



Overview of Emerging Trends in Stimulants, Buprenorphine, and Ketamine

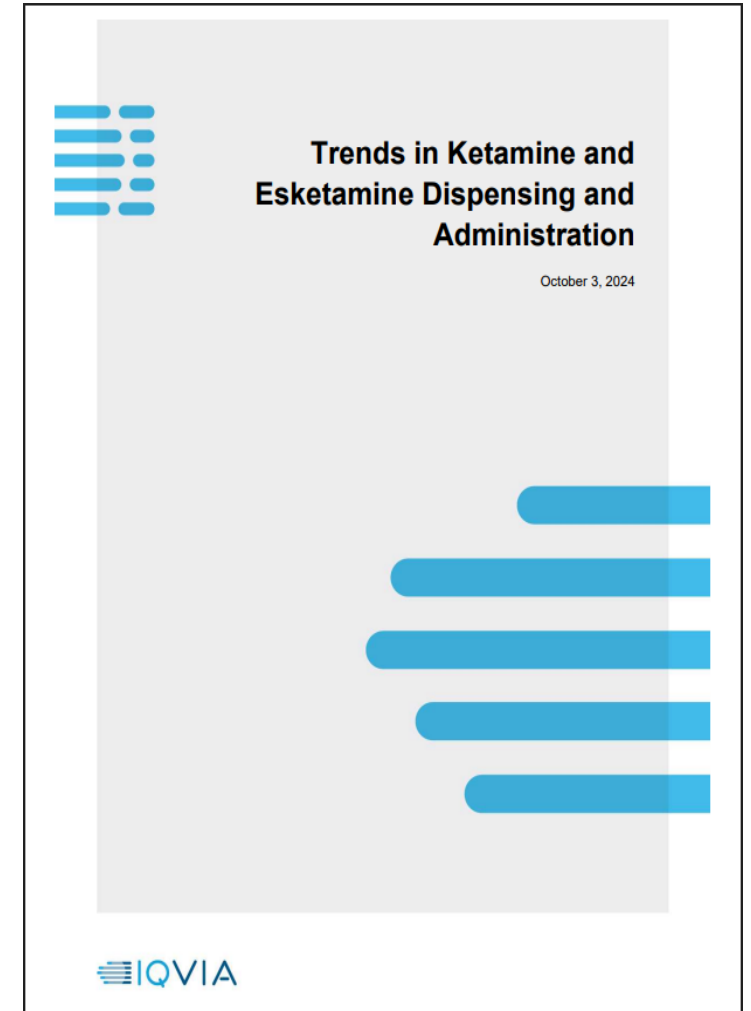
Prepared for the Drug Enforcement Administration Supply Chain Conference

Rosenie Thelus, PhD
IQVIA Government Solutions
Thursday, April 3rd, 2025

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Reports Published by DEA Diversion Control Division Under Advisories Section



Objectives

Stimulants

- Characterize trends by patient demographics and prescriber characteristics
- Assess trends by medication dispensed, switching patterns, brand vs generics and daily dose
- Understand the overall impact of telehealth on stimulant dispensed since the COVID-19 pandemic

Buprenorphine

- Identify potential gaps in buprenorphine treatment by patient demographics, provider characteristics, and region
- Evaluate the impact of the X-waiver removal by assessing trends in buprenorphine treatment pre/post June 2023

Ketamine & esketamine

- Assess overall trends in ketamine and esketamine pharmacy dispensing and office-based administration
- Describe patient and provider profiles for ketamine and esketamine dispensing and administration

IQVIA used medical and pharmacy claims to assess diagnosis and related treatment



Data sources, Target Population and Measures

Data Sources

- Longitudinal Prescription (LRx)/Medical Claims (Dx)
- Consumer Data—Stimulants only
- Formulary Impact Analyzer (FIA)—Buprenorphine only



Target Population

- Patients treated with medication of interest
- Patient with diagnosis treated with medication of interest (stimulants only)



Measures

- Raw and Projected prescription counts (stimulants)
- Raw and Projected patient counts
- Average daily dose

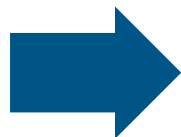


Brief Background

Trend in Stimulants

Pre-COVID 2012 - 2019

- Steady increase in stimulant prescribing with higher increases in adult ADHD¹⁻³
- Decreases in misuse of stimulants in most age groups but an increase in overdoses involving stimulants⁴



Peri-COVID 2020 - 2022

- Largest increases in stimulant and non-stimulant prescribing, especially among adults and females^{5,6}
- Highest increase in deaths from overdoses involving psychostimulants (37% increase from 2020 to 2021)^{7,8}



Post-COVID 2023 - current

- Continued increases in stimulant prescribing but notable decreases in amphetamine-dextroamphetamine
- Minimal change in ADHD diagnoses from 2022 to 2023

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Key Takeaways on Stimulant Prescribing Trends

60%

Increase in prescribing

From 2012 to 2023, overall dispensing of stimulants in the US increased by 60%.

92%

Increase for female patients

Prescriptions for female patients increased by 92%, while prescriptions for male patients increased by only 36%. By 2022-2023, more prescriptions were written for female patients.

75%

Prescriptions written by NPs

Nurse practitioners prescribed more than 75% of all stimulant prescriptions over time and were the top prescribing specialty in 2023.

94%

Continuous prescriptions

In 2023, the proportion of new and switched stimulant prescriptions slightly increased.

21%

Co-Rx with Stimulants

In 2023, 21% of all stimulant prescriptions were co-prescribed with another controlled substance, (most frequently benzodiazepines [35%] and SSRIs [27%]).

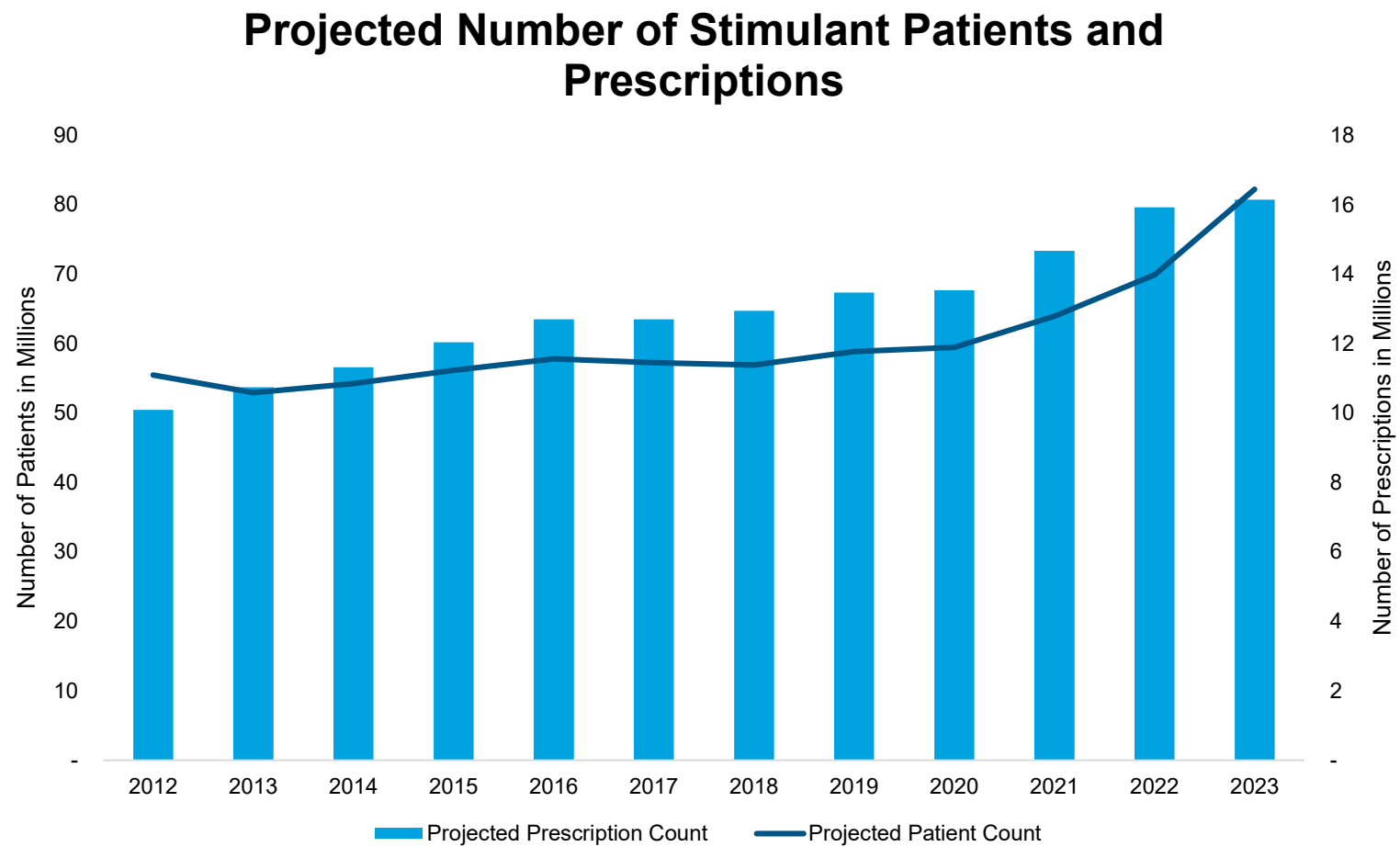
6%

Prescriptions by telemedicine

After rising sharply in 2020 and declining from 2020-2022, stimulant prescriptions associated with a telemedicine visit remained stable at 6% from 2022-2023.

