The identification of toxic adulterants in seized drug material around the world.

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What is ITAD?

- International Toxic Adulterant Data Base (ITAD)
- Created after the International Symposium of Forensic Drug testing Lab Directors in 2018.
  - Organized by US Department of State Bureau of International Narcotics and Law Enforcement Affairs (INL) and organized by the Colombo Plan Secretariat
- Discussed the need to collect and disseminate what toxic adulterants are being identified in seized drugs and the risks associated with them
- Having a compilation of data form countries around the world:
  - Could help laboratories be aware of possible new adulterants in seized drug materials.
  - Will serve as a global public health early warning system for the emergence of toxic adulterants.

Diluents vs Adulterants

Diluent

- Compounds with no activity in the body
  - Inactive compounds
- Examples:
  - Talc
  - Carbonates
    - Bicarbonate
  - Cement
  - Lactose

Adulterant

- Compounds that produce an effect in the body
- Potential unknown effects with repeated consumption
- Examples:
  - Lidocaine
  - Caffeine
  - Levamisole

Participating Countries

Data Submitting Countries

- Argentina
- Brazil
- Chile
- Colombia
- Ecuador
- El Salvador
- Honduras
- Indonesia
- Jordan
- Nigeria
- Paraguay
- Saudi Arabia
- Singapore
- South Africa
- USA
- Uruguay

Participating Countries

- Brunei
- China
- Mexico
- Philippines
- South Korea
- Sri Lanka
- Thailand

Instrumentation Used for Detection

- Laboratories were required to follow SWGDRUG analytical techniques for confirmation
- At least one A and one B category

Category A	Category B	Category C
Infrared Spectroscopy	Capillary Electrophoresis	Color Test
Mass spectroscopy	Gas Chromatography	Fluorescence Spectroscopy
Nuclear Magnetic Rensonance Spectroscopy	Ion Mobility	Immunoassay
Raman Spectroscopy	Liquid Chromatography	Melting Point
	Microcrystalline Test	Ultraviolet Spectroscopy
	Pharmaceutical Identifiers	
	Thin Layer Chromatography	
	Cannabis Only: Macroscopic Examination Microscopic Examination	

Data Collection and Analysis

- Countries sent data in monthly, quarterly or on a biannual basis
- Data was collected and analyzed using Microsoft Excel®
- Reported on our website: **ITAD.org**

Person of contact:	*Enter NAME*
AGENCY NAME:	*Enter AGENCY*
LOCATION:	*State/ Province, Country*
Contact information	*email address*

							Adulterants					
Case #	Date of Seizure	Location of Seizure (City, State/Province, Country	Method of identification	# of units in case/ weight	Target Drug	Multiple Adulterants (Y/N)	Adulterant 1 Add name	Adulterant 2 Add Name	Adulterant 3 Add Name	Adulterant 4 Add Name	Adulterant 5 Add name	Add as neces
(Can be a randomize number)			*eg. GC/MS, IR, Raman,etc*		e.g., cocaine, methamphetamine, heroin		Adulterant 1		Adulterant 3			

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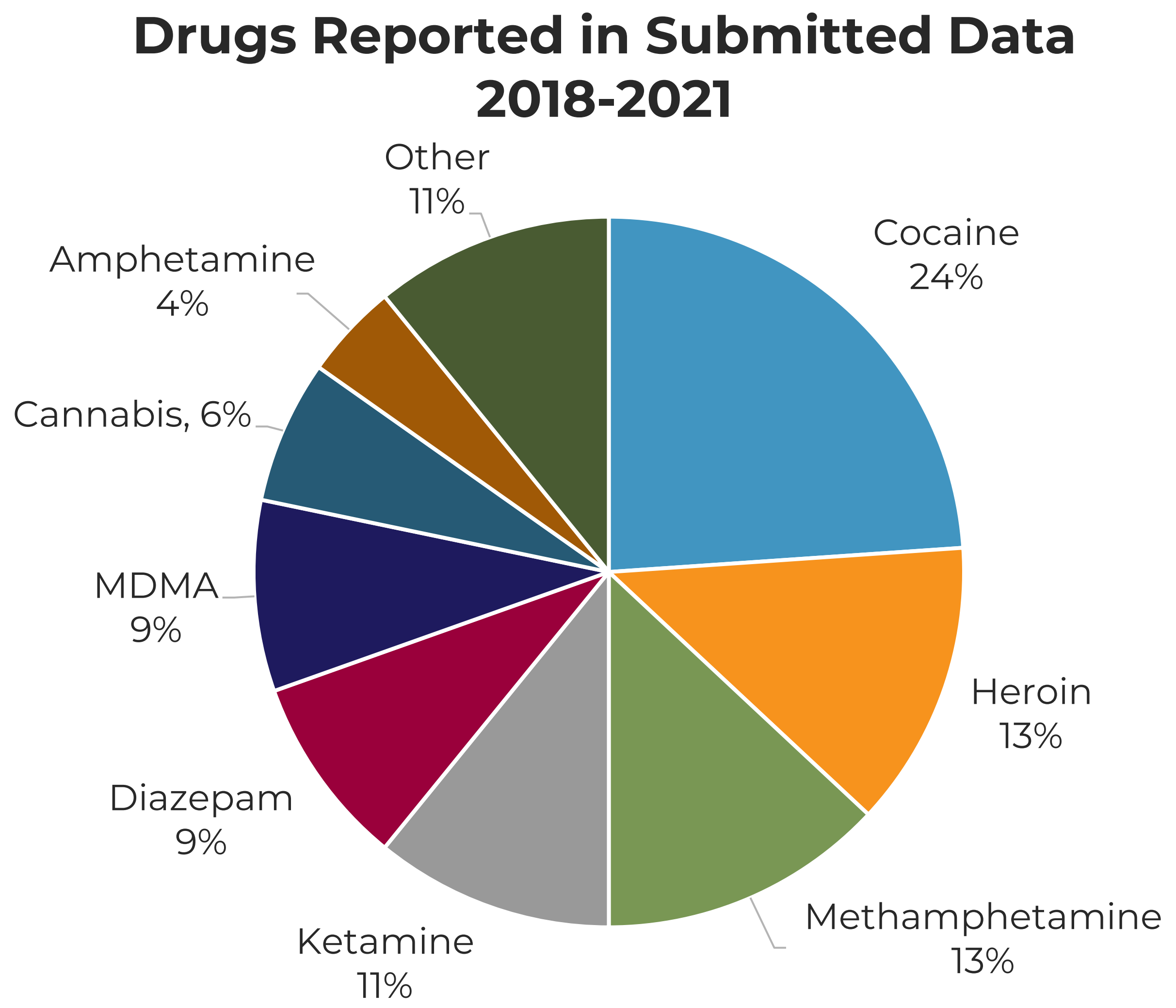
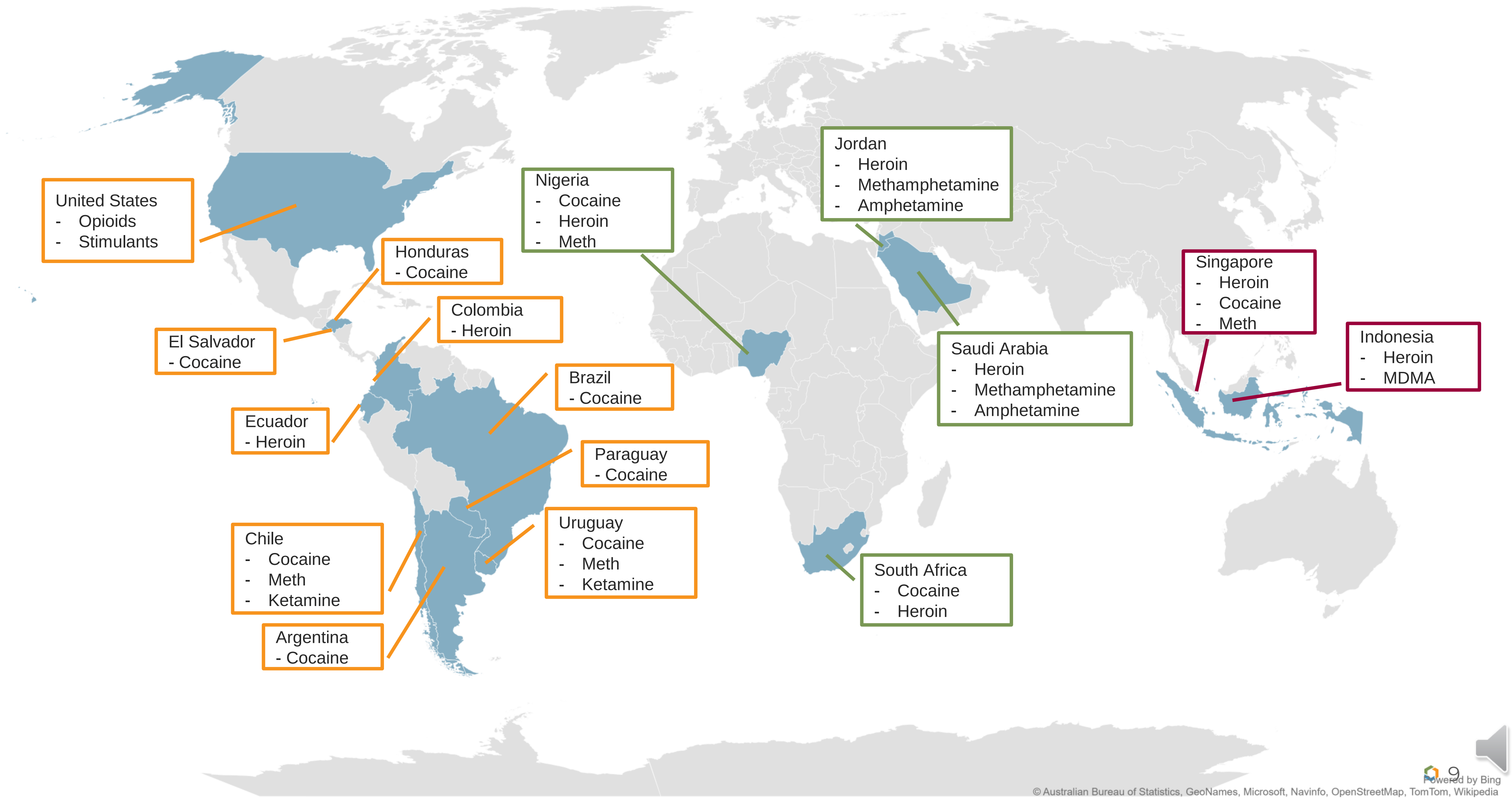
Data Collected

