PHenomenal Hope 2024

Knowledge, Research & Advocacy in PH

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Methamphetamine-Associated Pulmonary Arterial Hypertension: Uncovering an Urgent Unmet Medical Need in the US via Analytics and Insights

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Background and Study Overview

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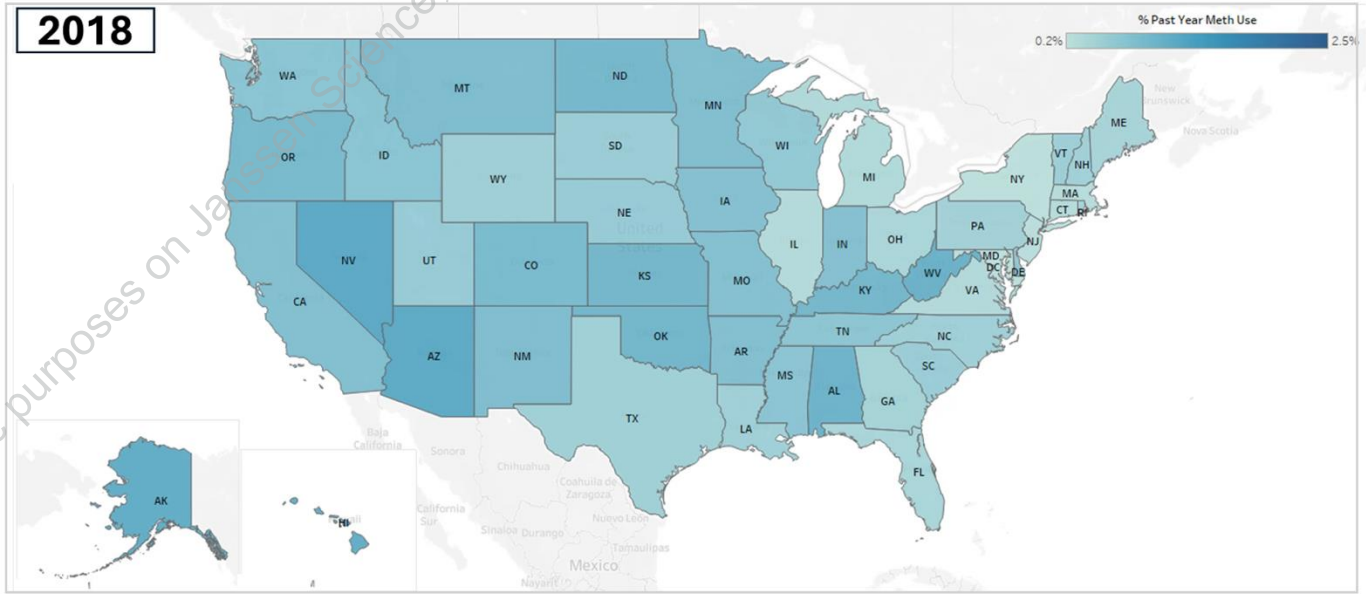
Methamphetamine-Associated PAH

- Methamphetamine use is continuing to increase nationally in the United States and worldwide[1,2]
- Methamphetamine use can lead to PAH, classified as Methamphetamine-associated PAH (Meth-APAH)[3]
- Compared to idiopathic PAH, Meth-APAH is associated with more than double the risk of clinical worsening or death[4]
- The societal, psychological, and clinical aspects of treating patients with Meth-APAH is an under-recognized and under-studied challenge for clinicians[4,5]

% Adult Population with Past Year Methamphetamine Use[1]



Abbreviations: PAH: pulmonary arterial hypertension; Meth-APAH: Methamphetamine-associated pulmonary arterial hypertension. Citations in slide notes.

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Study Objectives

To uncover the current landscape of Meth-APAH prevalence and patient characteristics across the US in the landscape of rising use of methamphetamine nationwide

Based on U.S. medical and prescription claims data*, uncover:

Trends in methamphetamine use and Meth-APAH prevalence

Demographic characteristics of patients with Meth-APAH

Treatment rates and patterns in managing Meth-APAH

*Medical and prescription claims data from an integrated dataset of Komodo and Symphony Health Solutions claims data of pulmonary hypertension patients, with full medical and pharmacy claims from 2016-01-01 to current; **Abbreviations:** Meth-APAH: Methamphetamine-associated pulmonary arterial hypertension

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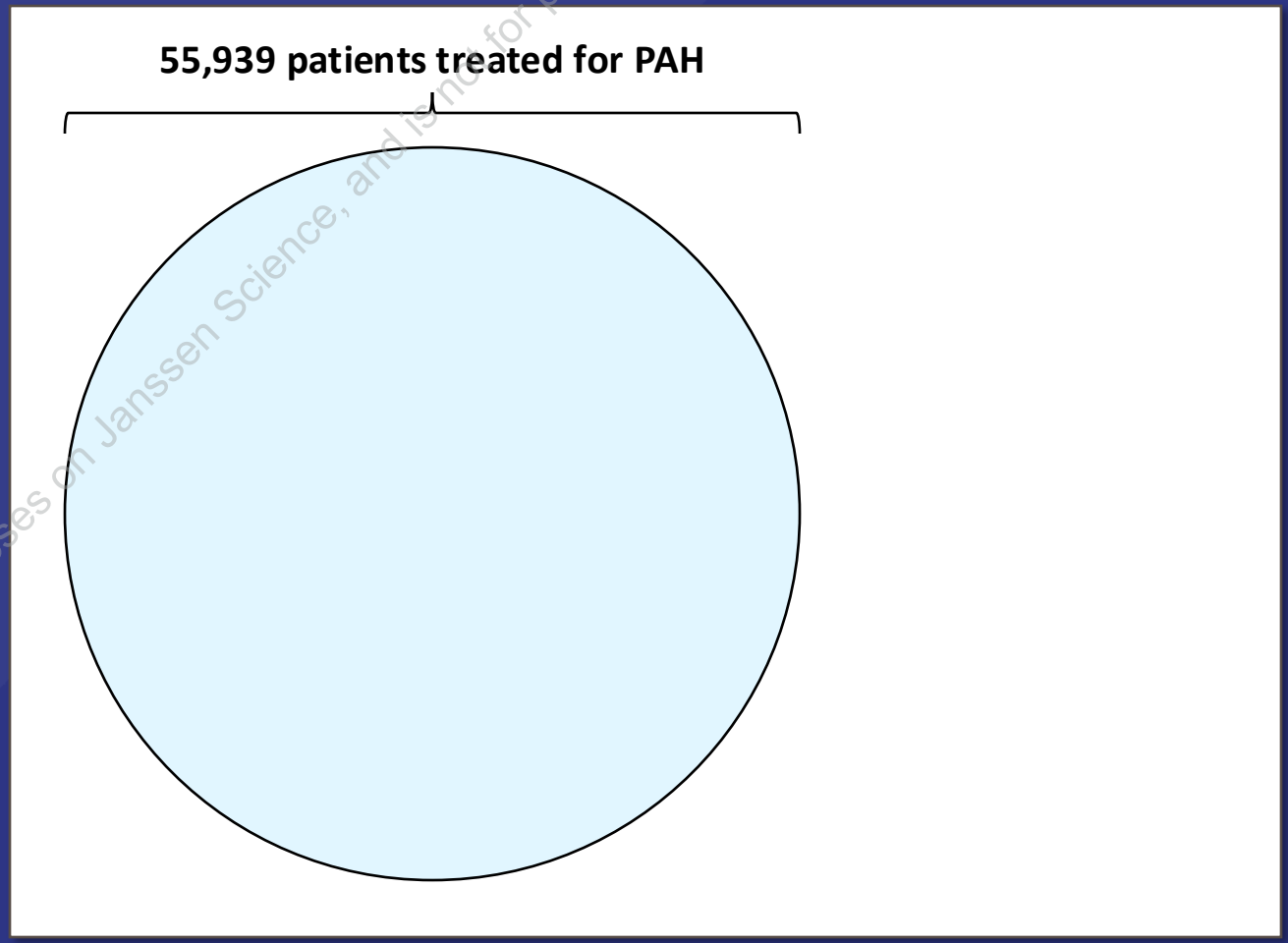
Methodology