Trends in overall stimulant dispensing

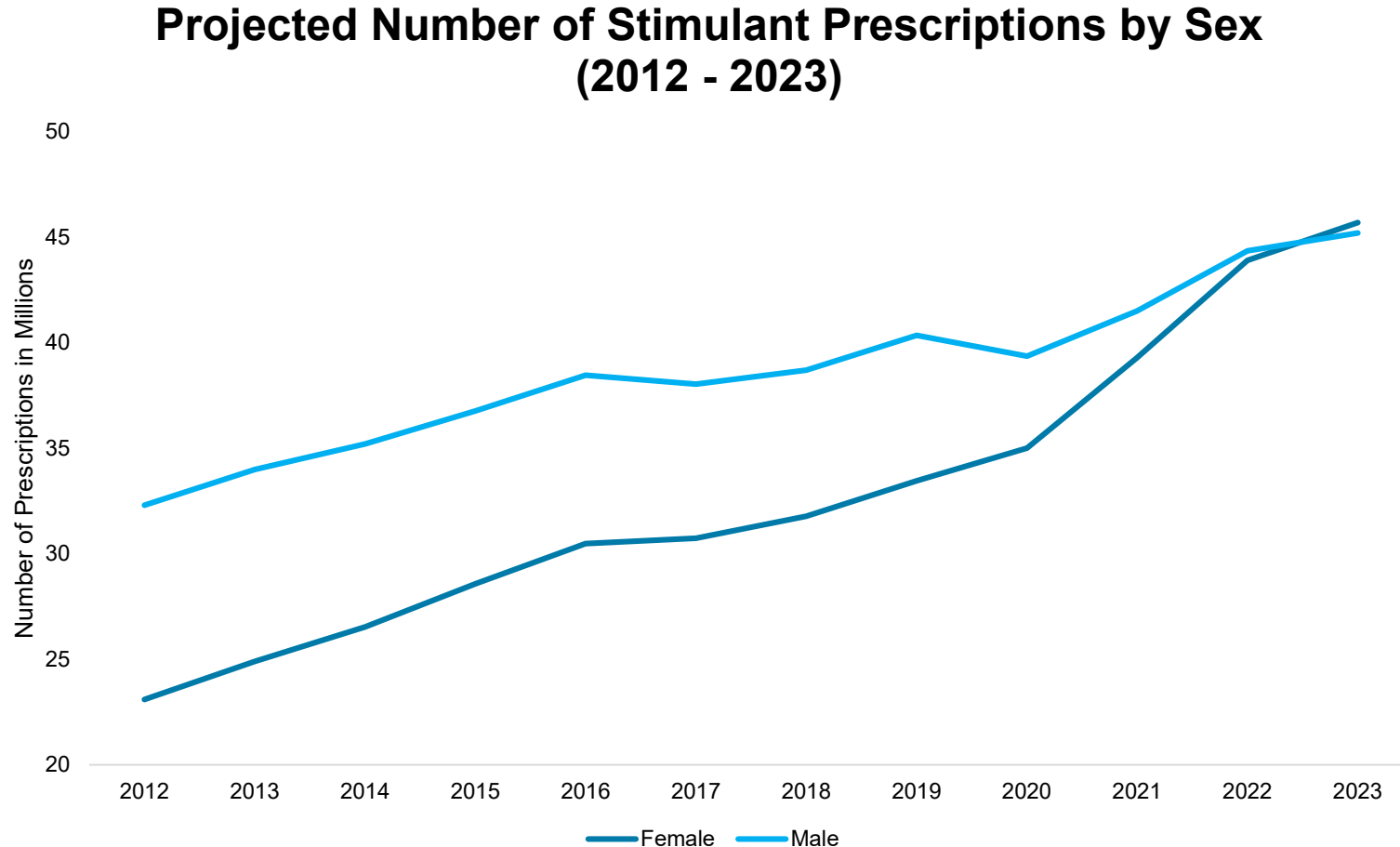
Projected Counts of Dispensed Stimulant Prescriptions and Patients, 2012 - 2023



- Projected stimulant prescriptions dispensed increased by 60%, and projected patients increased by 48%.
- The largest YOY increase (18%) occurred from 2022 - 2023.
- The number of prescriptions per patient declined by 13% from 2022 – 2023 (5.7% to 4.9%).

Prescriptions to female patients now outnumber prescriptions to male patients

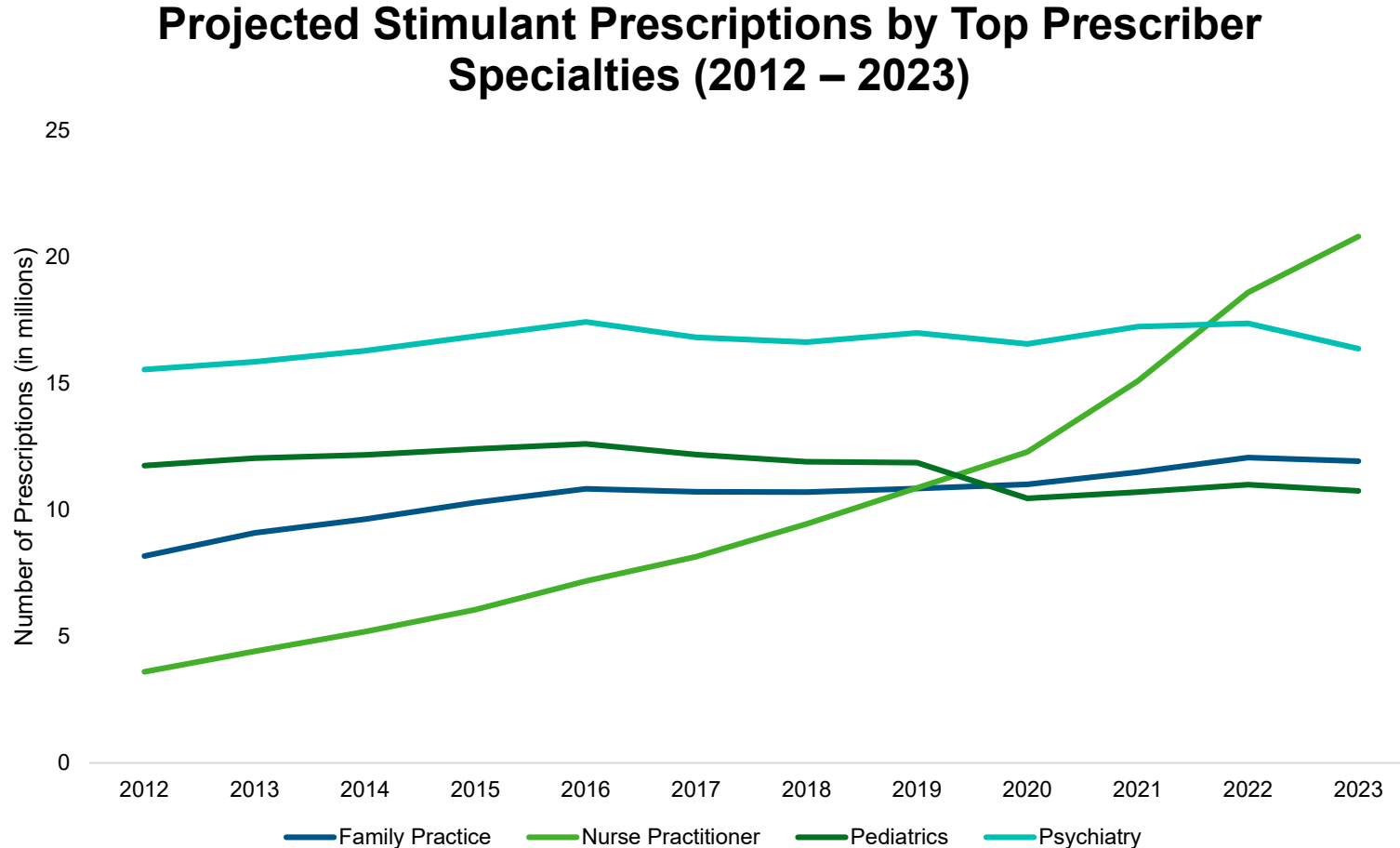
Projected Counts of Dispensed Stimulant Prescriptions from 2012 - 2023



- From 2012 - 2023, prescriptions to female patients nearly doubled (+92%), while prescriptions for male patients increased by a third (+36%).
- By 2023, more prescriptions were written for female patients than male patients.

Most stimulant prescriptions are written by nurse practitioners

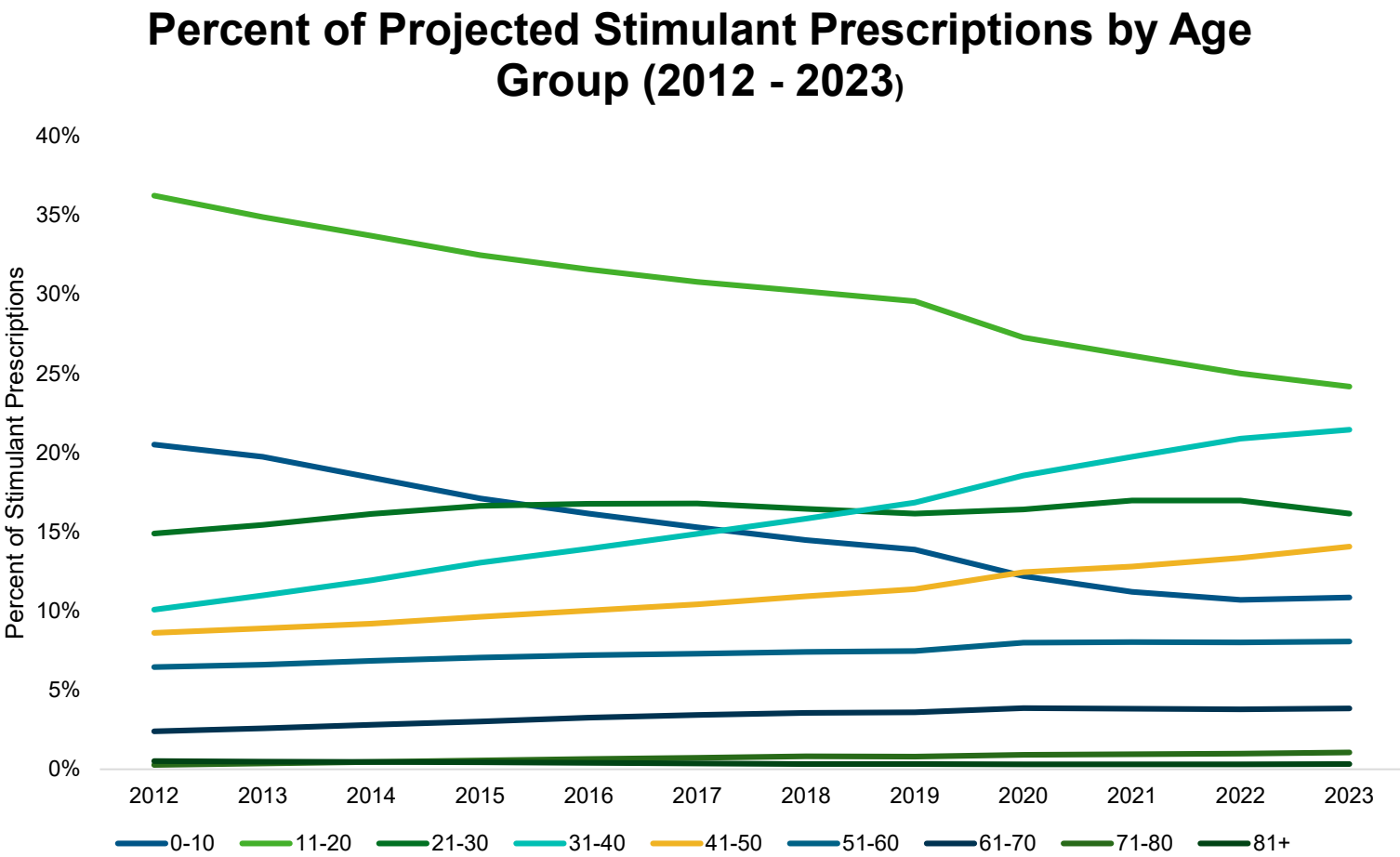
Projected Counts of Dispensed Stimulant Prescriptions, 2012 - 2023