Seized Drugs Reported

- Not all countries report the same seized drugs



Most Common Drugs Reported by Country



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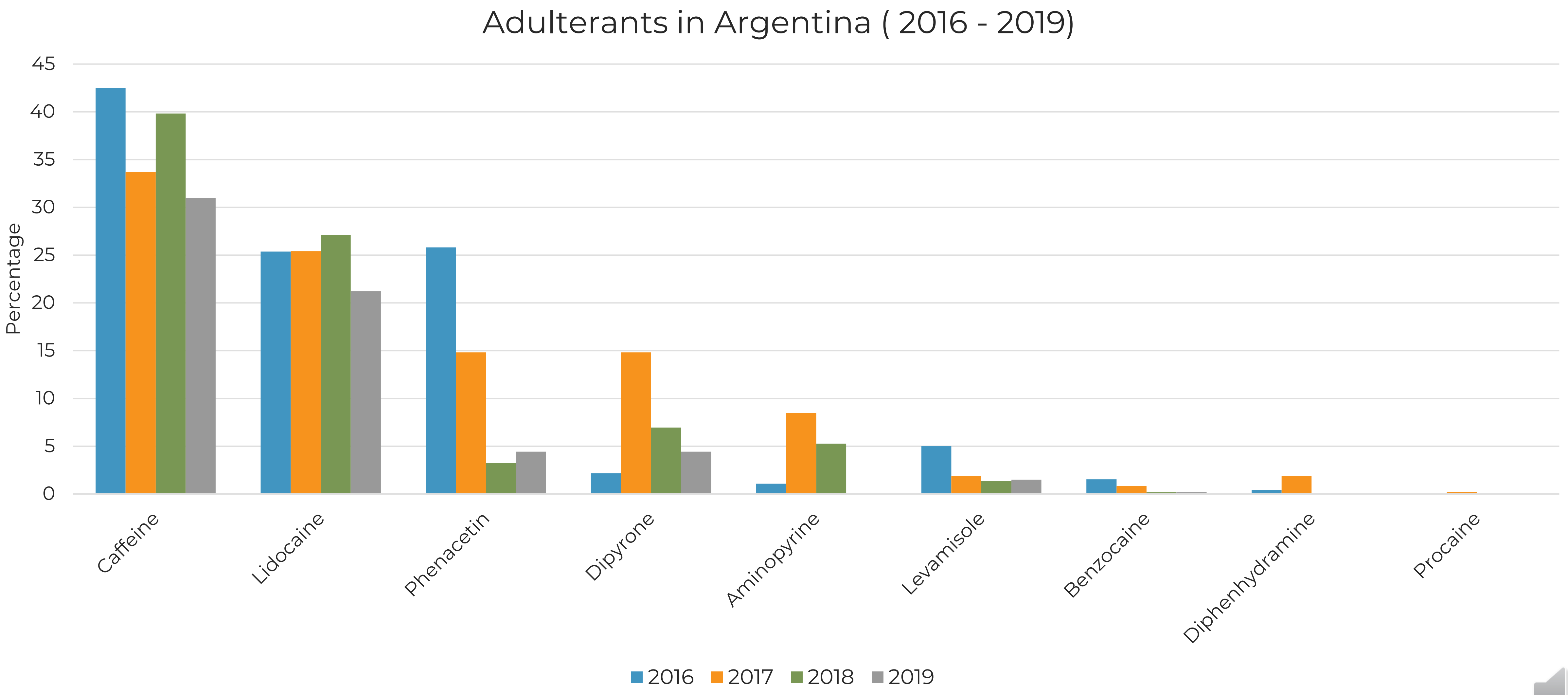
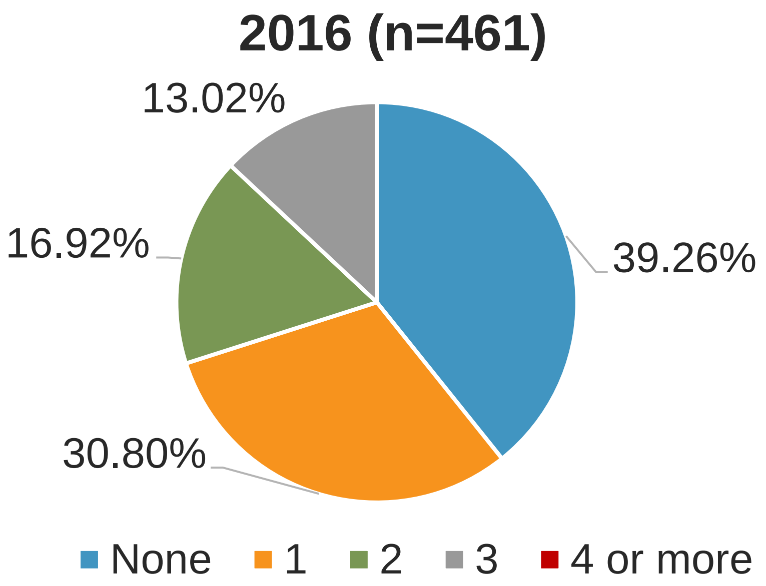
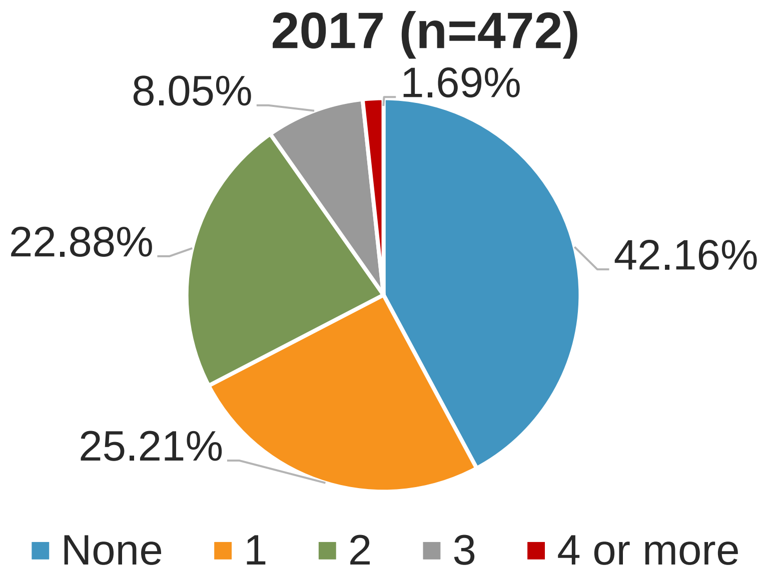
ARGENTINA

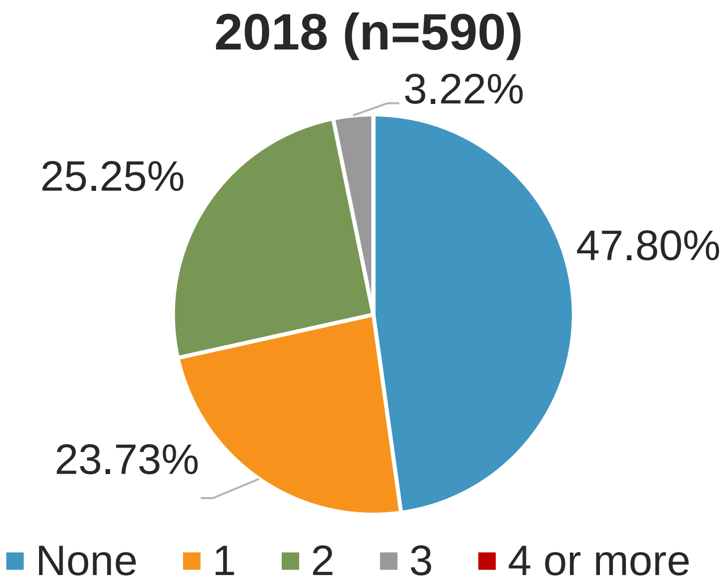
Argentina (Cocaine Seizures)