Identifying Patients Treated for PAH

Patient Types Identified:

1. Patients Treated for PAH: 55,939

- At least one PAH treatment claim temporally related to PAH diagnosis between 09/01/2021 and 08/31/2023
- Additional criteria of patients with PAH treatment & diagnosis, including:
  - Prescribed a PAH treatment by a pulmonologist, cardiologist, or rheumatologist
  - Received a PAH treatment near PAH diagnosis
  - If prescribed a PDE-5i, was not diagnosed with Left Heart Disease or Interstitial Lung Disease near PDE-5i prescription in time



Medical and prescription claims data from an integrated dataset of Komodo and SHS claims data of pulmonary hypertension patients, with full medical and pharmacy claims; *Therapies indicated for PAH must be temporally connected to a PAH diagnosis to qualify as a PAH treatment. **Abbreviations:** PAH: pulmonary arterial hypertension

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Methodology

Identifying Patients Treated for PAH

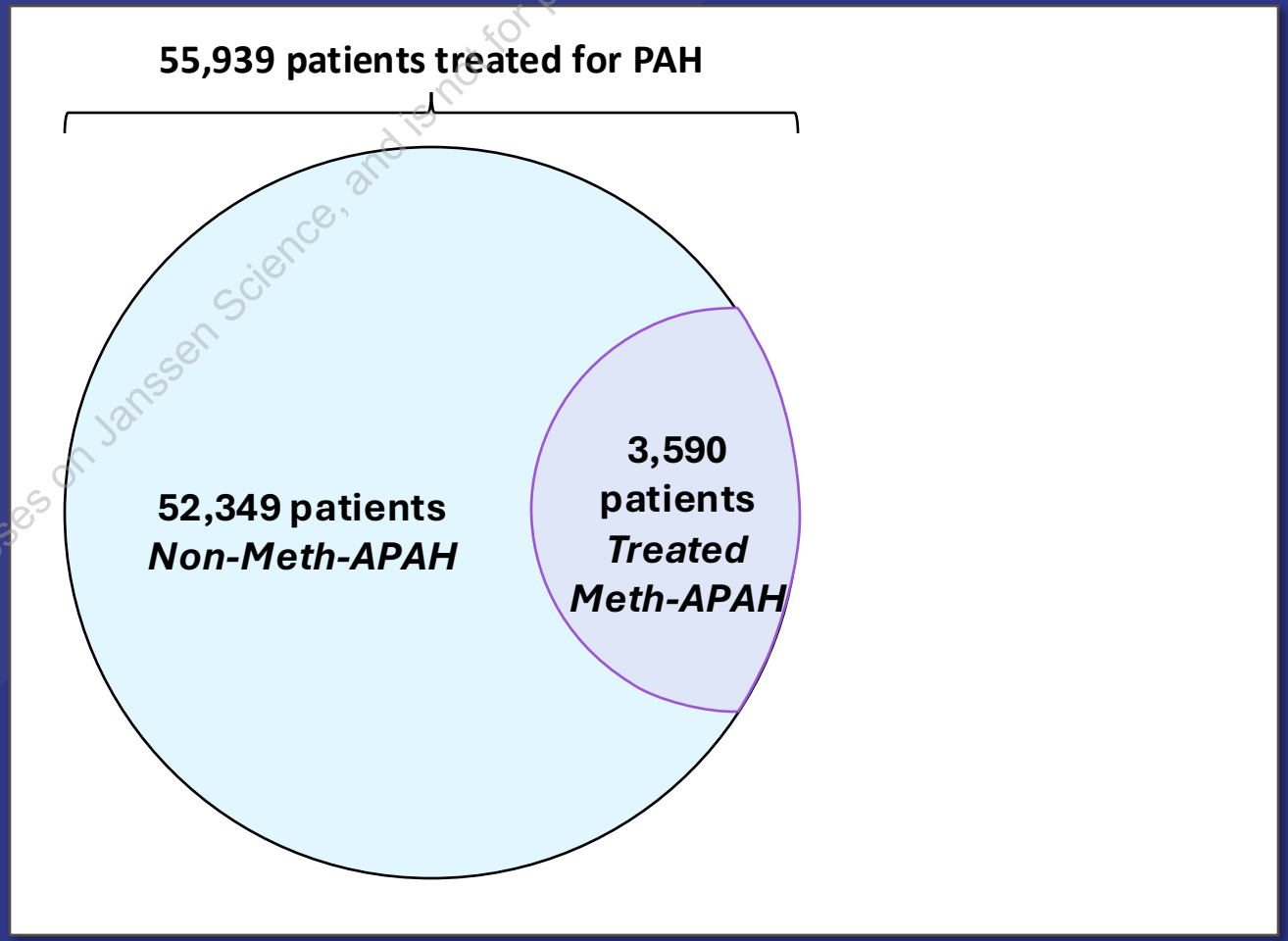
Patient Types Identified:

2. Treated Patients with Meth-APAH: 3,590

- Met the criteria for patients treated for PAH
- Methamphetamine use reported in claims data across available time range