- **75% of the stimulant prescriptions dispensed from 2012 – 2022 were by Psychiatry, Pediatrics, Family Practice and Nurse Practitioners.**
- **The number of prescriptions by Nurse Practitioners increased 5x since 2012.**

Stimulant prescriptions for patients aged 31- 40 increased by 3x

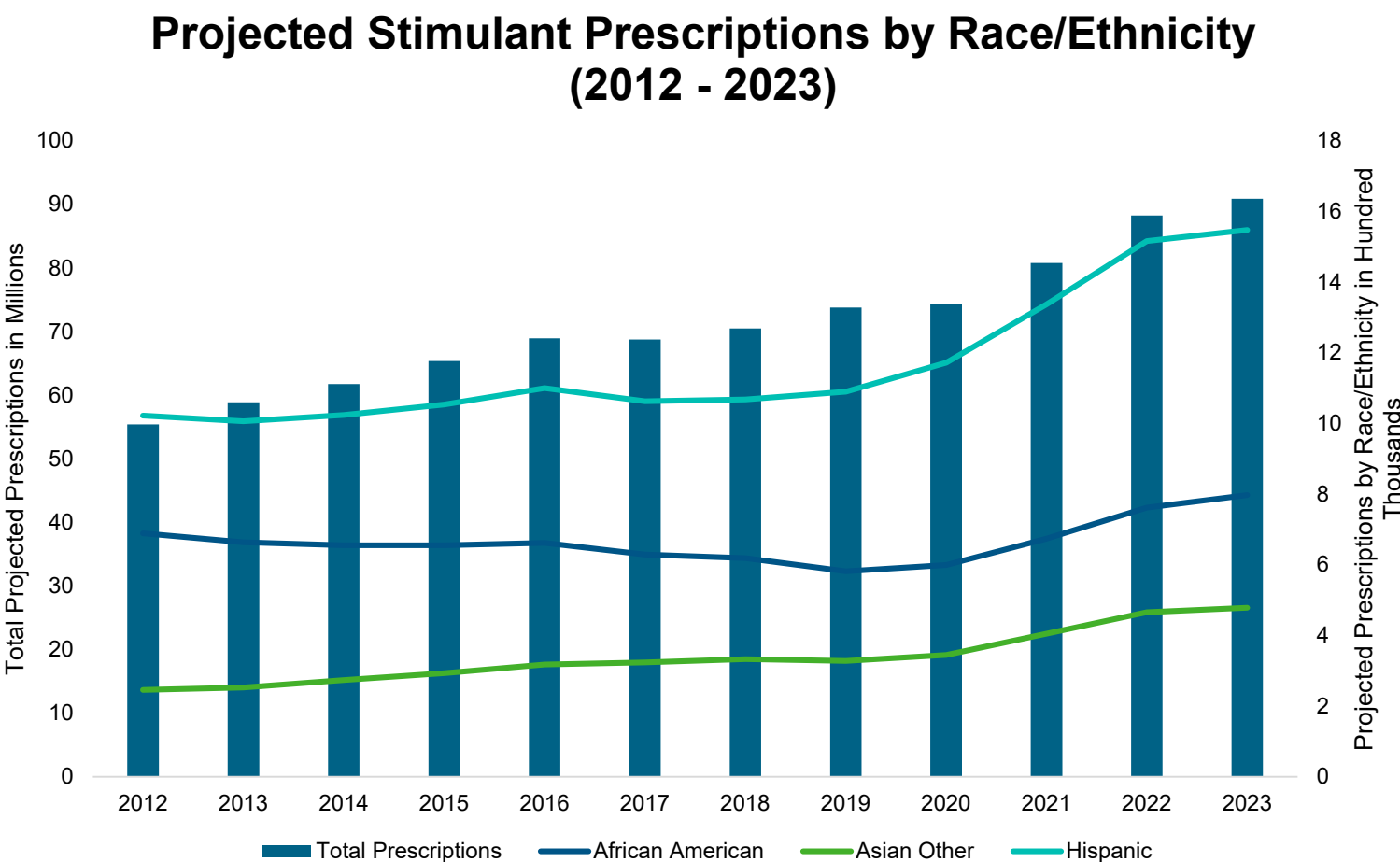
Projected Counts of Dispensed Stimulant Prescriptions from 2012 - 2023



- The proportion of stimulant prescriptions dispensed to patients under 20 decreased until 2021. Prescriptions to all other age groups increased.
- Prescriptions to patients aged 31 - 40 accounted for 22% of all stimulant prescriptions in 2023.

Trends in stimulant prescriptions differed by race/ethnicity

Projected Counts of Dispensed Stimulant Prescriptions and Patients, 2012 - 2022

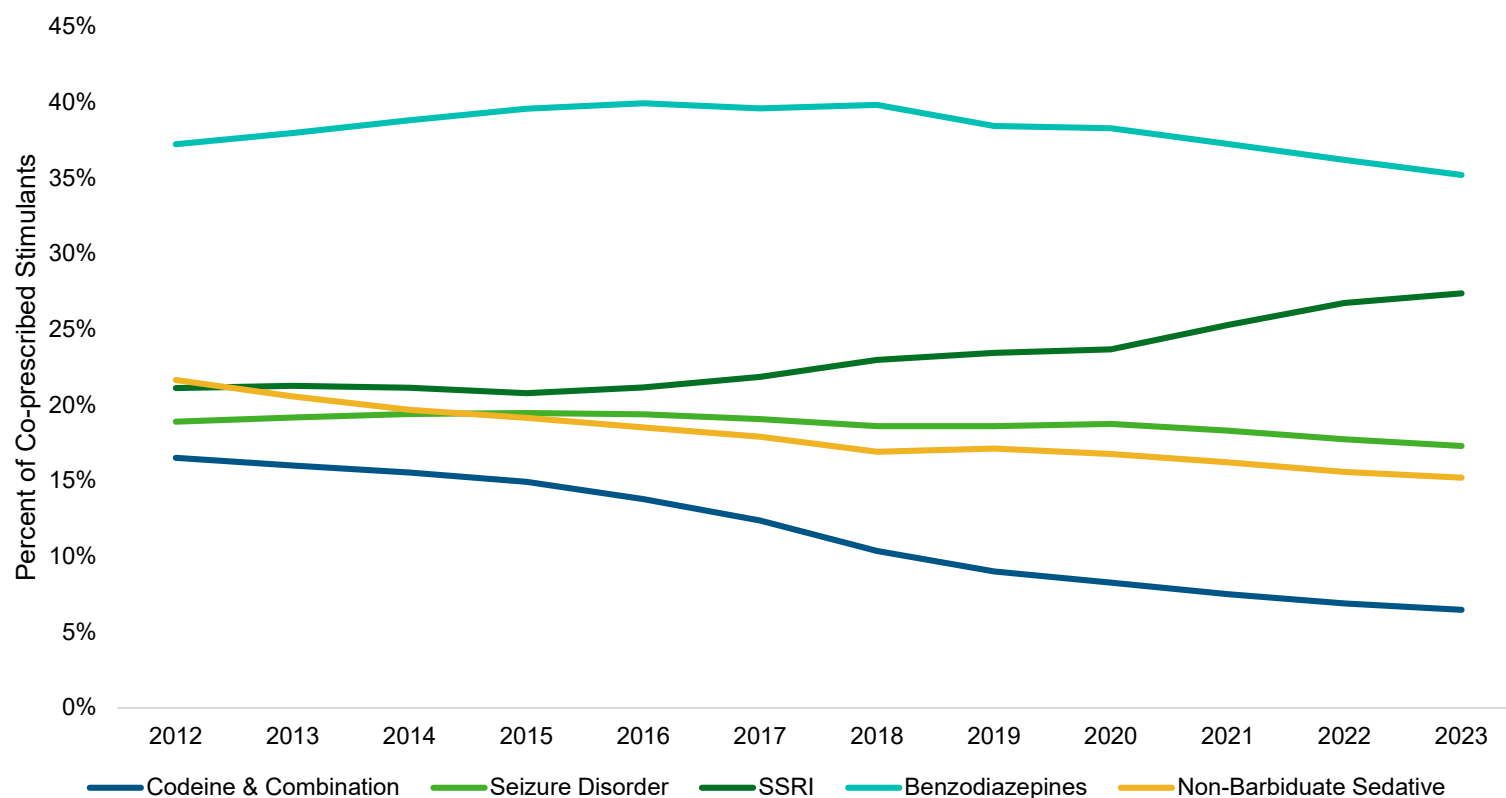


- **Caucasian patients had the most prescriptions dispensed, followed by Hispanic and African American patients.**
- **Hispanic and Asian patients had the largest post-pandemic increase in stimulant prescriptions.**
- **About two-thirds of stimulant prescriptions could not be linked to a race/ethnicity data.**