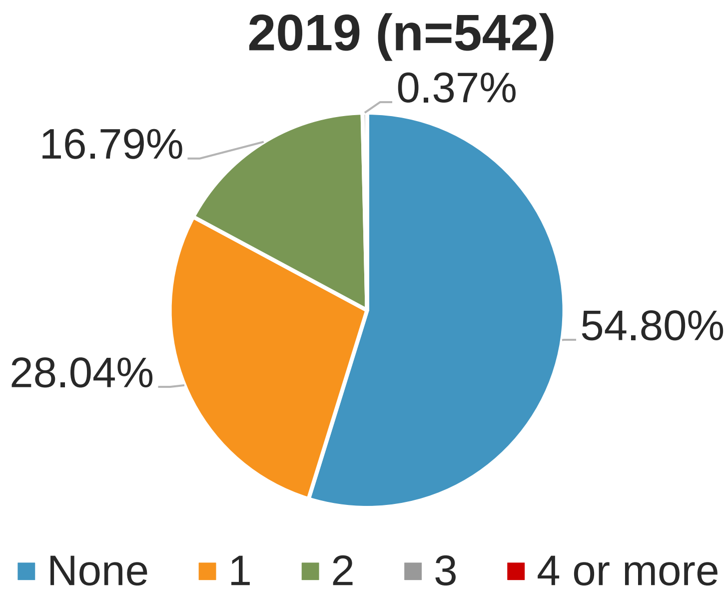


Number of Adulterants Identified in Seized Cocaine Samples

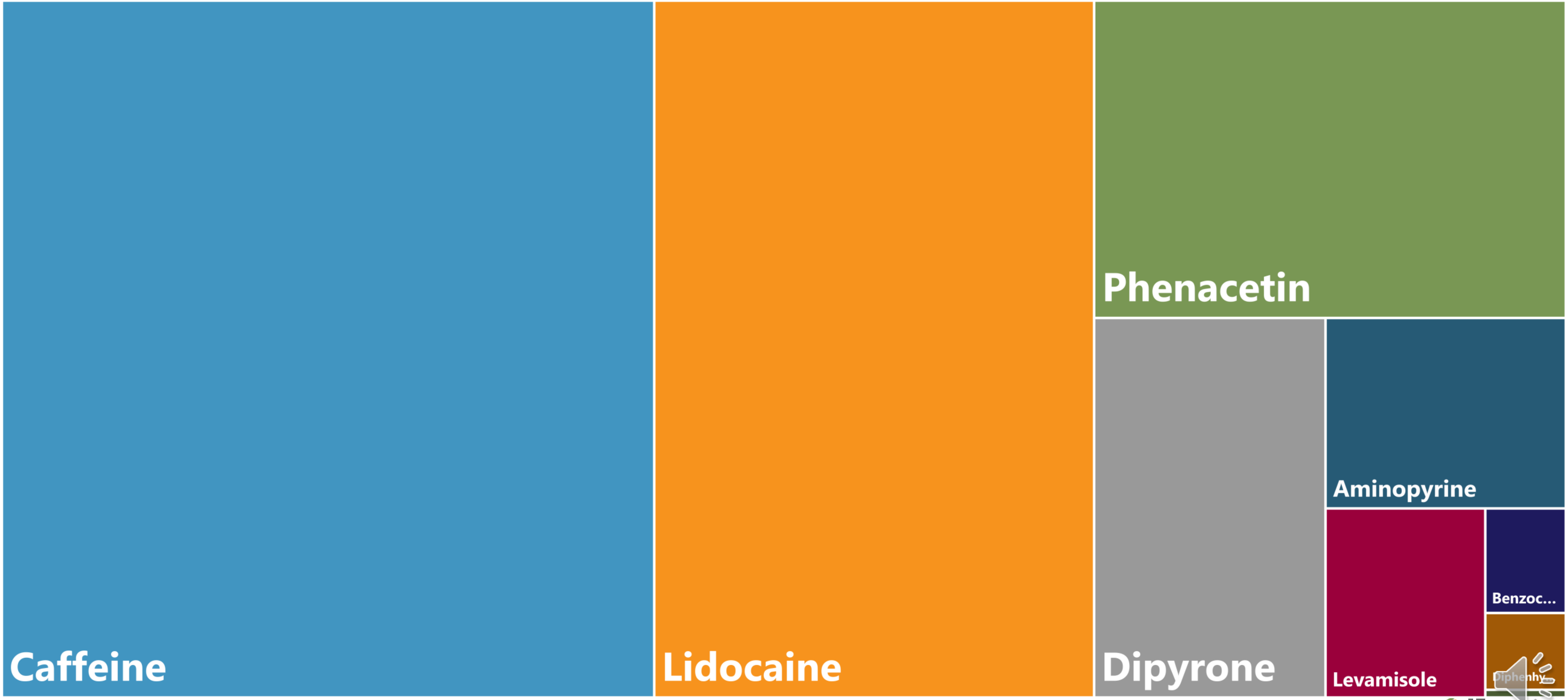








Most Common Toxic Adulterants 2016 - 2019



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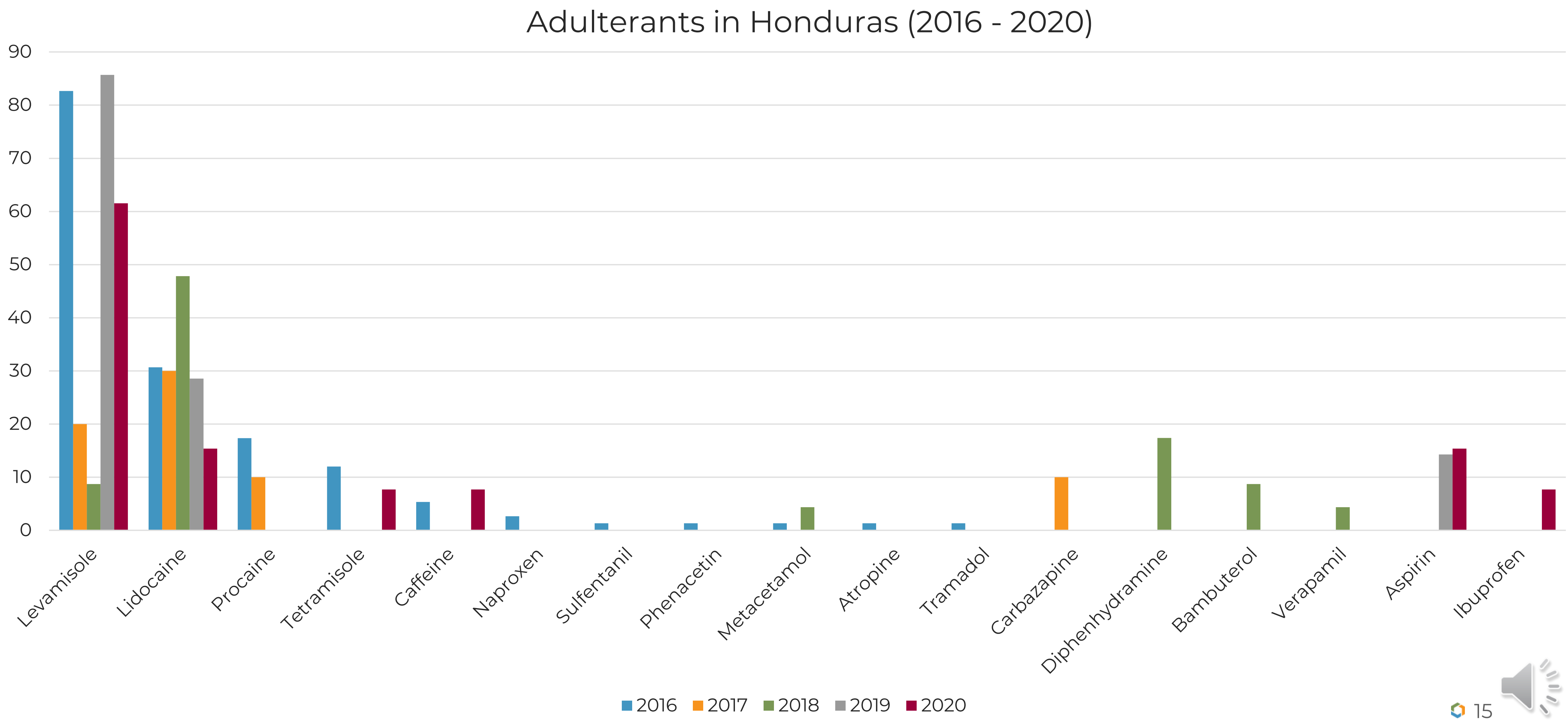
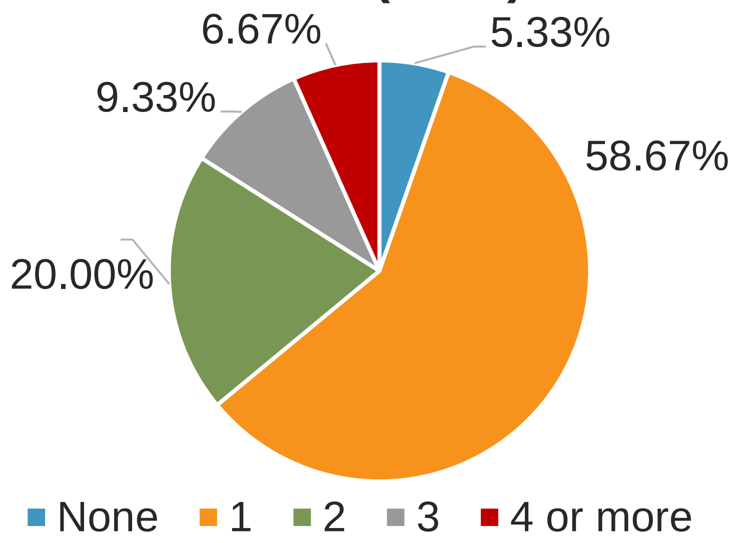
HONDURAS