3. Patients with Non-Meth-APAH: 52,349

- Met the criteria for patients treated for PAH
- Did not have methamphetamine



Medical and prescription claims data from an integrated dataset of Komodo and SHS claims data of pulmonary hypertension patients, with full medical and pharmacy claims; **Abbreviations:** PAH: pulmonary arterial hypertension; Meth-APAH: methamphetamine-associated pulmonary arterial hypertension

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Methodology

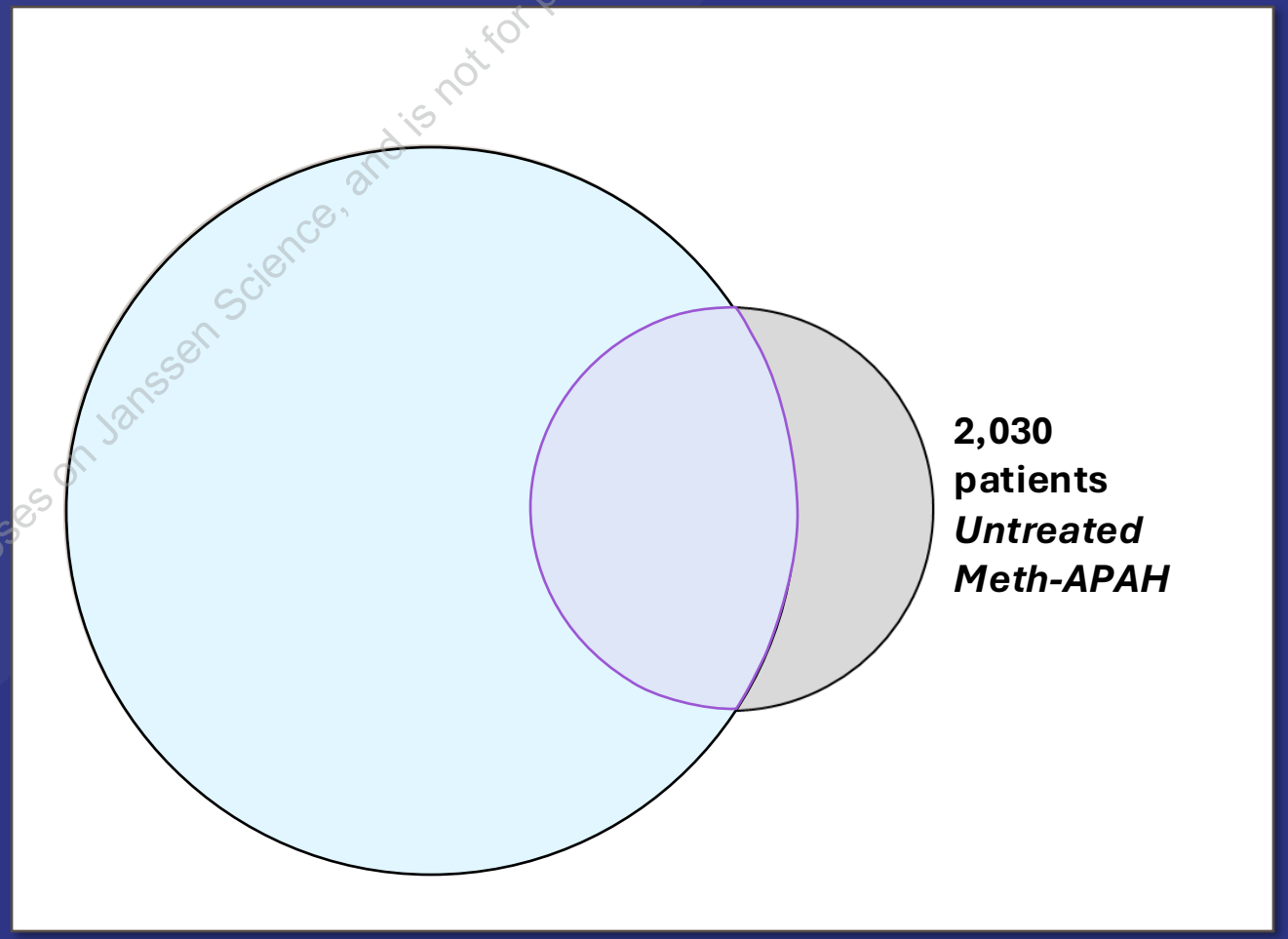
Identifying *Untreated* Patients with Meth-APAH

Patient Types Identified:

4. Untreated Patients with Meth-APAH: 2,030

Met all the following criteria:

- Methamphetamine use reported across available time range
- At least one PAH diagnosis between 09/01/2021 and 08/31/2023
- At least two PAH diagnoses in all available claims data
- At least one echocardiogram prior to PAH diagnosis
- At least one PAH-related visit to a cardiologist, a pulmonologist or a rheumatologist



Medical and prescription claims data from an integrated dataset of Komodo and SHS claims data of pulmonary hypertension patients, with full medical and pharmacy claims; **Abbreviations:** PAH: pulmonary arterial hypertension; Meth-APAH: methamphetamine-associated pulmonary arterial hypertension