Co-prescribing with selected medications mostly declined

Projected Counts of Dispensed Stimulant Prescriptions and Patients, 2012 – 2023

Co-Prescribing with Stimulants by Drug Class (2012 – 2023)



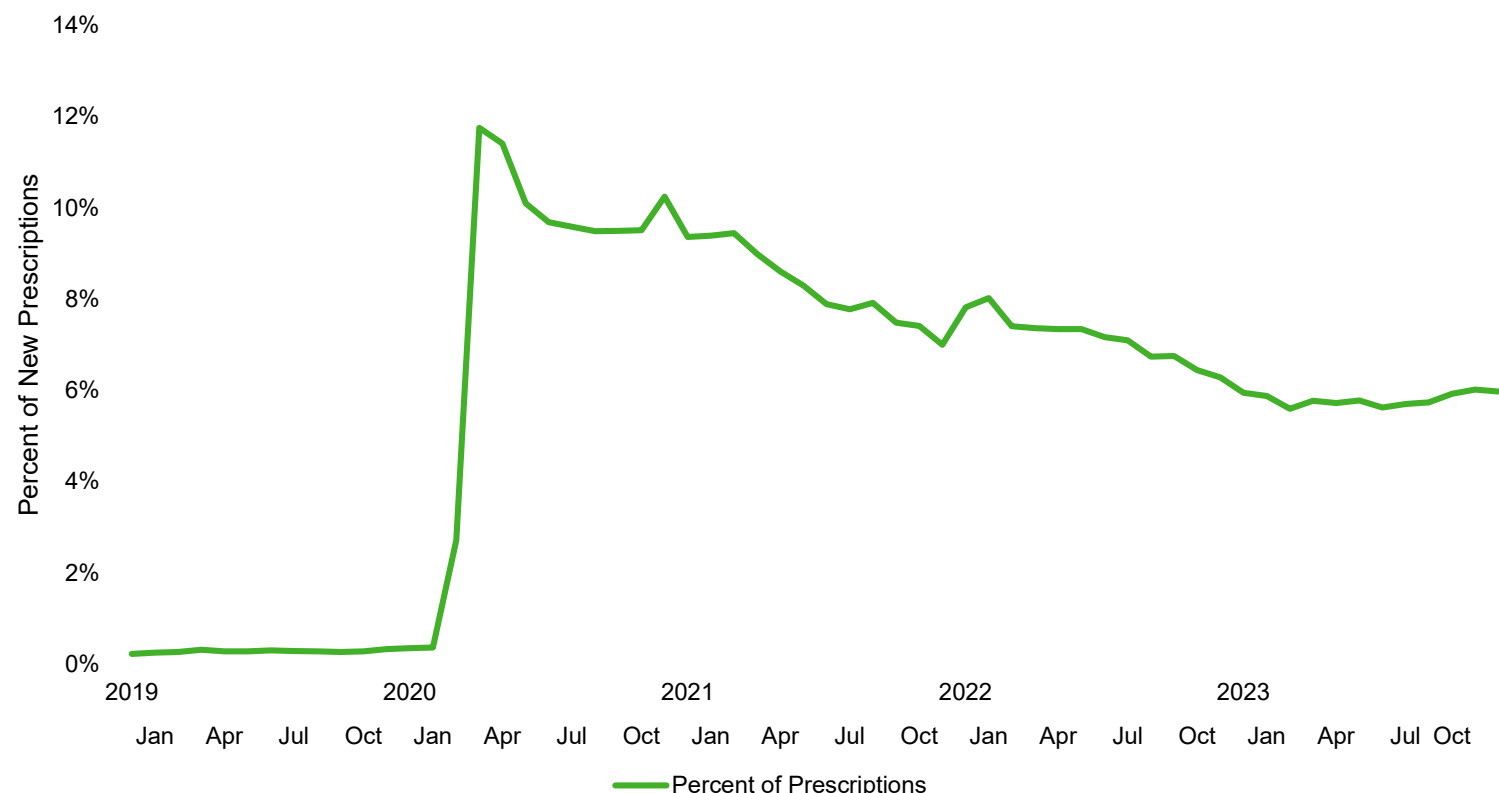
- Stimulants were most frequently co-prescribed with benzodiazepines, SSRIs, medications for seizure disorders, non-barbiturate sedatives, and codeine/codeine combinations.
- Co-prescribing of stimulants with the above medications largely declined through 2023. However, co-prescribing with SSRIs increased.

SSRI = selective serotonin reuptake inhibitor

Telemedicine prescribing continued to decline through 2023

Projected Counts of Dispensed Stimulant Prescriptions and Patients, 2019 – 2023

Percent of New Stimulant Prescriptions Associated with Telemedicine (2019 - 2023)



- The proportion of stimulants prescribed via telemedicine peaked at 12% in April 2020 and continued to decline to 6% by 2023.
- The most frequently dispensed products were consistent with overall dispensing.

Brief Background

Trend in Buprenorphine

Before

- Providers had to obtain a special waiver requirement
- Providers had to complete training and certification
- Strict restriction on the number of patients a provider could treat
- Required Annual reports detailing prescribing practices

DEA X-Waiver Elimination

After

- Eliminated the need to obtain a special waiver
- Providers complete at least eight hours of training.
- No limits on number patients treated limits and no annual reporting to the DEA
- Providers comply with state-specific requirements

- Buprenorphine is a treatment option for opioid use disorder (OUD). Despite its effectiveness, access to treatment depends on provider availability and perception.
- In December 2022, new legislation removed special registration requirements (i.e., the X-waiver) for buprenorphine providers, with the goal of improving access and expanding eligibility across specialties

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Buprenorphine

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- Evaluate the impact of the X-waiver removal by assessing trends in buprenorphine treatment pre/post June 2023

Ketamine & esketamine

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Key Takeaways on Buprenorphine Prescribing Trends

No Change

In total number of patients treated

No notable changes in total patients after the X-waiver removal (January – June 2023).

2x

Increase in patients aged 35 - 64

About **67%** of patients prescribed buprenorphine were between the ages of 35 - 64. The number of patients in these age groups nearly doubled from 2018 – 2024.

9 - 12x

Increase in NP and PA prescribing

From 2018 – 2024, the number of patients prescribed buprenorphine by nurse practitioners and physician assistants increased by >10-fold.

94%

Increase in Medicare/Medicaid Rx

From 2018 – 2024, the proportion of patients covered by Medicare and Medicaid increased by 44% and 14%, respectively.

36%

Increase in prescriber after X-waiver

An increased of 36% in the year following the X-Waiver removal (2023 – 2024) was consistent with pre-waiver removal trends.

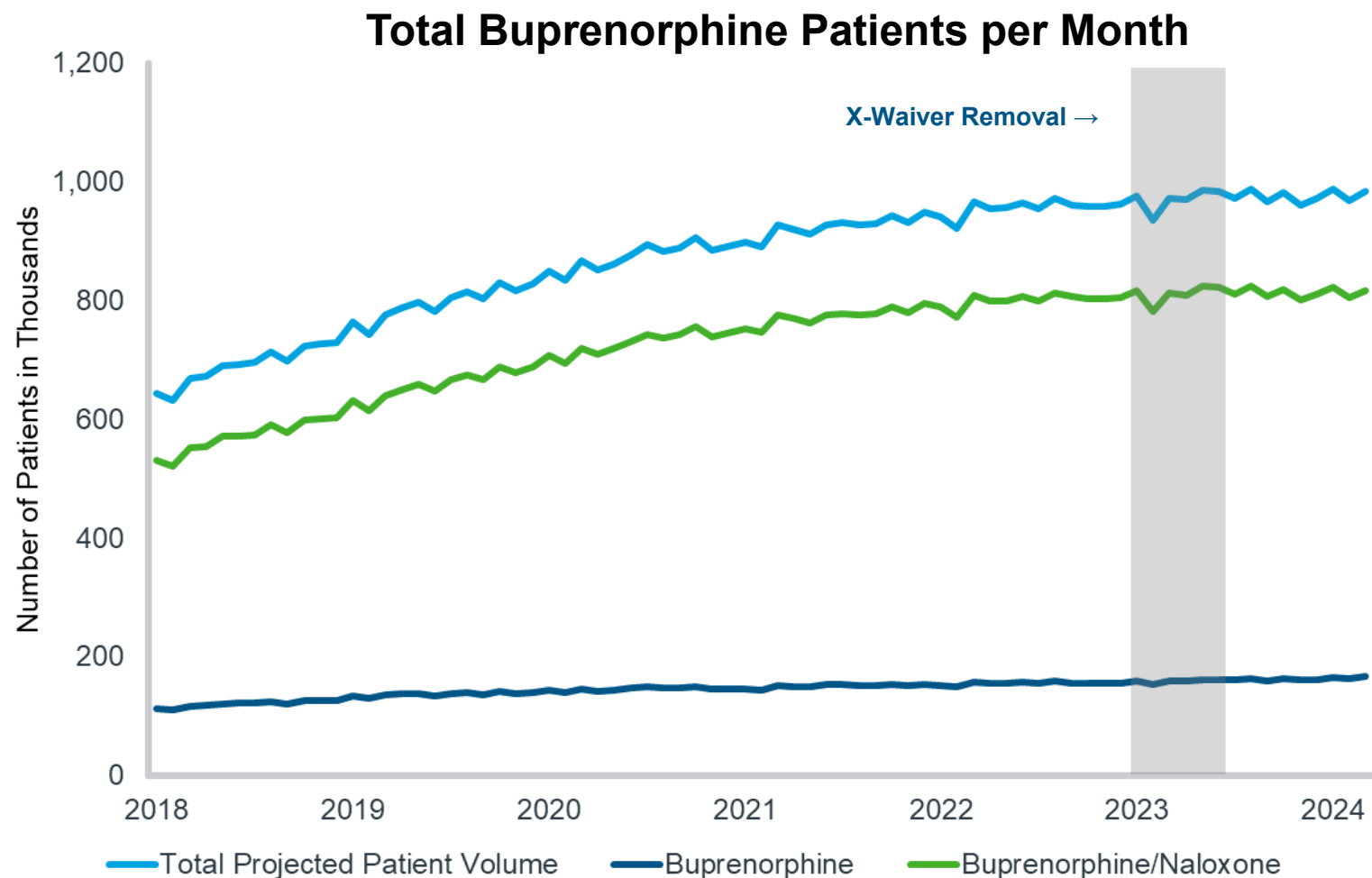
19%

Patients with an Rx rejection

Rejection and abandonment rates remained stable from 2018 – 2024, averaging 19% and 7% of patients with at least one rejection or reversal.