Honduras (Cocaine Seizures)

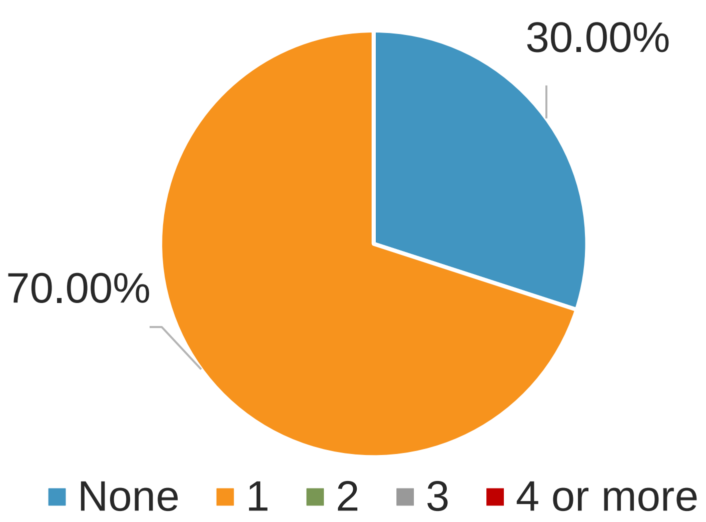


Number of Adulterants Identified in Seized Cocaine Samples

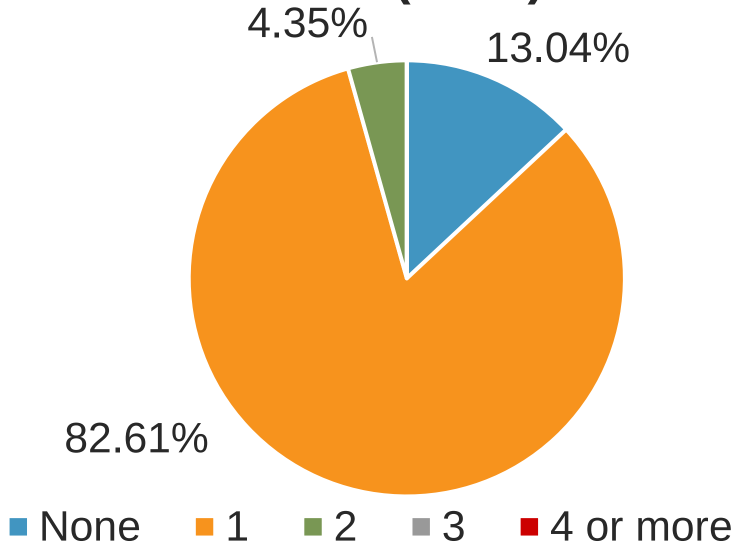
2016 (n=75)



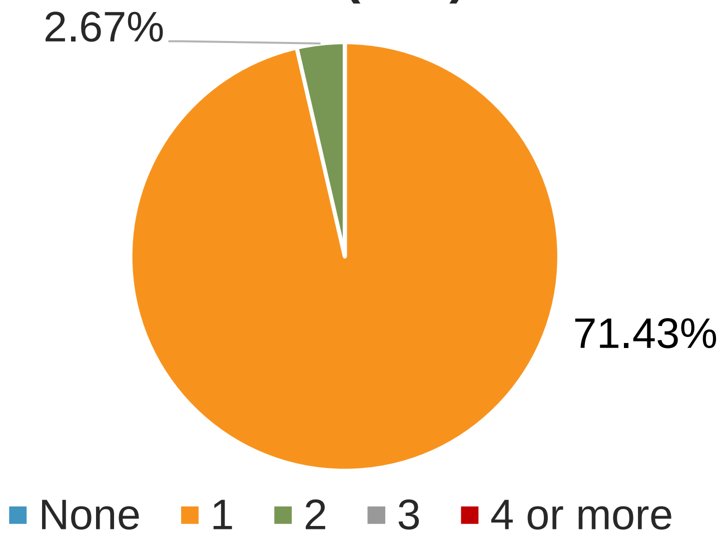
2017 (n=10)



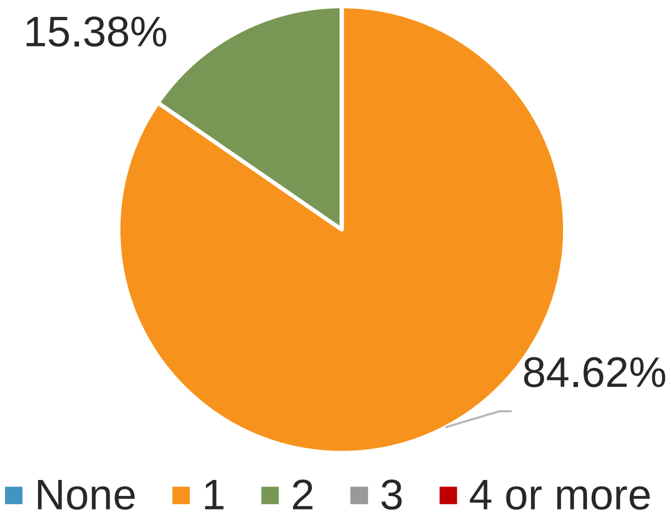
2018 (n=23)



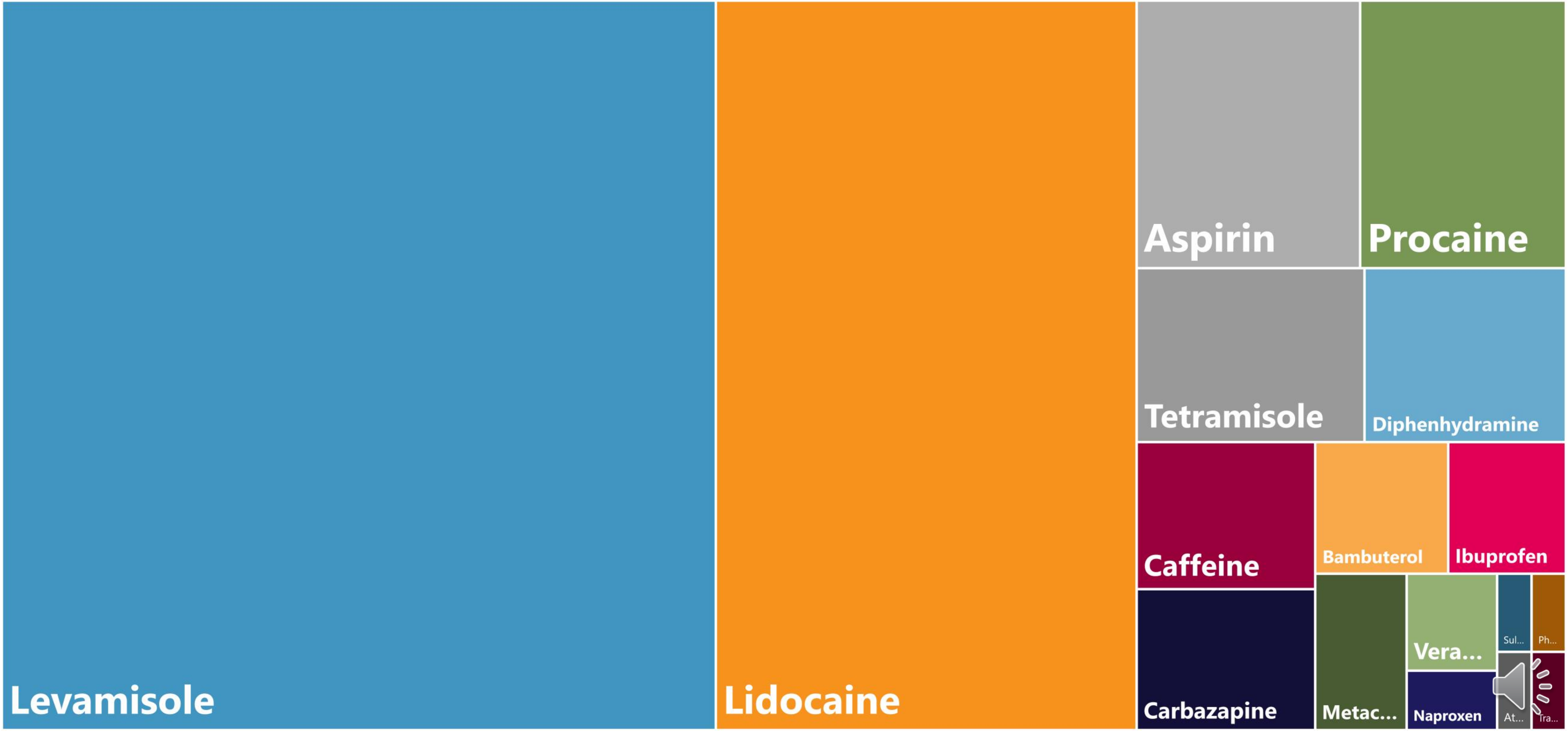
2019 (n=7)