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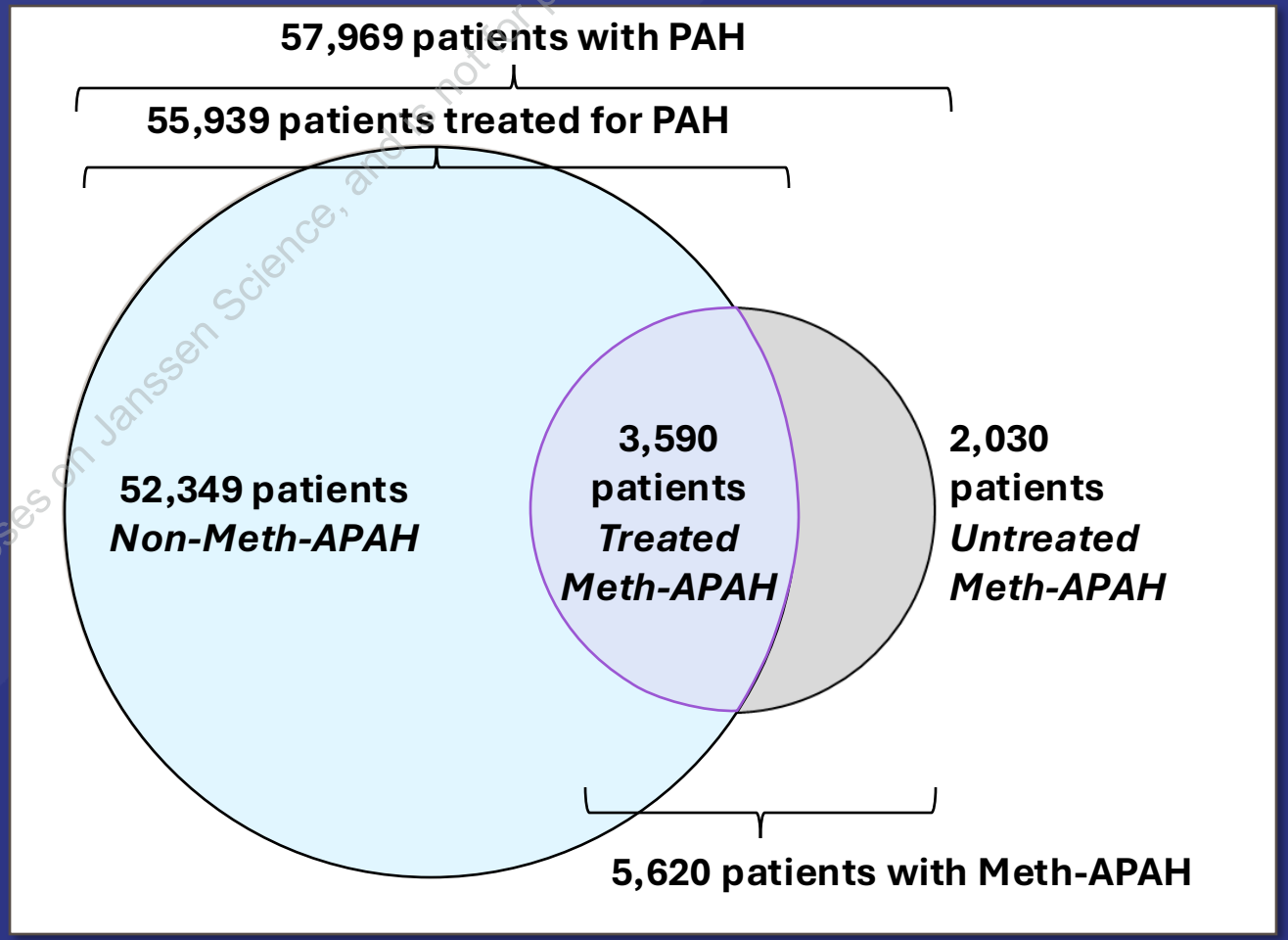
Methodology

Summary of Patient Counts

Of patients identified in claims:

~10%	**of patients with PAH had recorded methamphetamine use**
~36%	**of patients with Meth-APAH did not receive a PAH treatment**



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Results

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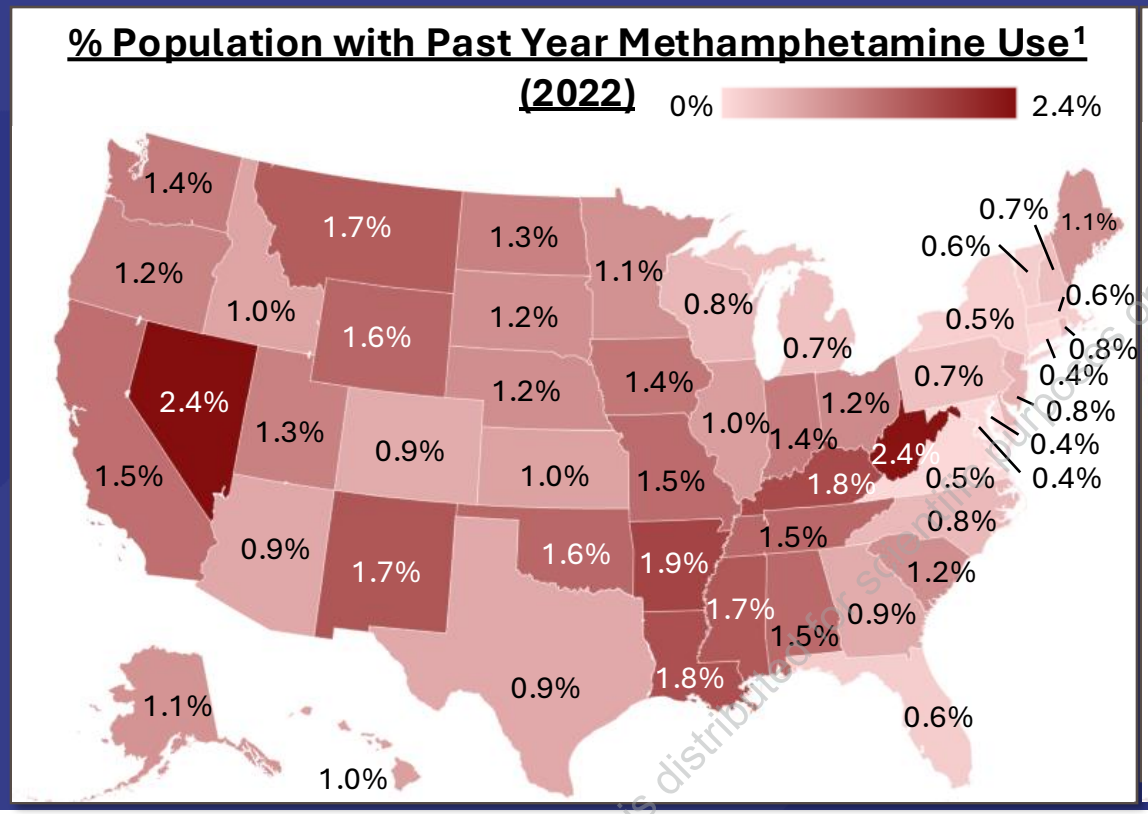
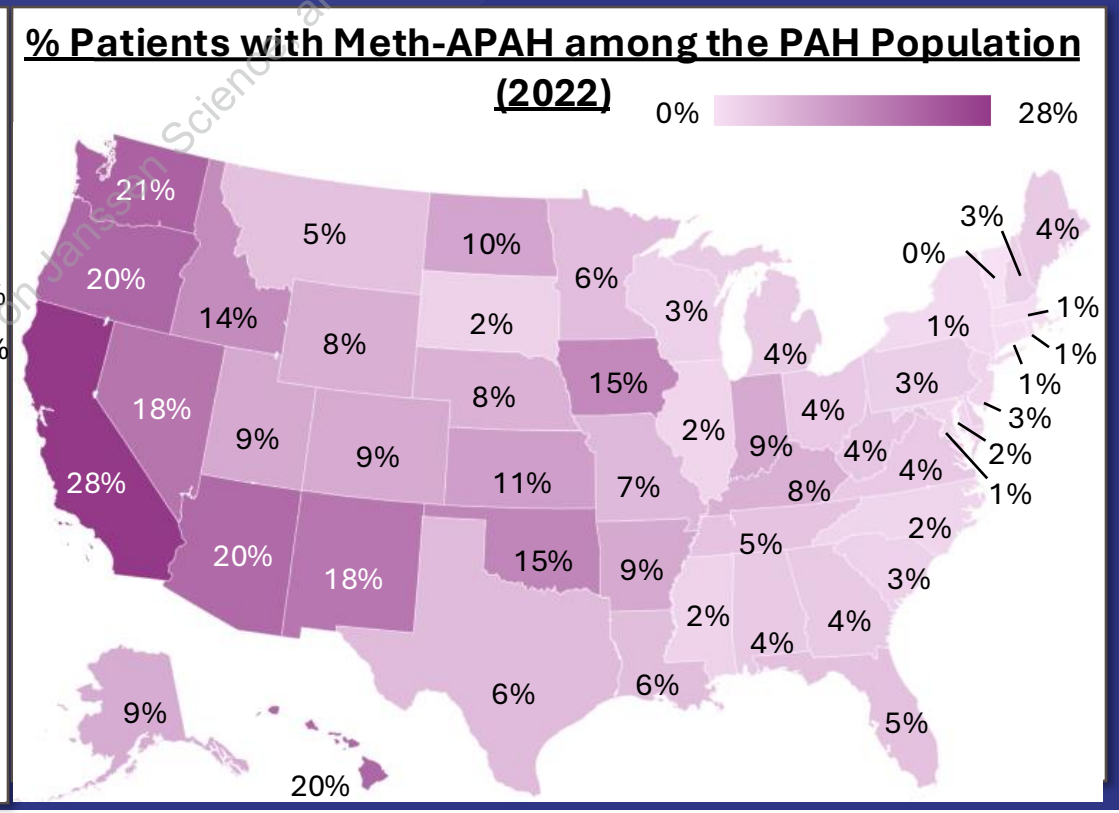
Proportion of Meth-APAH within PAH by State