Buprenorphine Treatment for Substance Use Disorder (SUD)

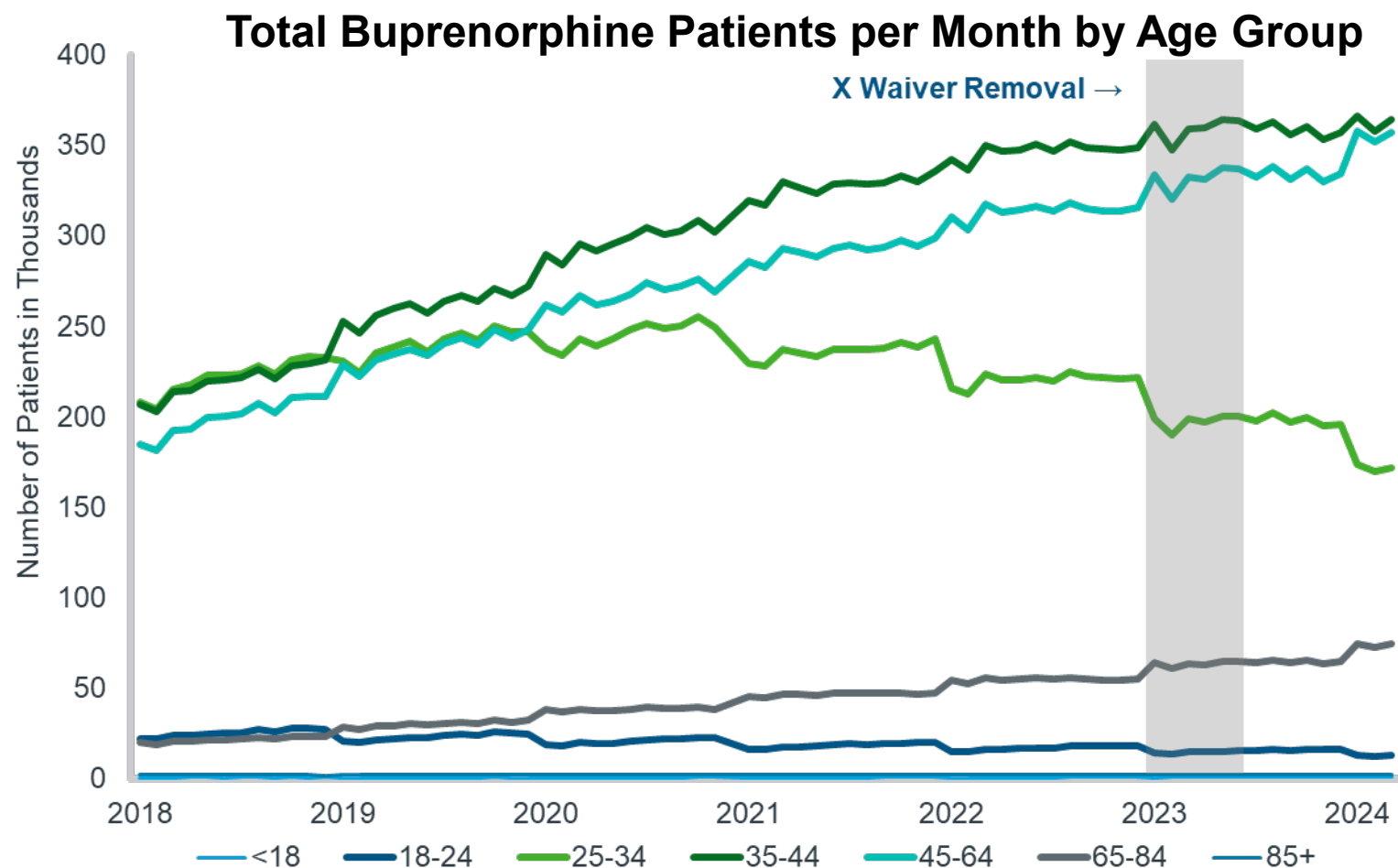
Trends in Buprenorphine Patients



- From 2018 to 2024, buprenorphine patients increased by 53%
- Most patients were prescribed buprenorphine/naloxone combination therapy
- There were minimal changes in total patients after the X-waiver removal (January – June 2023)

Buprenorphine Treatment for Substance Use Disorder (SUD)

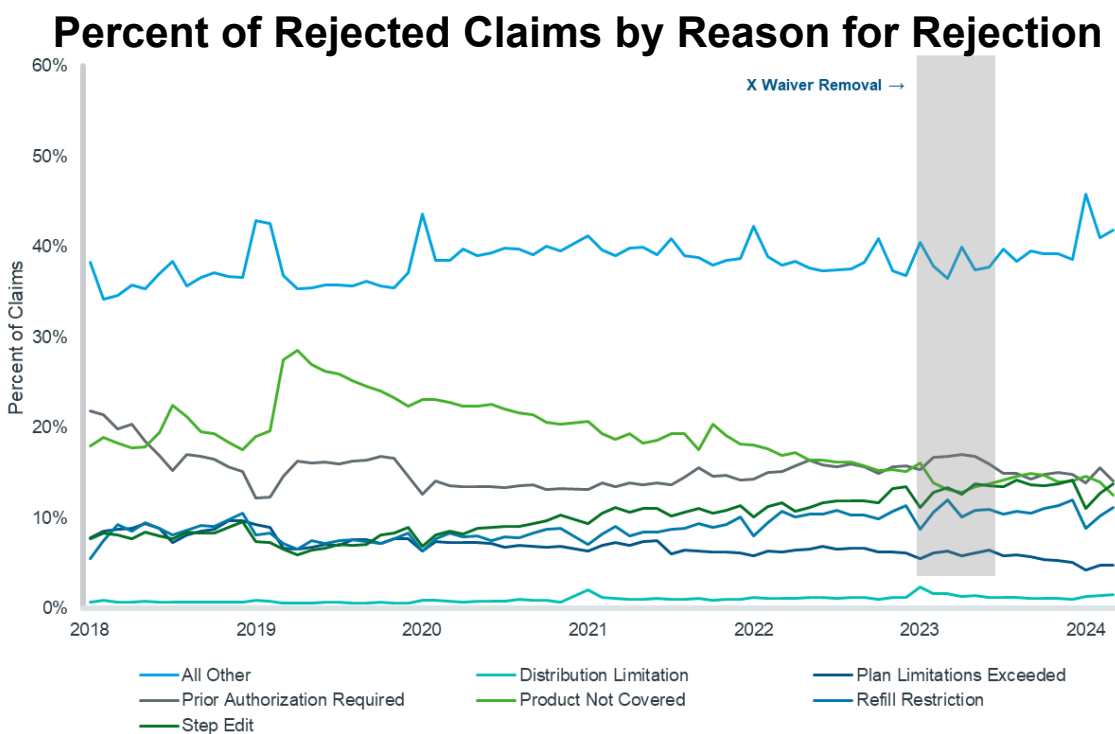
Trends in Buprenorphine Patients by Age



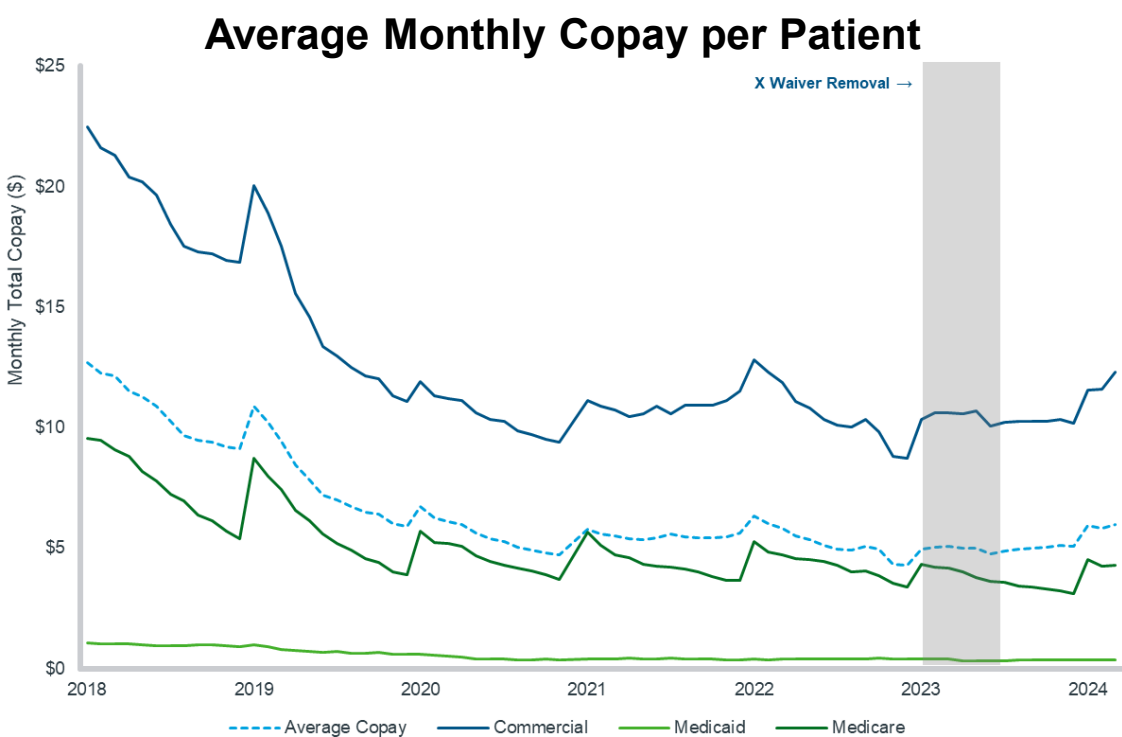
- More buprenorphine patients were male (56%) than female (44%) over time
- When stratified by age, the largest increases were seen among patients aged 35 – 44 (76%), 45 - 64 (93%), and 65 - 84 (277%)
- At the same time, the number of patients aged 18 - 24 (-41%) and 25-34 (-17%) decreased