2020 (n=13)



Most Common Toxic Adulterants 2016 - 2020



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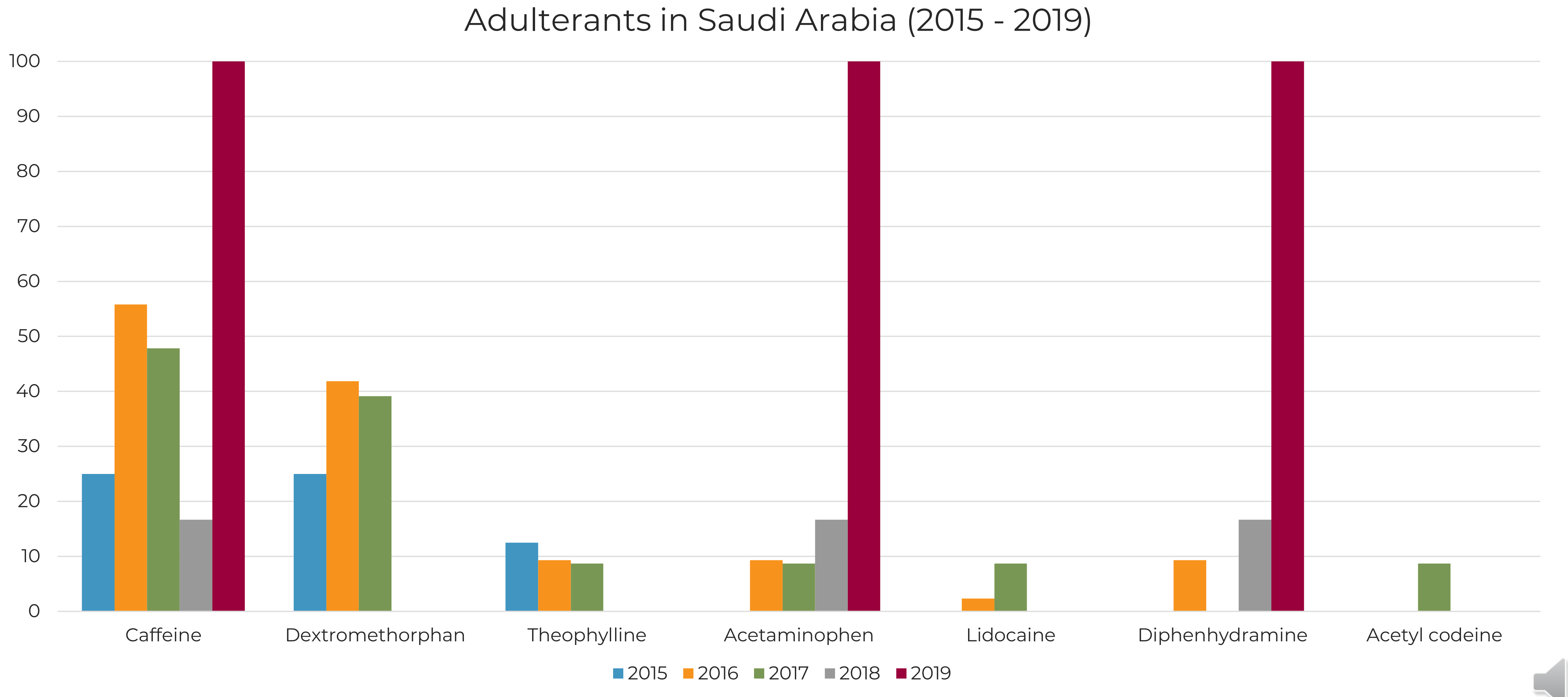
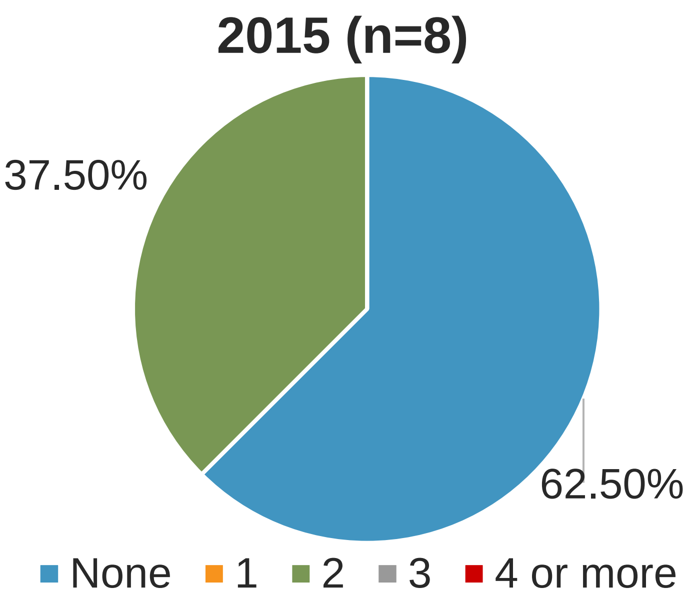
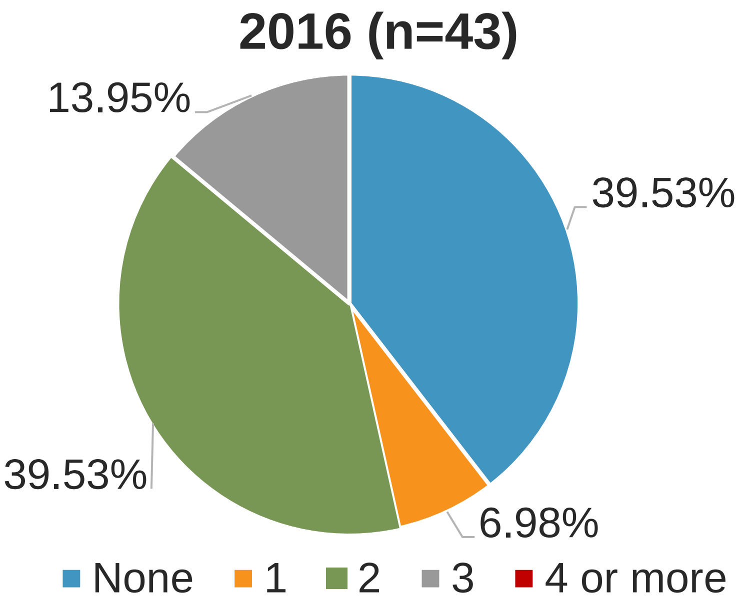
SAUDI ARABIA

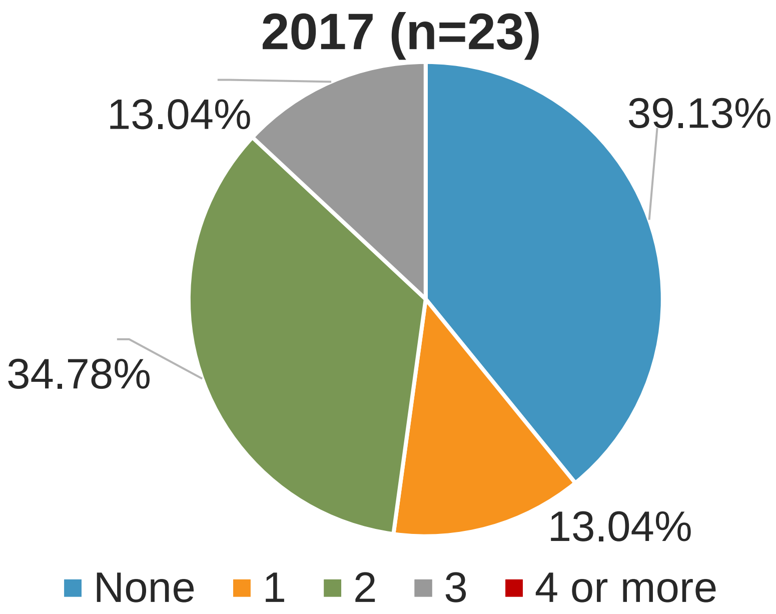
Saudi Arabia (Meth., Amph., Tramadol and Heroin Seizures)