The average proportion of PAH patients with a history of methamphetamine use is approximately 10% in U.S





Abbreviations: PAH: pulmonary arterial hypertension

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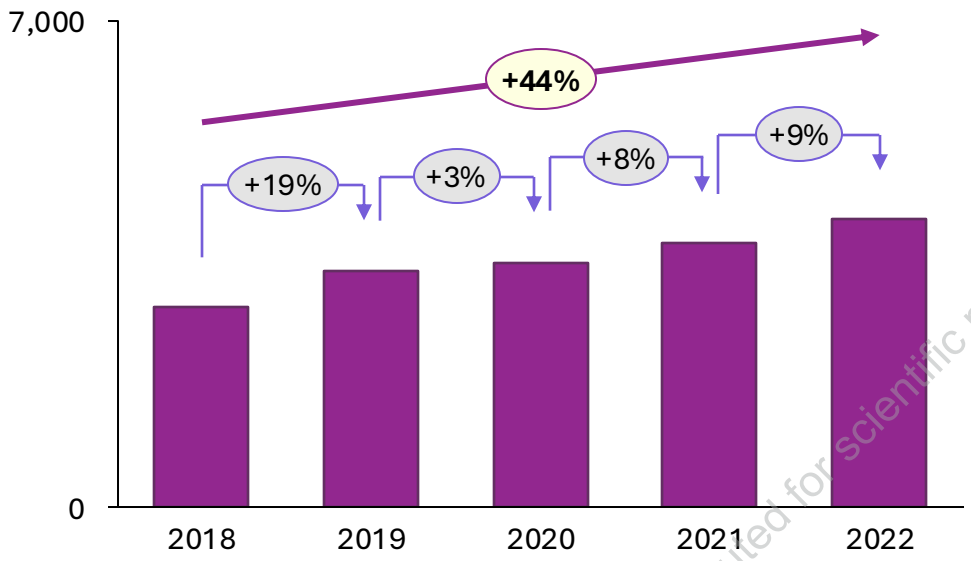
Trends in Meth-APAH Prevalence

Meth-APAH prevalence has been steadily rising, especially in the West and Midwest

Prevalent Patients with Meth-APAH Nationwide



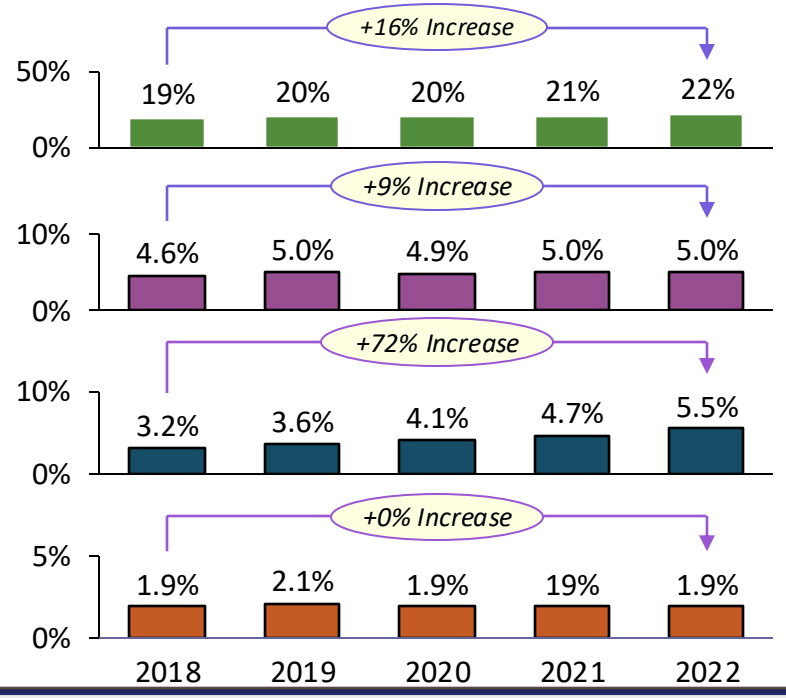
Proportion of Patients with Meth-APAH among the PAH Population *(% Increase between 2018-2022)*