Buprenorphine Treatment for Substance Use Disorder (SUD)

Trends in Claim Rejection, Reversal/Abandonment



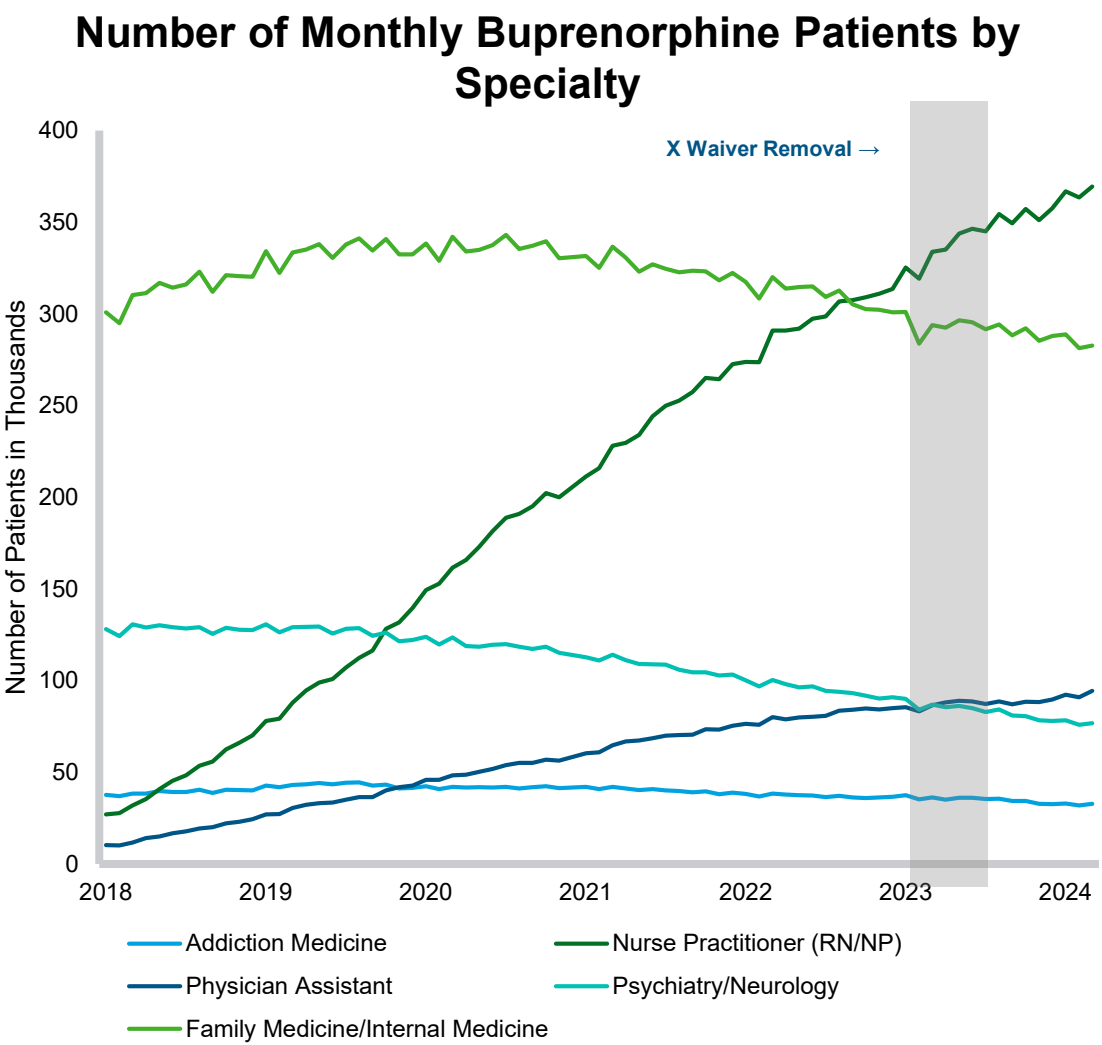
Trends in Average Copay by Payor



No meaningful changes were observed in claim rejections and reversals/abandonments, or in average copay (overall or by payor) following the X-waiver removal

Buprenorphine Treatment for Substance Use Disorder (SUD)

Trends in Buprenorphine Prescribers by Specialty



Provider Type	Number of Providers		% Change
	Pre-Waiver Jul 2022 – May 2023	Post-Waiver Jun 2023 – Apr 2024	
Total Providers	85,696	116,429	36%
Family Medicine/ Internal Medicine	27,752	38,152	37%
Nurse Practitioner (RN/NP)	21,729	29,820	37%
Psychiatry/Neurology	9,340	10,816	16%
Emergency Medicine	7,965	11,930	50%
Physician Assistant	7,525	11,258	50%
Other	2,823	3,793	34%
Pain Medicine	2,066	2,358	14%
Anaesthesiology	1,053	1,152	9%

The increase in buprenorphine providers observed post-waiver removal was consistent with ongoing trends in number of providers and provider specialties

Brief Background

Trend in esketamine and Ketamine prescribing

- **Ketamine** is increasingly used off-label as a therapy for treatment-resistant depression (TRD), suicidal ideation, bipolar disorder, and PTSD
 - In 2019, **esketamine** (the S-isomer of ketamine) received FDA approval for the treatment of patients with TRD and/or suicidal ideation, in conjunction with an antidepressant
- The FDA has issued warnings to patients and providers about potential risks associated with ketamine products, especially when used without monitoring by a healthcare provider
- Increasing off-label use of Ketamine and esketamine have been reported, specifically through independent ketamine clinics; these clinics has increased rapidly in recent years, with viral marketing campaigns and celebrity endorsements.

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Key Takeaways in Ketamine and Esketamine Trends

350%

Increase in ketamine Rx

Higher rate of dispensing increased by 350% from 2018 – 2023, at an average rate of 43 patients per month.

2x

Rate of esketamine vs ketamine

On average, 10 new patients were dispensed ketamine per month, compared to 26 patients dispensed ketamine per month.

Increase

In female patients on esketamine

From mid-2019 through 2023 the proportion of esketamine patients who were female rose from 56% to 65%. At the same time, the proportion of ketamine patients who were female declined from 67% to 59%.

Increase

In office-based esketamine

After its introduction to market in 2020, office-based esketamine administrations outpaced ketamine administrations by mid-2022.

99%

Esketamine + antidepressants

Consistent with prescribing guidelines, nearly all patients dispensed esketamine were also dispensed antidepressants. Approximately half of ketamine patients were dispensed an antidepressant.

Increase

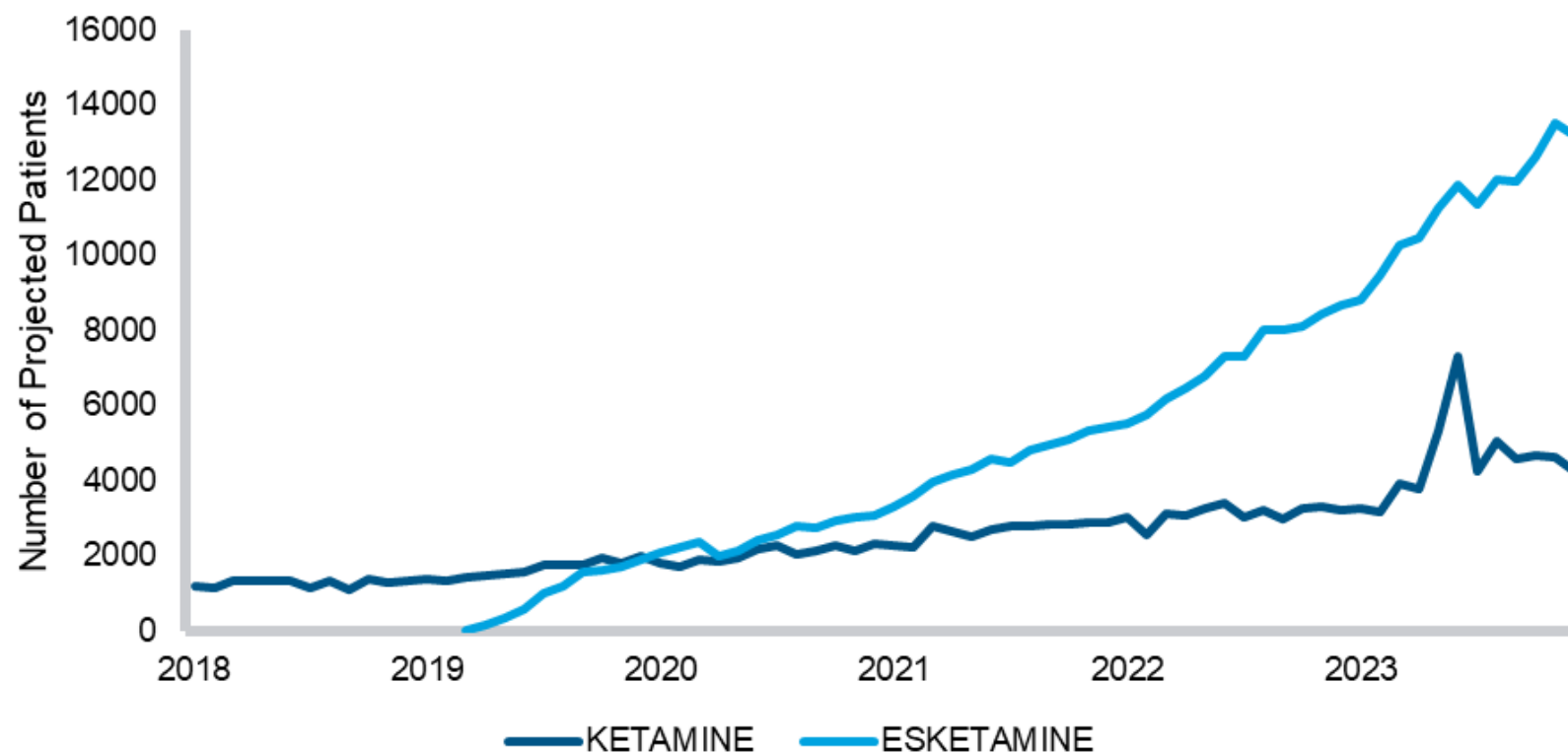
In NP/PAs prescribing both

While pain medicine specialists and psychiatrists/neurologists were the primary prescribers for in-office administrations, retail prescribing by NPs/PAs for both drugs increased.

