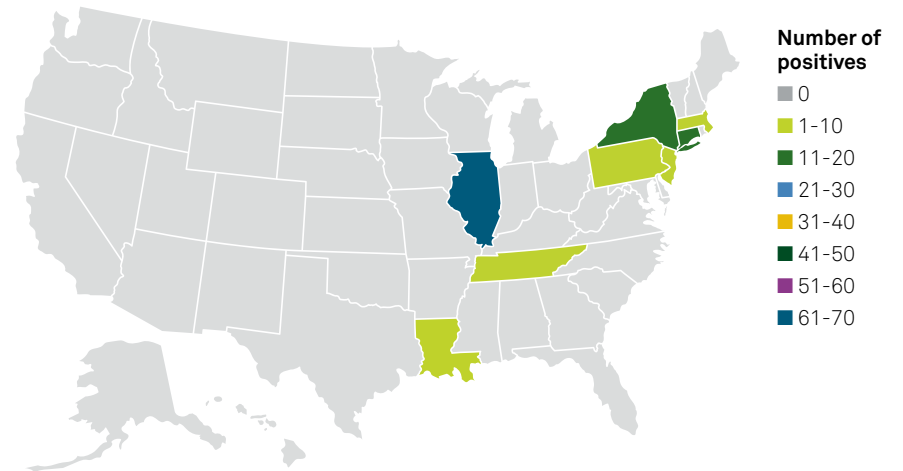
The designer opioid class saw a large range of positive analytes, with 12 different positive parent opioids and/or metabolites throughout the second quarter. Desethyl metonitazene and the metabolite pyrrolidino hydroxy nitazene continued to be the most positive designer opioids.

## DO positivity



## DO class number of positives by state April-June 2025

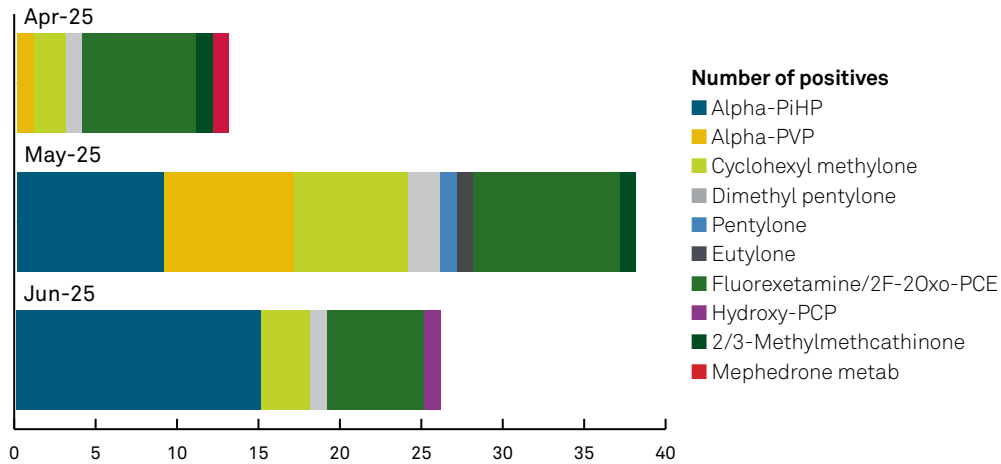
Designer opioid positive specimens were only seen in the eastern half of the US, with most positive specimens from Illinois.



# Designer stimulants (DS)

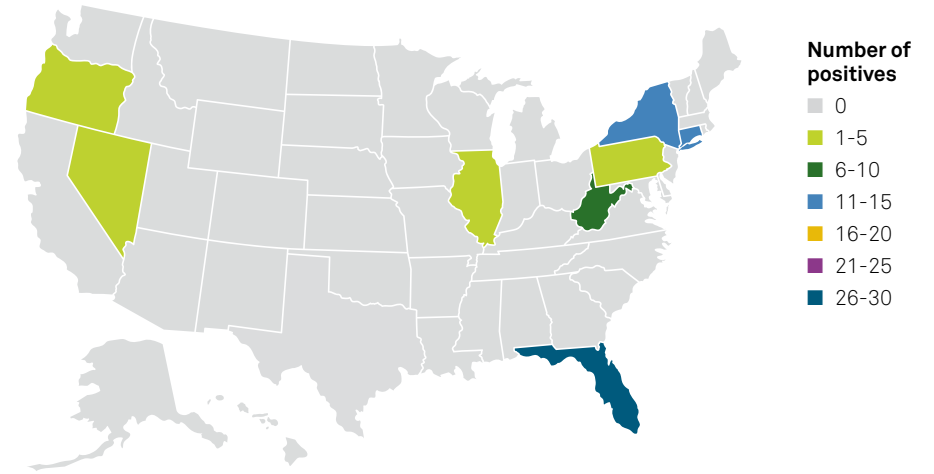
The designer stimulant class saw a variety of positive analytes throughout the second quarter. Fluorexetamine and its isomer 2F-2oxo-PCE (also known as 2-fluoro 2-oxo PCE) continued to be seen in positive specimens, a trend that first emerged in Quest Diagnostics testing the first quarter of 2025. In addition, alpha-PVP and alpha-PiHP emerged as repeated positives during the second quarter.