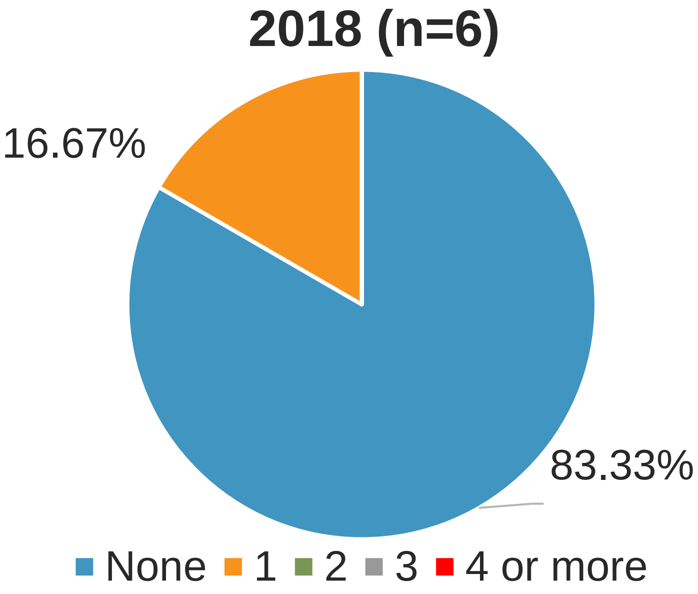


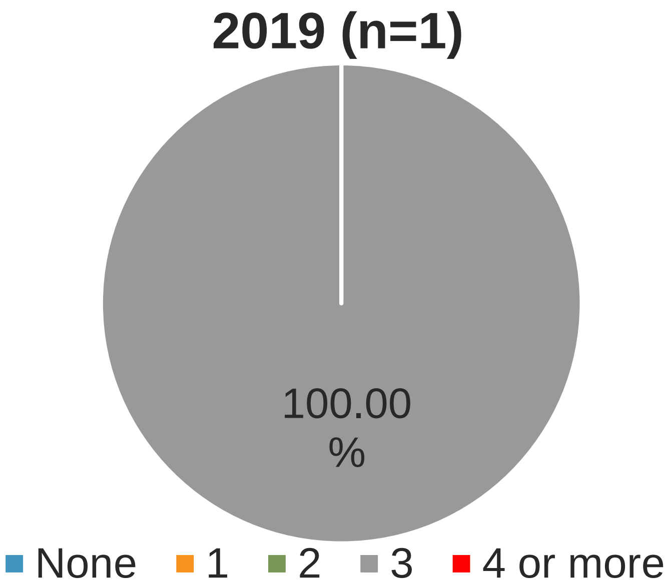
Number of Adulterants Identified in Seized Samples



