

# Temporal Trends and the Influence of the COVID-19 Pandemic on Prescription Medication Use in Pediatric Patients

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## Introduction

In the United States, nearly one in five children uses a prescription drug in any given month. Over the past two decades, there have been declines in the use of antibiotics and cough/cold products but increases in medications for mental health and other psychiatric disorders and asthma. Early in the COVID-19 pandemic, pediatric prescriptions declined by 27% as compared with the prior year. However, little is known about how these trends have evolved since then. The objective of this research is to fill this gap by describing utilization of prescription medications in pediatric patients from 2016 to 2024.

## Objective

### Primary Objective

- To describe trends in pediatric prescription drug utilization from 2016 to 2024, focusing on changes before and after the COVID-19 pandemic.

### Secondary Objectives

- Estimate the prevalence of pediatric polypharmacy ( $\geq 3$  prescriptions per year).

## Methods

- Data Source:** IQVIA PharMetrics® Plus for Academics
- Dataset includes 31 million deidentified members.
- Population:** Patients <18 years with  $\geq 1$  prescription (2016-2024)
- Measures:** Medications were categorized by therapeutic class and active ingredient, including all brands, generics, and dosage forms.
- Average % of total pediatric prescriptions was calculated for the pre-pandemic period (2016–2019).
- Average % of total pediatric prescriptions was calculated for the post-pandemic period (2021–2024).
- Percent change between the two intervals was computed to evaluate shifts in utilization over time.
- Outcomes:** Annual crude prescription rates by year, age group, and class; identification of most frequently prescribed drugs.
- Ethics:** Determined non-human subjects research by UMB IRB.

## Results

Table 1. Patient Demographics Among Pediatric Members With  $\geq 1$  Prescription, 2016–2024 (Excluding 2020).

Demographic	Average	Standard Deviation
Total number of prescriptions per year	6,855,371	1010520
Mean Number of enrolled days	319	16.37%
Male	50.20%	16.76%
Female/unknown	49.80%	16.76%
Age 0-1	12%	26%
Age 2-5	21%	31%
Age 6-12	35%	27%
Age 13-<18	32%	95%
Members with 1 Rx	357,868	35623
Members with 2 Rx	236,601	26518
Members with 3 Rx	155,500	19929
Members with 4+ Rx	310,760	51996

Figure 1: Prevalence of pediatric polypharmacy ( $\geq 3$  prescriptions per year).