Trends in Ketamine & Esketamine Dispensing

Number of Monthly Projected Patients Dispensed Ketamine and Esketamine

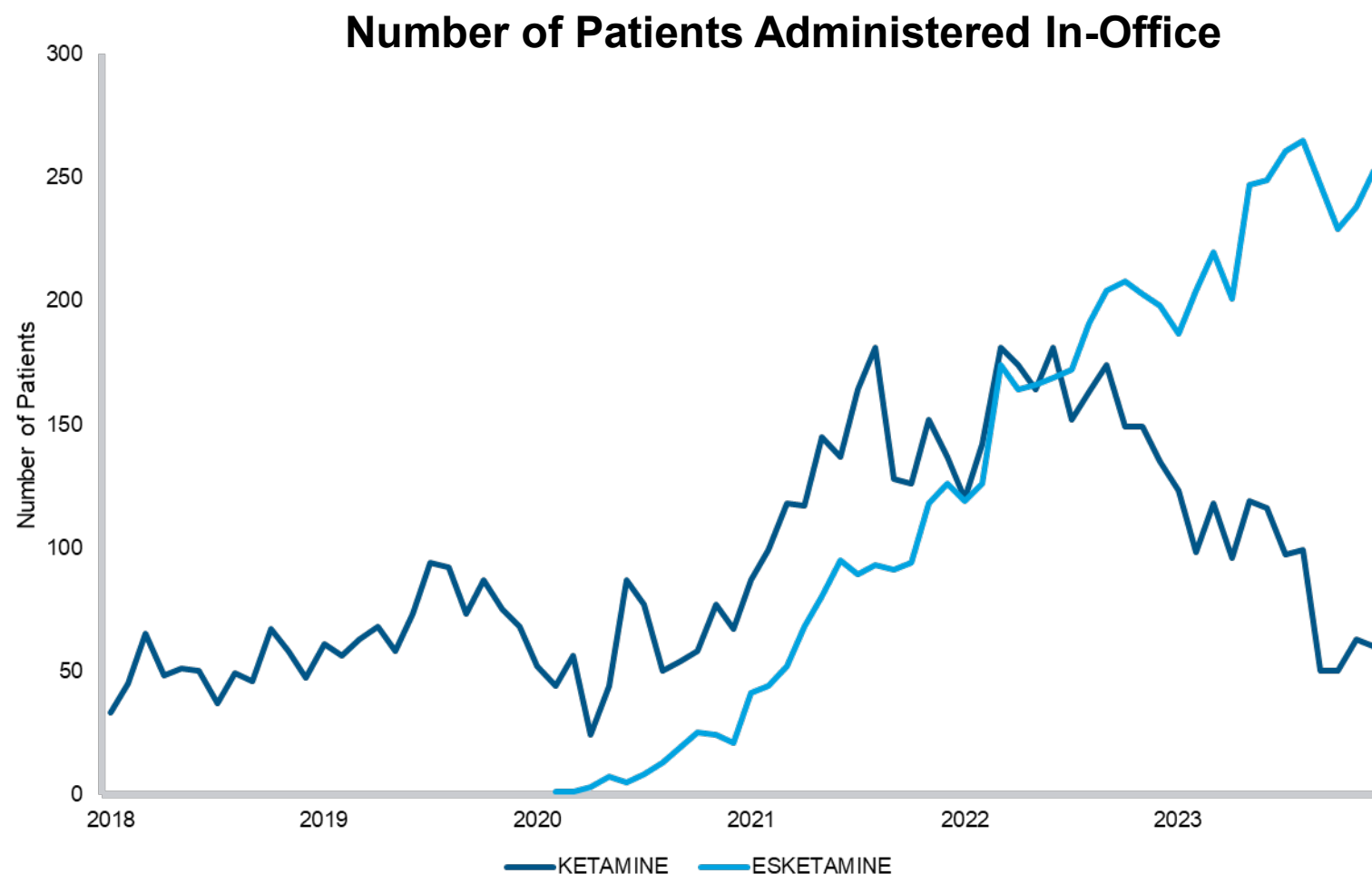
Number of Patients Dispensed Prescriptions



- The number of new patients dispensed prescriptions for ketamine and esketamine per month increased from 2018 – 2023
- By the end of 2023 there were approximately 4,600 patients dispensed ketamine, and 13,000 patients dispensed esketamine per month

Trends in Ketamine & Esketamine Administration

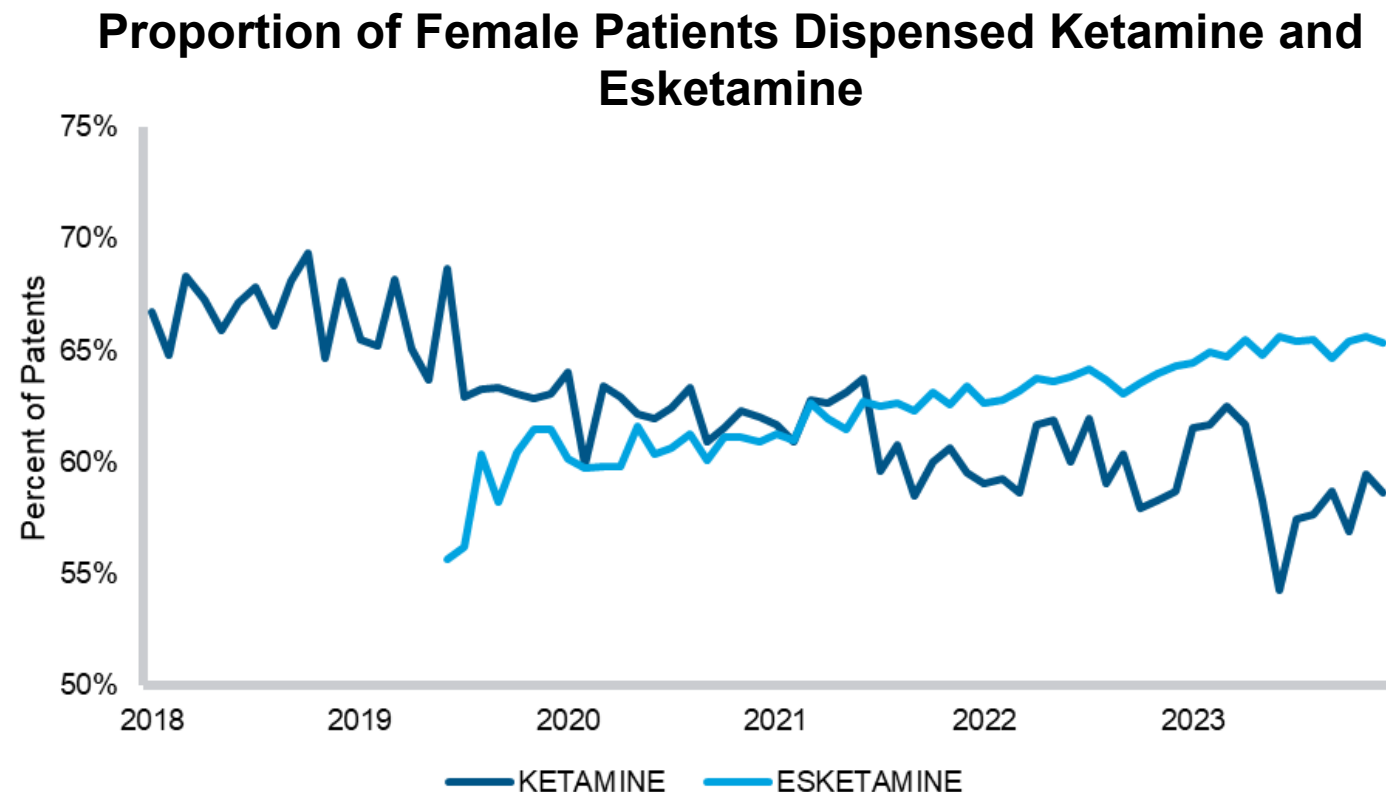
Overall Number of Patients Administered Ketamine and Esketamine in an Office-Based Setting



- The total number of patients administered ketamine in office-based settings notably increased through 2021 but declined starting in 2022
- There were consistently more new patients administered ketamine each month than esketamine until 2023, when new patients per month for both products were roughly equal