## DS positivity



## DS class number of positives by state April - June 2025

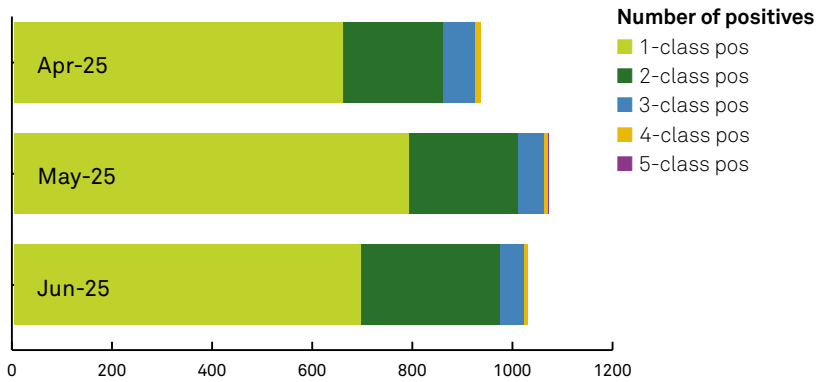
Most designer stimulant positive specimens in the US were from Florida. Previously, designer stimulants were primarily seen in specimens from the eastern part of the country. However, during the second quarter, several patients from the West Coast were positive for the designer stimulant class.



# In conclusion

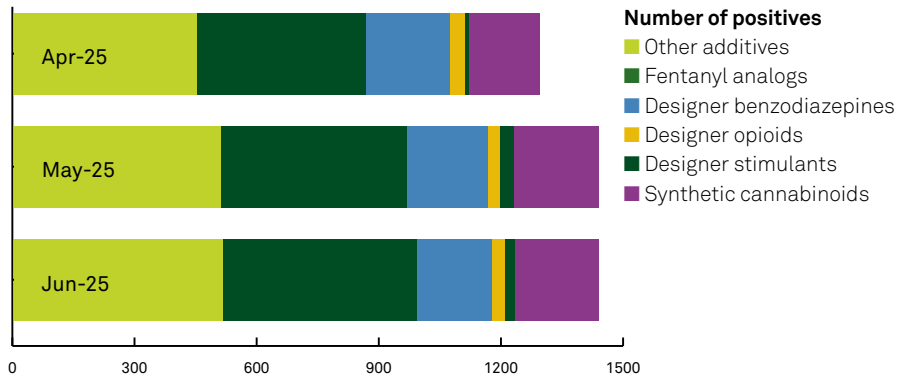
In total, 59 different NPS were seen throughout the second quarter of 2025. Most specimens (70%) were positive for 1 NPS class. However, more 2-class NPS positive specimens were seen in the second quarter than have been identified in previous quarters (in 2025, 23% were positive in the second quarter, whereas 18% were identified as positive in the first quarter).

## NPS positivity



The OI and FA classes continued to see the most positive specimens of all NPS classes. However, DS positivity greatly increased in the second quarter with a total of 70 positive specimens, up from 28 positive specimens in the first quarter.

## Positivity by NPS class



Once again, this report helps emphasize that the NPS landscape is constantly changing. For example, as discussed above, Quest Diagnostics identified 2 new analytes as positive in the second quarter of 2025 that had not previously been seen in specimens submitted for NPS positivity testing. Because the different NPS agents seen in such testing may continually change, it's crucial to test with a full NPS panel that analyzes all NPS classes, vs more individualized testing, to ensure proper detection and appropriate treatment.



# References

1. Shafi A, Berry AJ, Sumnall H, Wood DM, Tracy DK. New psychoactive substances: a review and updates. *Ther Adv Psychopharmacol.* 2020;10:2045125320967197. Published 2020 Dec 17. doi:10.1177/2045125320967197
2. Mohr ALA, Logan BK, Fogarty MF, et al. Reports of Adverse Events Associated with Use of Novel Psychoactive Substances, 2017-2020: A Review. *J Anal Toxicol.* 2022;46(6):e116-e185. doi:10.1093/jat/bkac023





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