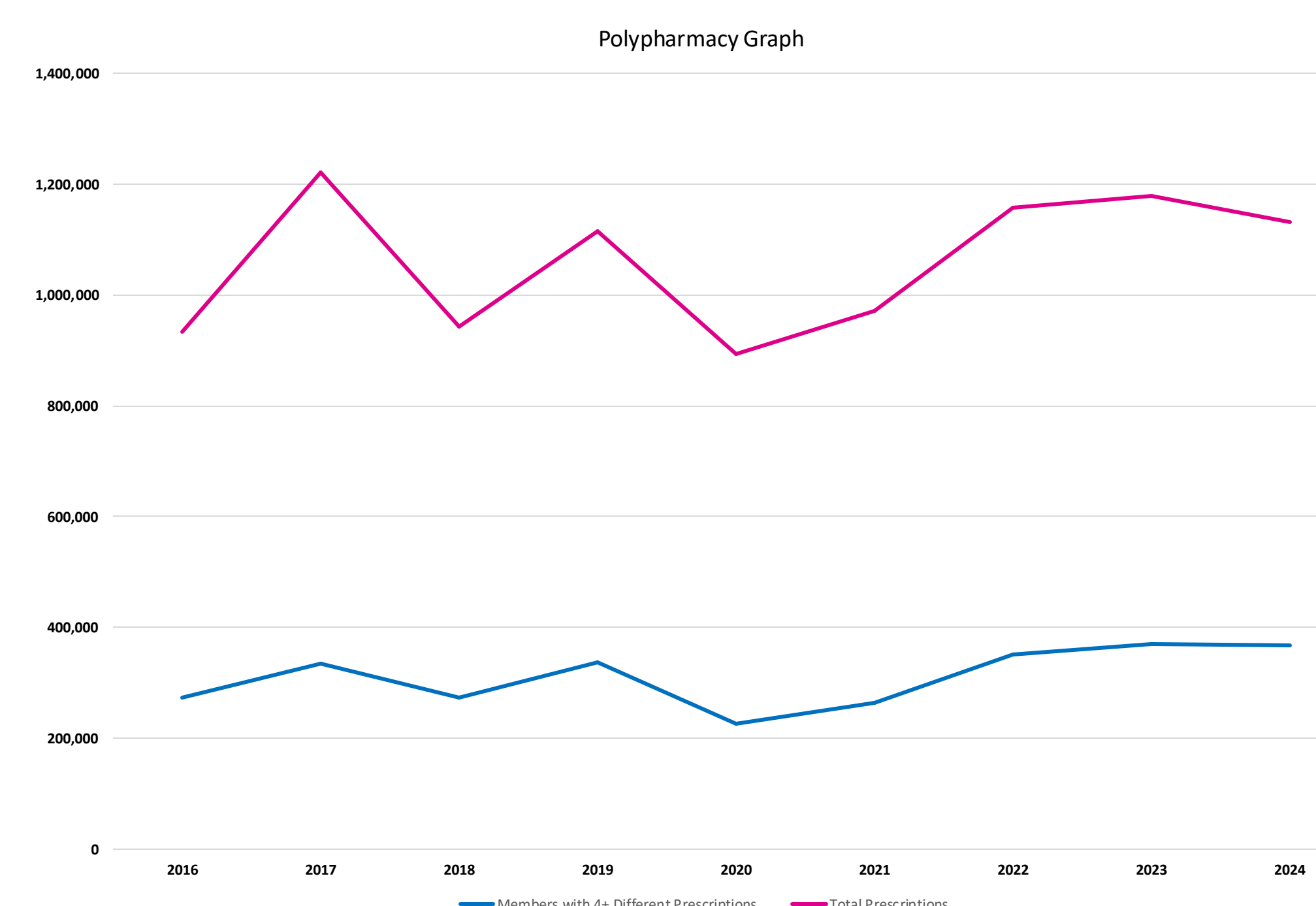
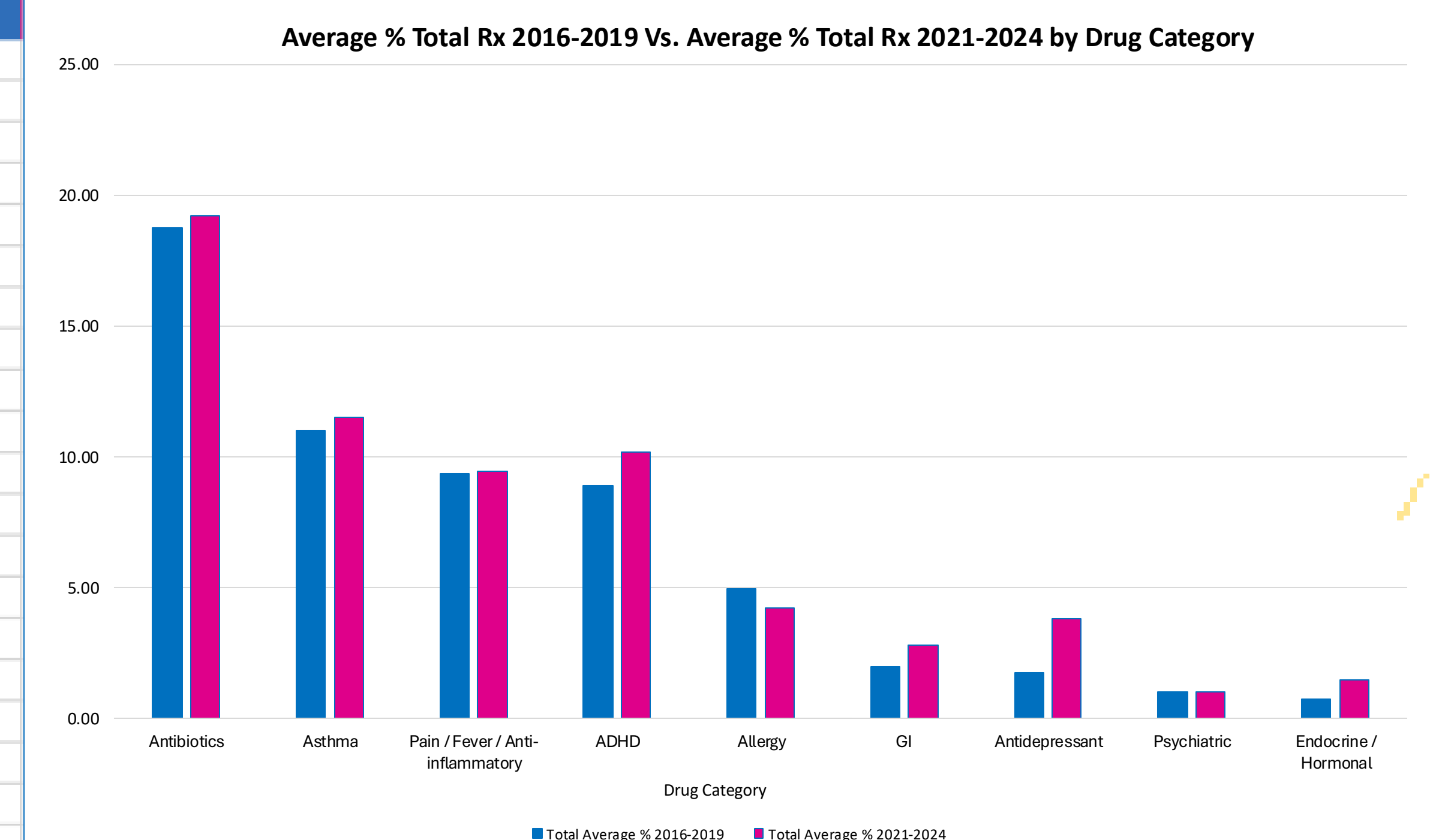