West + *16%*

South + *9%*

Midwest + *72%*

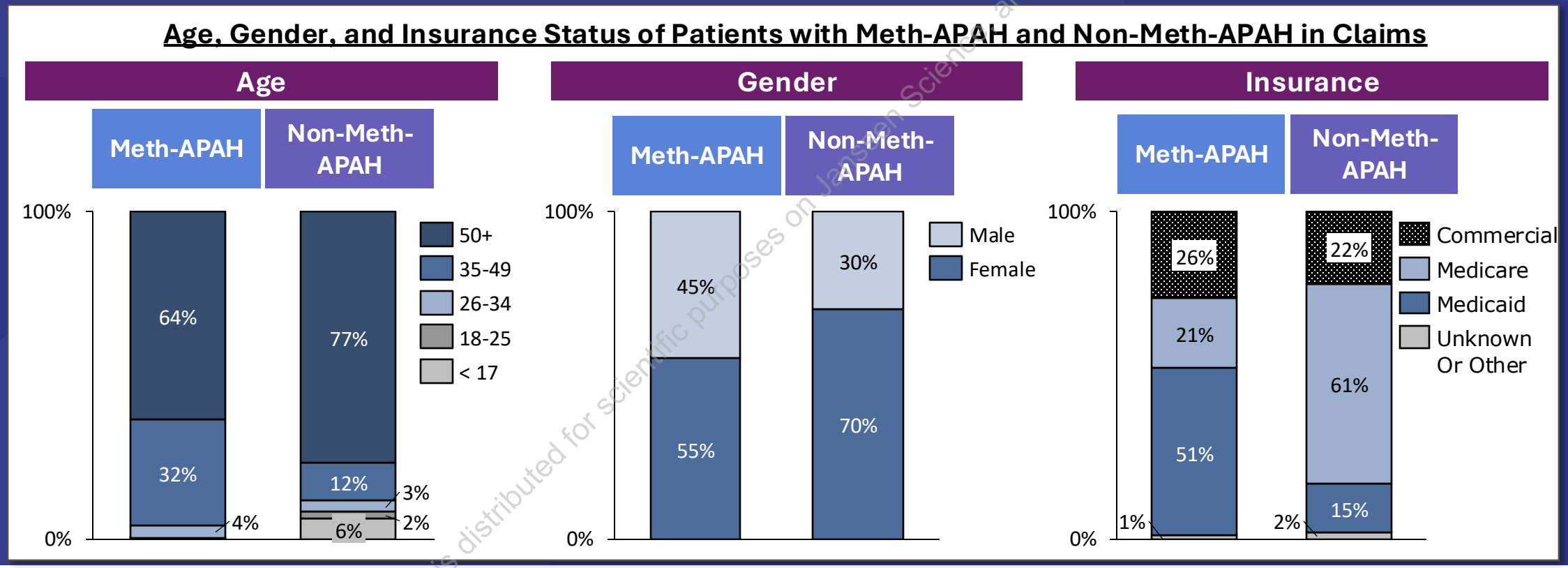
Northeast + *0%*



Abbreviations: Meth-APAH: methamphetamine-associated pulmonary arterial hypertension

Demographics of Patients with Meth-APAH

Patients with Meth-APAH are more likely to be male, younger, and on Medicaid compared to those with Non-Meth-APAH



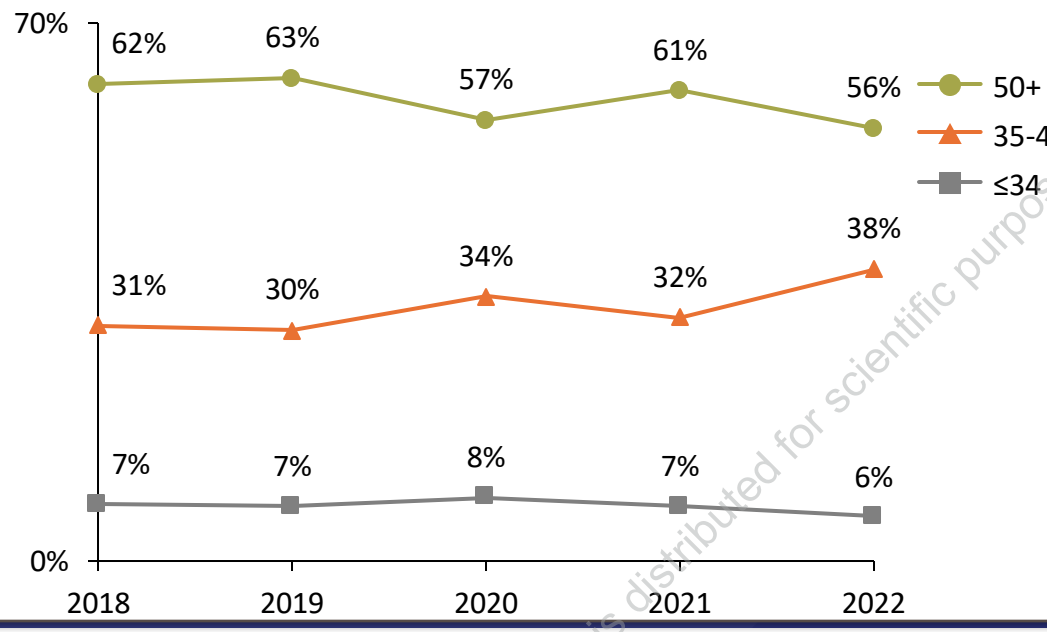
Abbreviations: Meth-APAH: methamphetamine-associated pulmonary arterial hypertension

Demographics of Patients with Meth-APAH

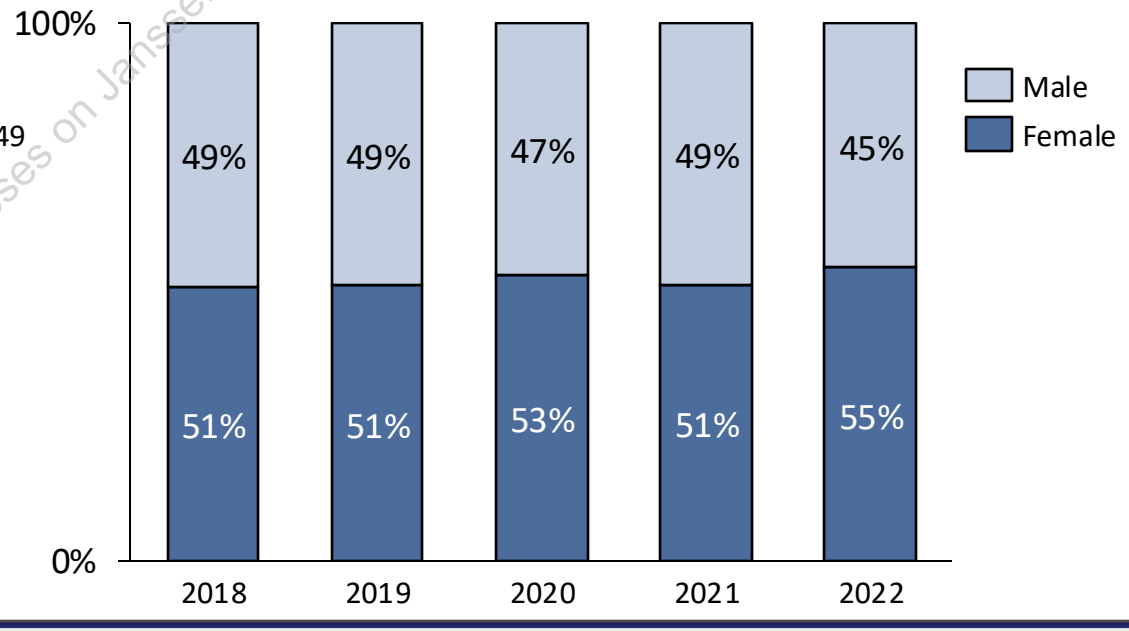
In the past 5 years, the proportion of diagnoses of Meth-APAH is increasing in patients ages 35-49