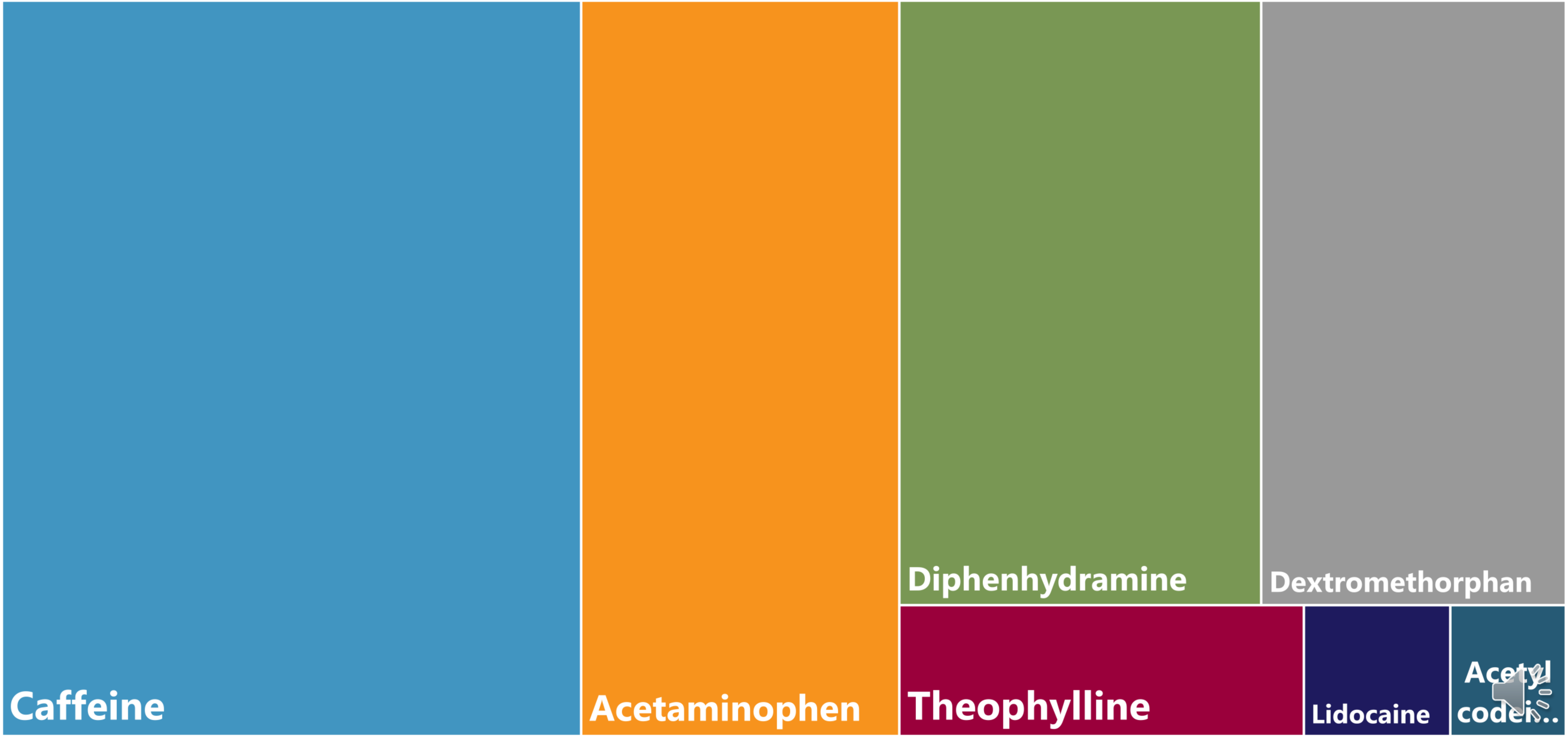








Most Common Toxic Adulterants 2016 - 2020



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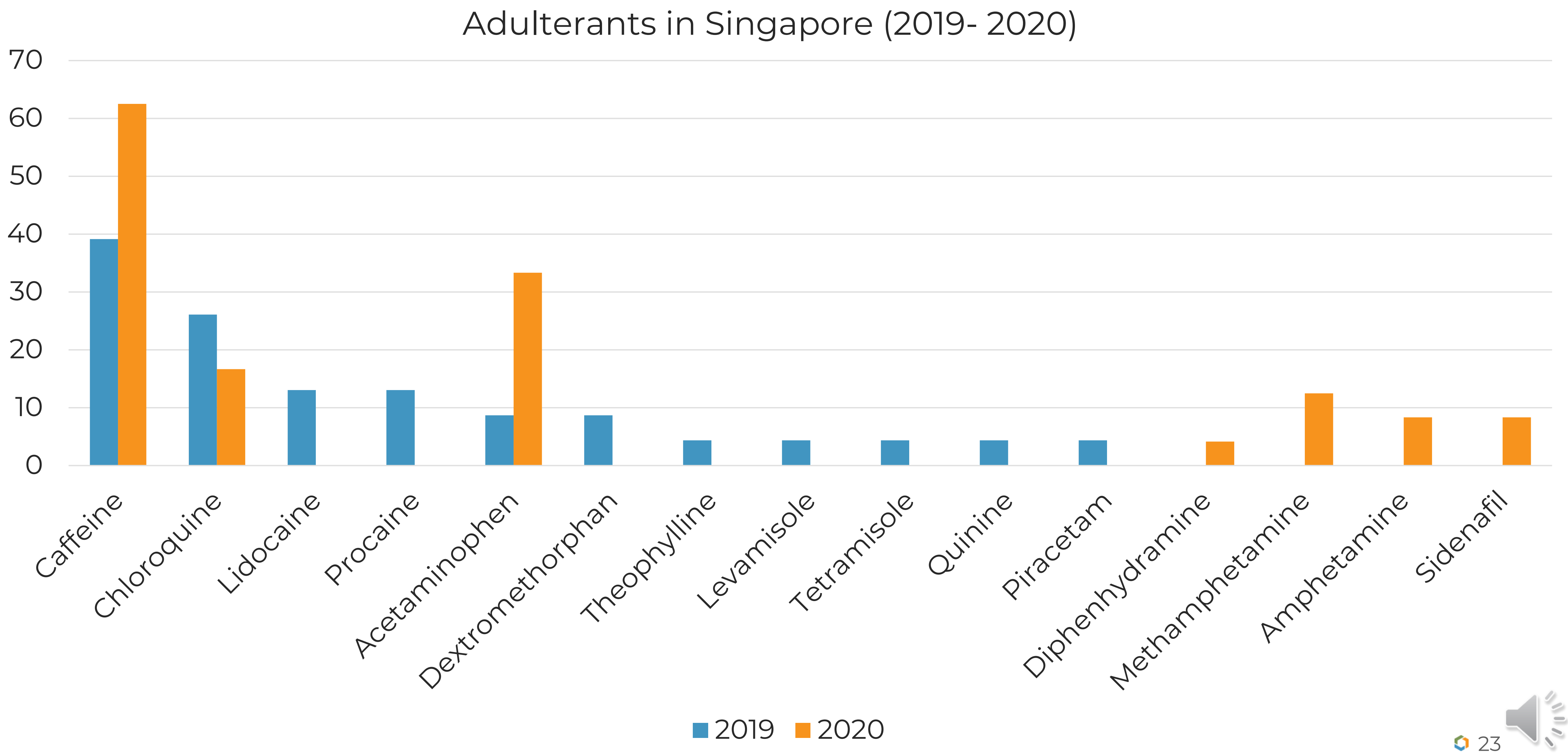
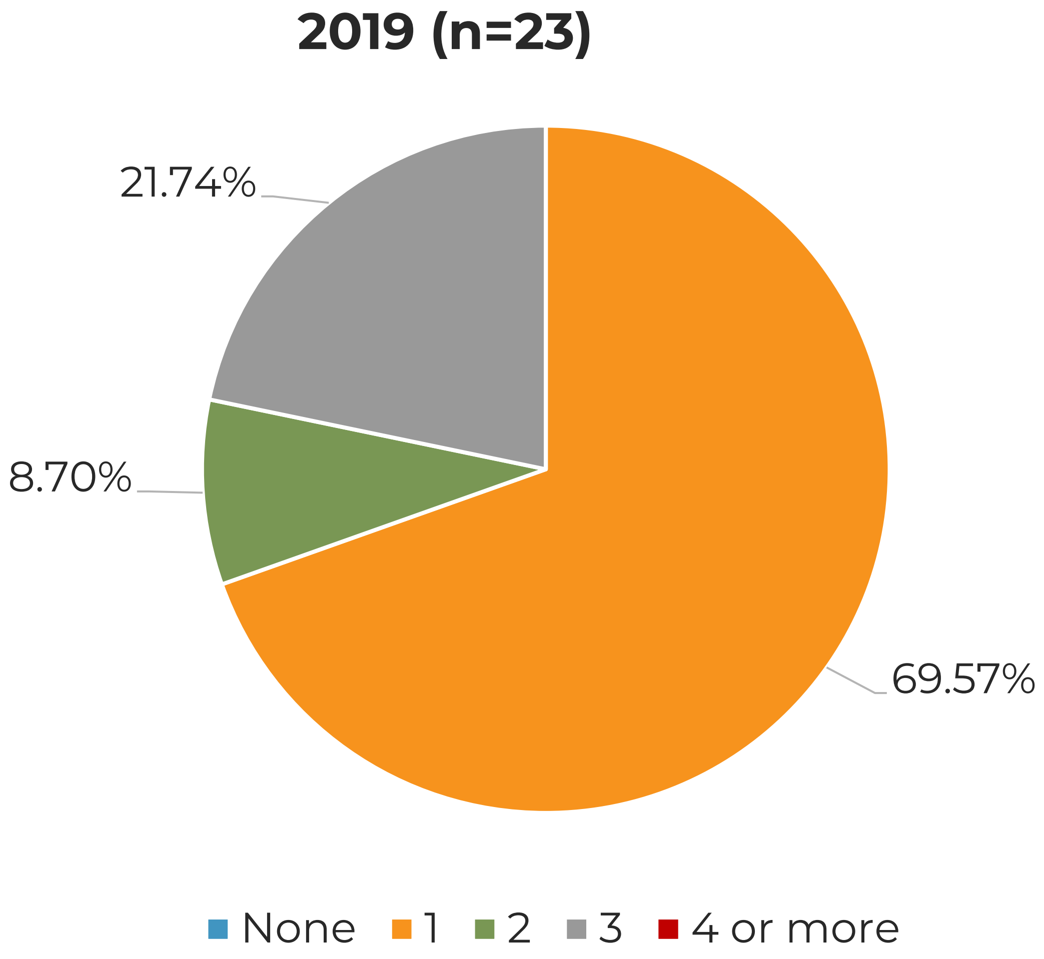
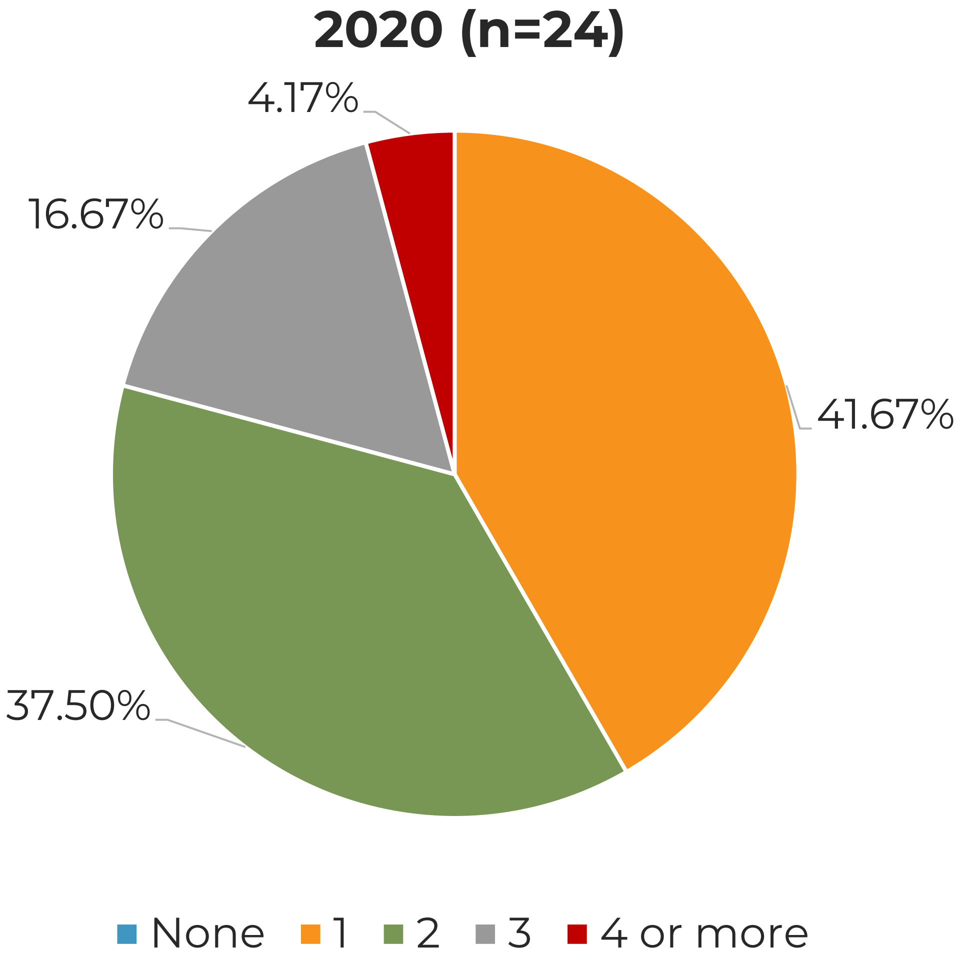
SINGAPORE

Singapore (Cocaine, Heroin, Ketamine, MDMA and Meth)