Trends in Ketamine & Esketamine Dispensing

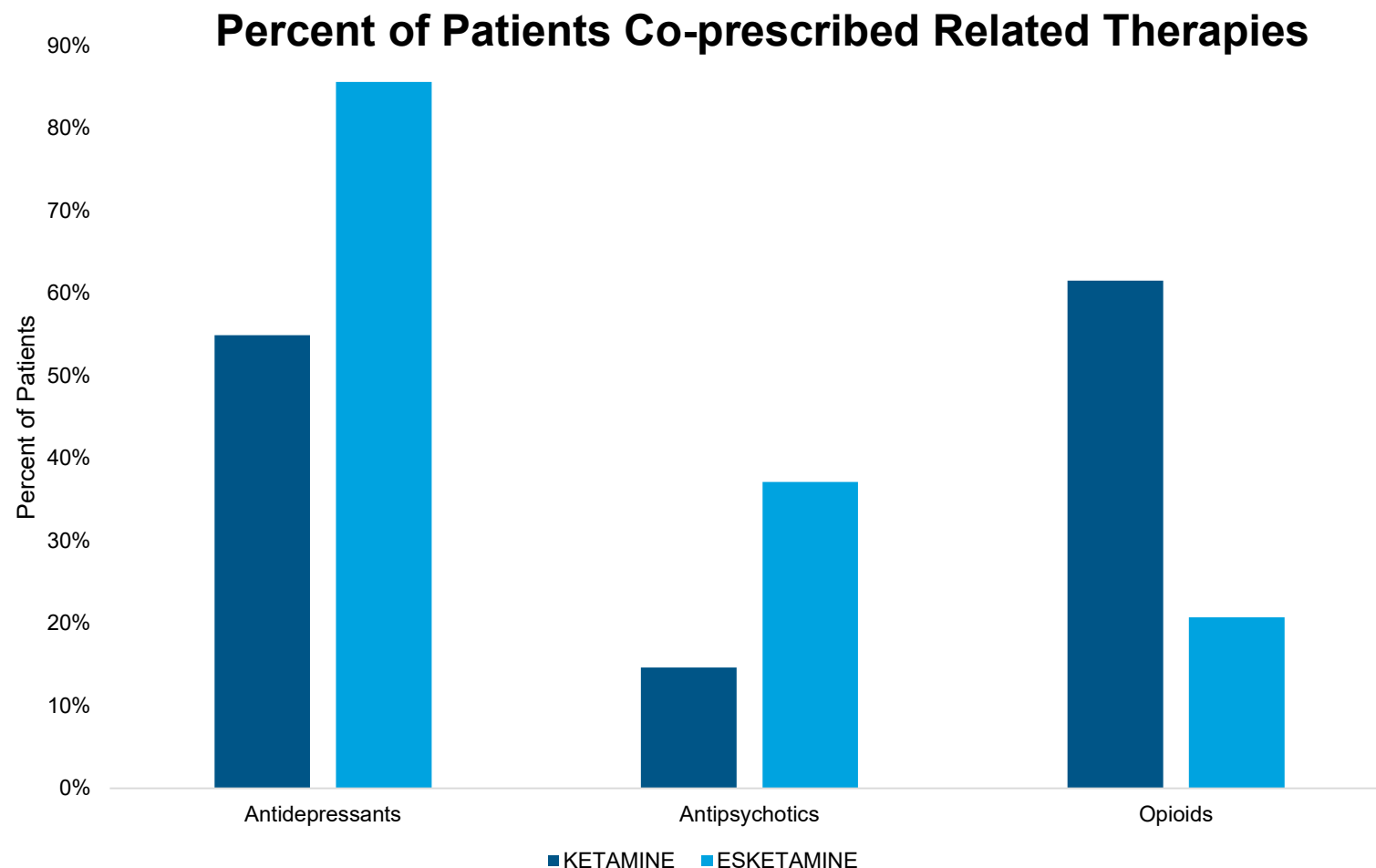
Sex and Age Trends in Retail Dispensing



- Most patients dispensed ketamine and esketamine were female
- The number of patients dispensed ketamine in all age groups increased; most patients were between the ages of 45 - 64 (40%) and 65 - 84 (22%)
- The number of patients dispensed esketamine in all age groups also increased; most patients were aged 35 - 44 (23%) and 45 - 64 (42%)

Trends in Ketamine & Esketamine Administration

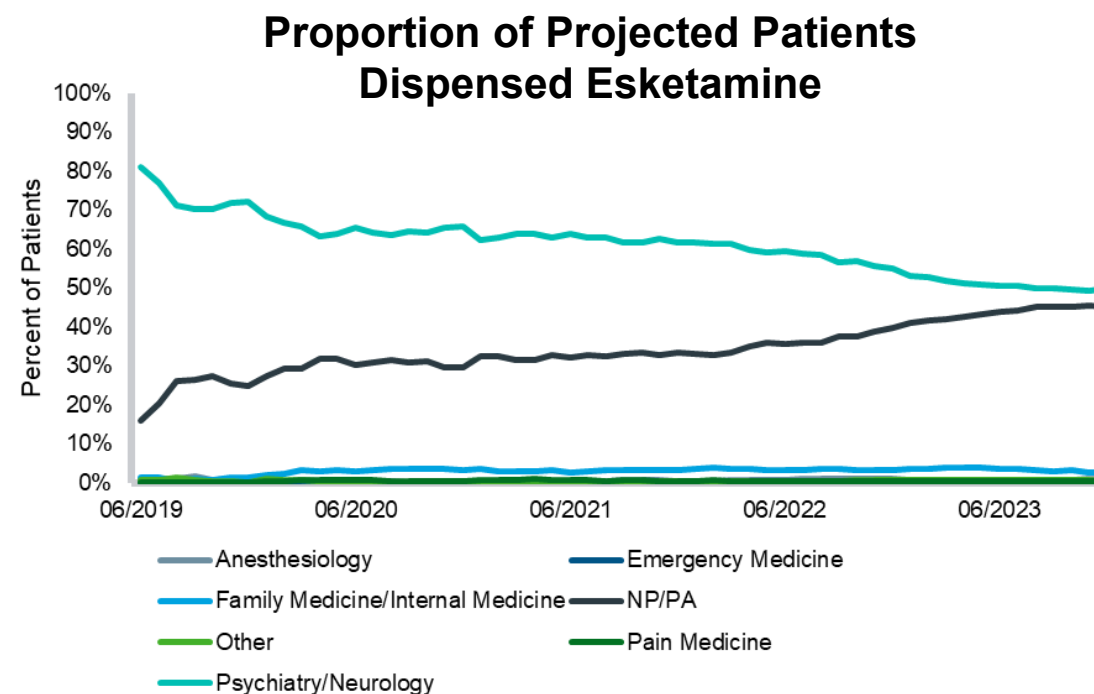
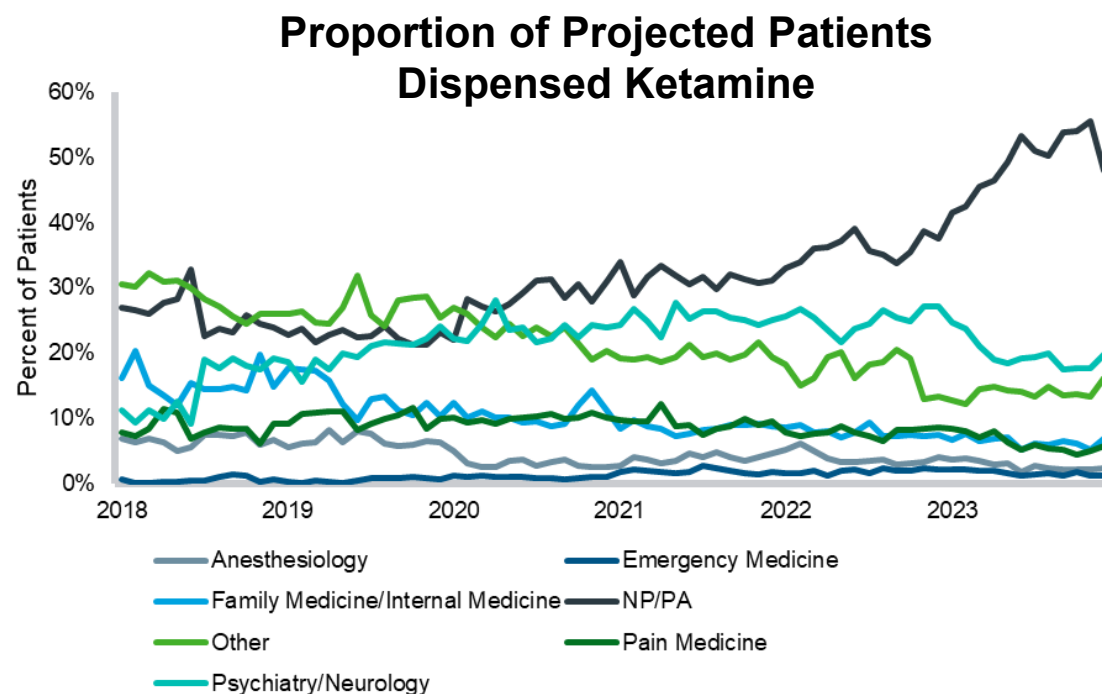
Co-prescribing with Antidepressants, Antipsychotics, and Opioids



- More than half of patients administered ketamine were co-prescribed an antidepressant or an opioid medication
- Most patients administered esketamine were co-prescribed an antidepressant, in line with prescribing guidelines

Trends in Ketamine & Esketamine Dispensing

Provider Specialties for Retail Dispensing



- By 2023, most patients dispensed ketamine were prescribed by an NP/PA or family medicine/internal medicine provider
- The proportion of esketamine prescribed by psychiatrists/neurologists has declined as the proportion prescribed by NP/PAs has increased

Conclusions and Caveats

Stimulants, Buprenorphine, and Ketamine

The reports provide data-driven insights to the DEA to understand emerging trends in stimulants, buprenorphine and ketamine and to assess the impact of various policies such as telemedicine and X-waiver elimination.

1. **Stimulants:** continued increases in overall stimulant prescribing despite shortages in amphetamine/dextroamphetamine.
2. **Buprenorphine:** No meaningful change in dispensing but a **30%** increase in providers engaged in substance use treatment.
3. **Ketamine & Esketamine:** increased use of esketamine in prescriptions & office-based visits while ketamine use increased until approval of esketamine in 2019.

The report do not differentiate between legitimate medical use of included products and misuse/abuse by patients and/or their close contacts. While some of the prescriptions have the potential for abuse, the data in this report cannot be used to infer the intent of patients.



Rosenie Thelus, PhD, MPH
Principal/Senior Epidemiologist
Government Solutions

M: +1 202 394 9773 | E: rosenie.thelus@iqvia.com