Age and Gender Distribution of Newly Diagnosed Patients with Meth-APAH

Age



Gender

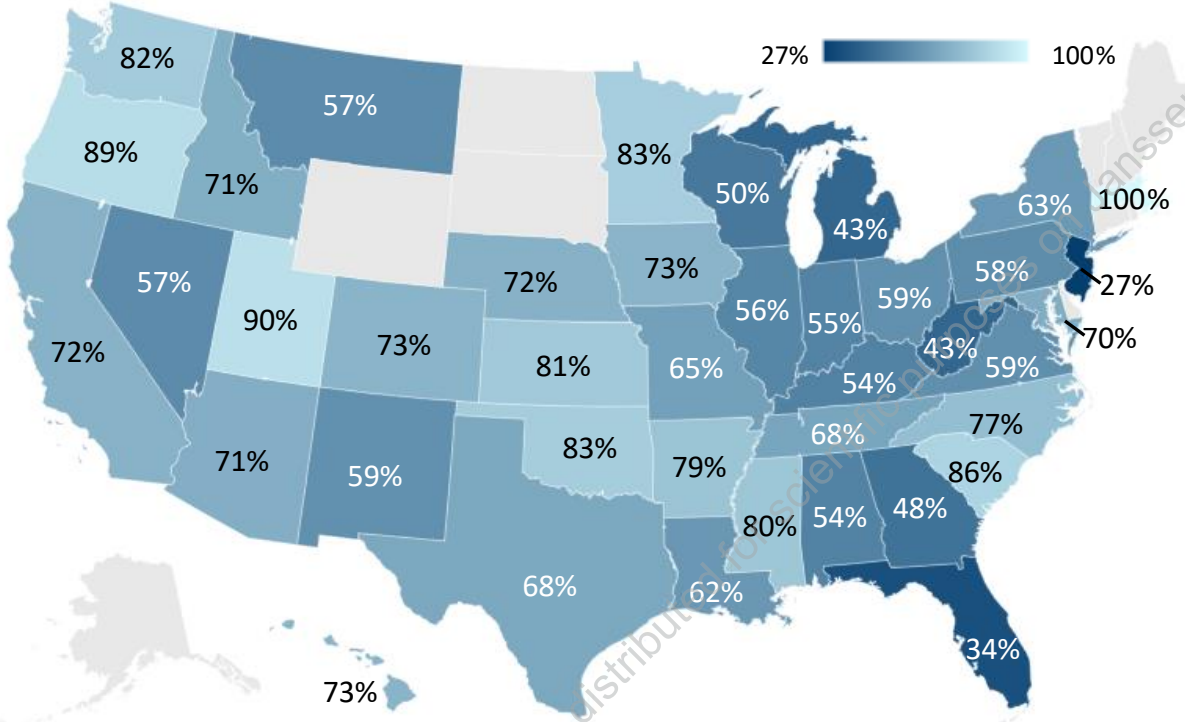


Abbreviations: Meth-APAH: methamphetamine-associated pulmonary arterial hypertension

Proportion of Treated Patients with Meth-APAH by State

~30% of patients with Meth-APAH were not receiving PAH treatment in 2022

% of Patients with Meth-APAH Receiving PAH Treatment (2022)



National Average: 69% of patients with Meth-APAH are receiving PAH treatment

Some states in the **Northeast** and **South** have the lowest treatment rates, such as:

- New Jersey (27%)
- Florida (34%)
- West Virginia (43%)
- Michigan (43%)
- Georgia (48%)

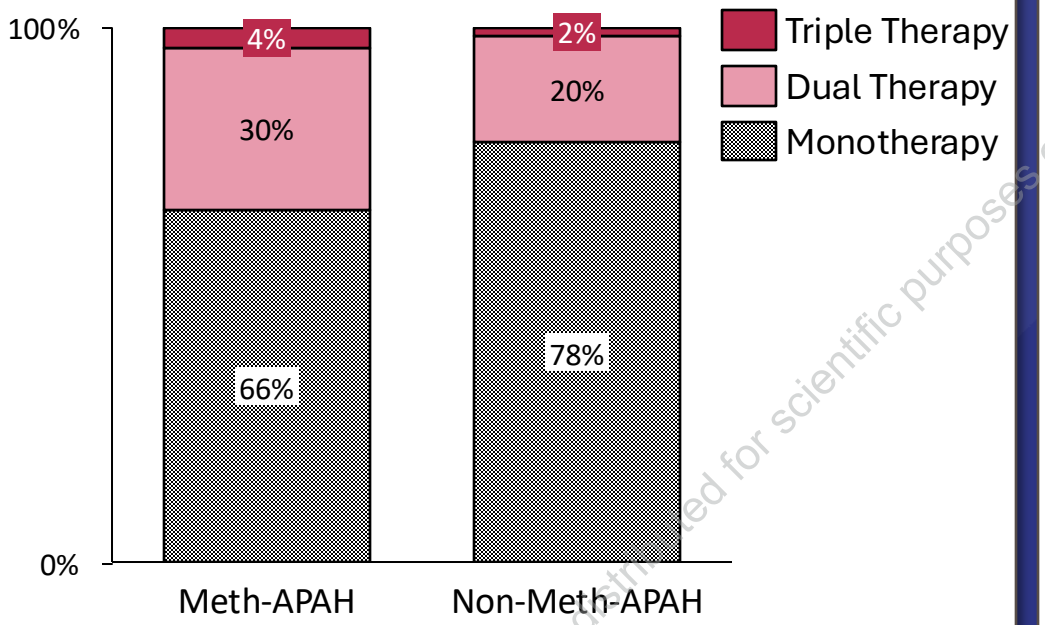
Treatment rates in states with less than 5 PAH patients with a history of methamphetamine use were not calculated due to low sample size and are shown in grey. **Abbreviations:** Meth-APAH: methamphetamine-associated pulmonary arterial hypertension, PAH: pulmonary arterial hypertension