Percent of Samples containing toxic adulterants





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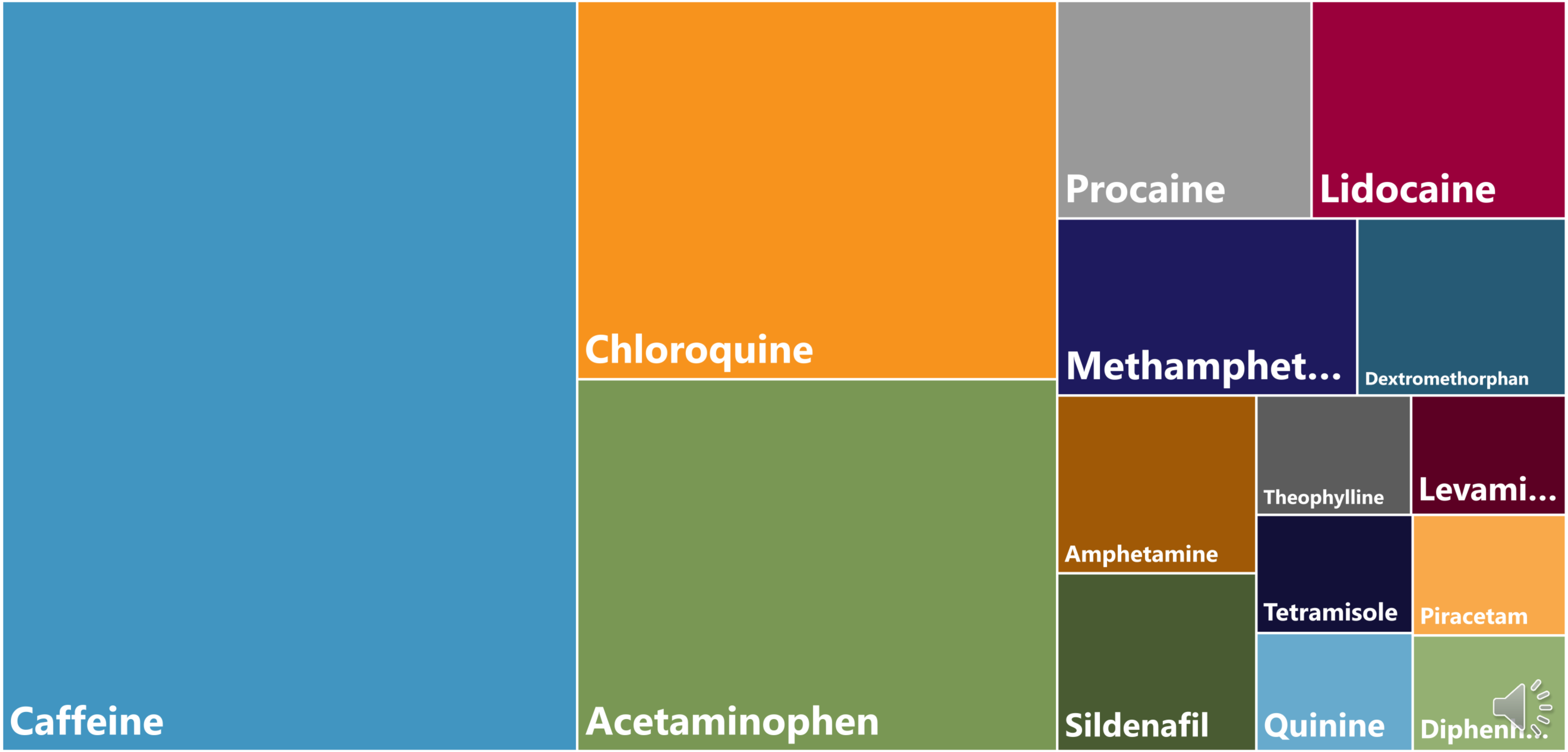
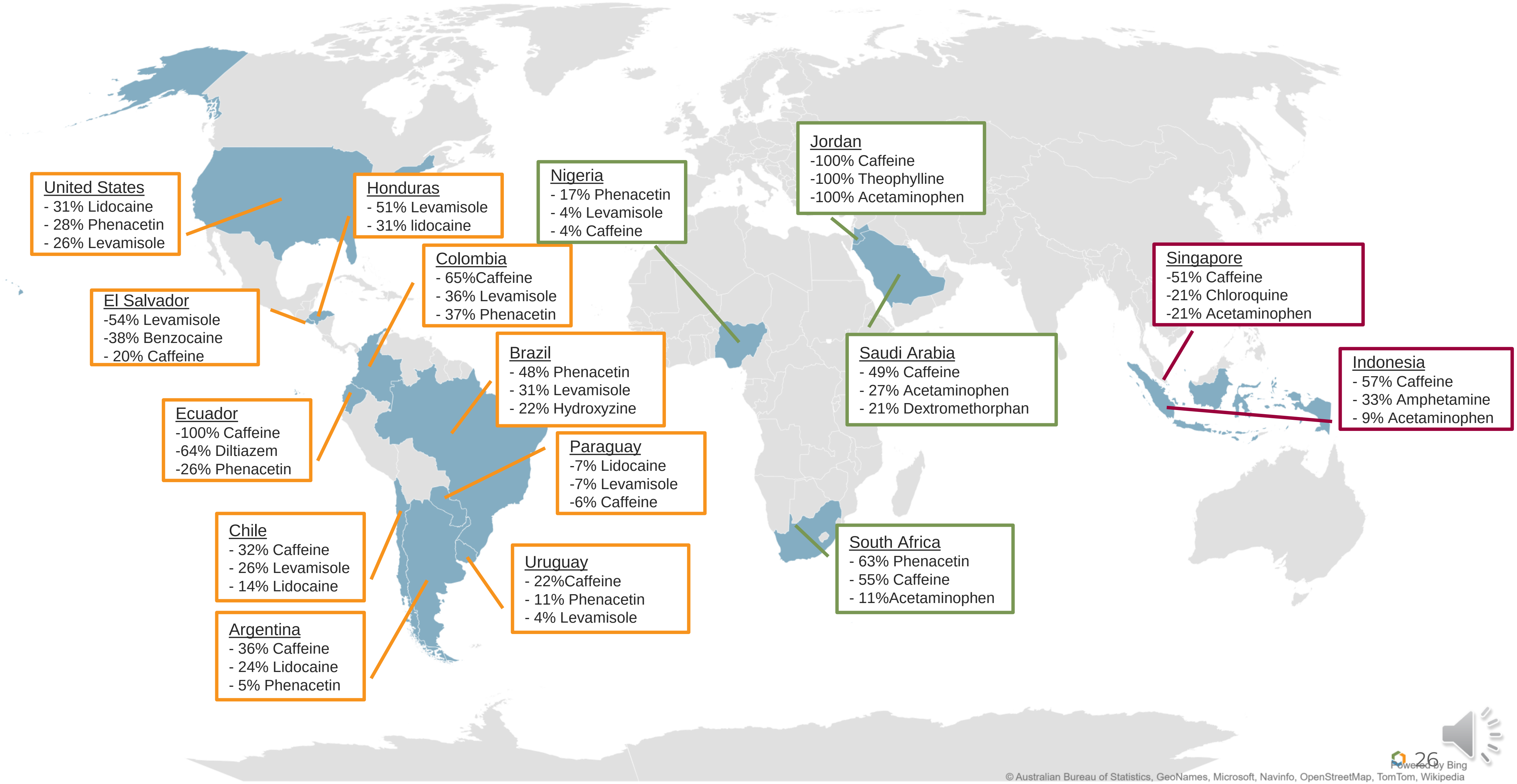
Most common Toxic adulterant between 2019 - 2020



Most common toxic adulterant reported by country



Discussion

- Most popular adulterant worldwide is Caffeine
  - Followed by Phenacetin and Levamisole
- Neighboring countries do not always have the same adulterants
  - In **South America**, drug seizures were mostly cocaine and contained a variety of adulterants
    - Levamisole, Diltiazem, Lidocaine, Phenacetin, Hydroxyzine (mostly in cocaine)
  - In the **Middle East**, adulterants were found in meth/amphetamine seizures
    - Adulterants differed relative to those found in South American cocaine seizures
- This shows how the drug market in each country is different and the drug adulterants vary greatly and are dependent on the drug type:
    - Identifying common adulterant mixtures may help identify a specific origin of a seized drug

Discussion

- What about trends over time?
- The number of adulterants identified by sample have decreased over time.
  - **Argentina:** Unadulterated cocaine increased from 40% to 55% from 2016 to 2019
  - **Saudi Arabia**: Unadulterated seized drugs increased from 63% to 83% from 2015 to 2018
- Year over year, the profile with respect to the number of adulterants identified has changed:
  - Ex. **Honduras**: - In 2016, there were 7 or more different adulterants identified
    - By 2020, only 3 or 4 of the more common adulterants were identified.
- Moreover, the number of toxic adulterants identified per sample has decreased:
  - From three or more adulterants per sample → to one

Why is identifying toxic adulterants important?

- The consumption of toxic adulterants have associated health risks
- Co-ingestion of toxic adulterants with other drugs may increase the likelihood of adverse events.
  - Possible adverse effects → health complications
- A better understanding of what toxic adulterants are identified will help:
  - Emergency services
  - Toxicologists and medical examiners
- There is a need to inform the public about the risks associated with the chronic ingestion of toxic adulterants and a need to better understand what toxic adulterants are commonly found in drug material.

Acknowledgements

- I would like to thank
  - –All participating laboratories around the world
  - –All CFSRE staff
    - Mandi Mohr

- If you would like to participate in this data sharing initiative, please email me at:

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