Treatment Patterns of Patients with Meth-APAH

Patients with Meth-APAH were more likely to be prescribed an initial therapy of dual or triple therapy following diagnosis

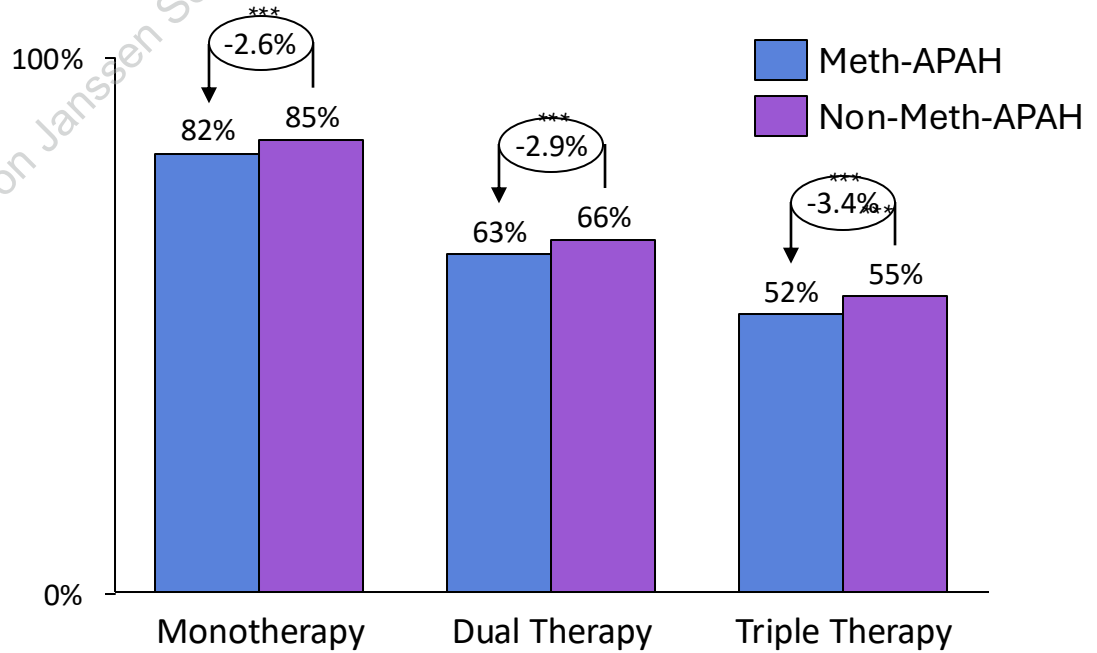
Patients with Meth-APAH have slightly lower treatment adherence: it is ~3% lower in patients with Meth-APAH compared to those with non-meth-APAH

Distribution of Initial Therapy Type



Treatment Adherence by Therapy Type

***: $p < 0.05$



Abbreviations: Meth-APAH: methamphetamine-associated pulmonary arterial hypertension; PAH: pulmonary arterial hypertension

Study Conclusions

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Study conclusions

- Meth-APAH diagnoses has been steadily rising in the U.S., with ~10% of patients with PAH recorded to have a history of methamphetamine use
- Patients with Meth-APAH are more likely to be male (compared to those with non-Meth-APAH), younger, and on Medicaid
- ~30% of patients with Meth-APAH were not receiving PAH treatment in 2022; treatment rates vary greatly across the country
- There is an urgent need to understand and address the key challenges felt by patients and providers managing Meth-APAH

Abbreviations: Meth-APAH: methamphetamine-associated pulmonary arterial hypertension; PAH: pulmonary arterial hypertension

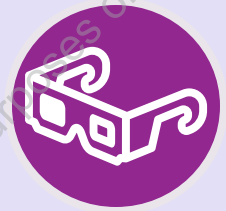
Study importance

Prior to this study, there was little information on patients with Meth-APAH outside of registries tracked at PAH specialty centers.

Using claims data, this first-of-its-kind study demonstrates a methodology to identify, quantify, and characterize the nationwide distribution, prevalence, and demographics of patients with Meth-APAH.

The findings of this research call for:

Increased provider education and awareness of the prevalence of Meth-APAH



Routine screening for past and/or ongoing methamphetamine use during PAH workup

Improved strategies to identify and provide treatment to patients with Meth-APAH

Limitations of this study: *As claims data is collected for billing purposes, data capture may be incomplete. Patients without insurance are not represented in claims data. The time frame analysed in this study overlaps with the COVID-19 pandemic.*

Abbreviations: Meth-APAH: methamphetamine-associated pulmonary arterial hypertension; PAH: pulmonary arterial hypertension

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Thank you!

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Appendix

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References

1. 2015-2022 NSDUH Detailed Reports
2. UNODC World Drug Report 2022 https://www.unodc.org/res/wdr2022/MS/WDR22_Booklet_1.pdf
3. Simonneau G, Montani D, Celermajer DS, et al. Haemodynamic definitions and updated clinical classification of pulmonary hypertension. European Respiratory Journal. 2019;53(1).
4. Zamanian RT, Hedlin H, Greuenwald P, et al. Features and outcomes of methamphetamine-associated pulmonary arterial hypertension. American journal of respiratory and critical care medicine. 2018;197(6):788-800.
5. Kolaitis NA, Zamanian RT, de Jesus Perez VA, et al. Clinical Differences and Outcomes between Methamphetamine-associated and Idiopathic Pulmonary Arterial Hypertension in the Pulmonary Hypertension Association Registry. Ann Am Thorac Soc. 2021;18(4):613-622.

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Claims Data Source

An integrated dataset of **Komodo and SHS claims data** of pulmonary hypertension patients, with full medical and pharmacy claims

Features	Komodo	Symphony Health Solutions (SHS)
Length of Time Covered	2016-01-01 to current	
Types of Claims Captured	Medical (Mx), Prescription (Rx)	
Coverage	50+ Payer datasets (includes mix of large payers, regional payers, risk-bearing IDNs and other partnerships across US)	All Payer types and all plans represented
Number of Patients Represented	~88M patients (all with linkable patient tokens)	~22M patients (~15M with linkable patient tokens)

Abbreviations: CDP = Central Data Platform, IDN = Integrated Delivery Network, Mx = Medical, PAH = Pulmonary Arterial Hypertension, Rx = Prescription, SHS = Symphony Health Solutions