Table 2: Comparison of Average Annual Prescription Shares: 2016–2019 vs 2021–2024 (Excluding 2020) and Percent Change

Generic Drug Name	Average % RX 2016-2019	Average % RX 2021-2024	Change(%)
AMOXICILLIN	6.99	6.3	↓ 0.69
ALBUTEROL SULFATE	5.31	5.29	↓ 0.02
AZITHROMYCIN	3.26	3.43	↑ -0.17
METHYLPHENIDATE HCL	2.53	4.01	↑ -1.49
MONTELUKAST SODIUM	2.77	2.5	↓ 0.27
CETIRIZINE HCL	2.97	2.01	↓ 0.96
IBUPROFEN	2.36	2.32	↓ 0.04
AMPHETAMINE-DEXTROAMPHETAMINE	2.54	1.84	↓ 0.7
AMOXICILLIN & POT CLAVULANATE	1.78	2.21	↑ -0.43
CEFDINIR	1.87	1.76	↓ 0.11
FLUTICASON PROPRIONATE (NASAL)	1.35	1.8	↑ -0.45
CEPHELEXIN	1.69	1.65	↓ 0.04
SERTRALINE HCL	1.16	1.65	↑ -0.49
LISDEXAMFETAMINE DIMESYLATE	1.23	1.52	↑ -0.29
ACETAMINOPHEN	1.24	1.55	↑ -0.31
FLUOXETINE HCL	1.22	1.49	↑ -0.28
LORATADINE	1.41	1.28	↓ 0.13
TRIAMCINOLONE ACETONIDE (TOPICAL)	1.34	1.13	↓ 0.21
CLONIDINE HCL	1.25	1.23	↓ 0.02
PREDNISOLONE SODIUM PHOSPHATE	0.93	1.24	↑ -0.31
SULFAMETHOXAZOLE-TRIMETHOPRIM	0.99	1.17	↑ -0.18
DEXMETHYLPHENIDATE HCL	0.82	1.25	↑ -0.42
FLUTICASON PROPRIONATE HFA	0.97	1.25	↑ -0.28
MUPIROICIN	0.82	1.23	↑ -0.41
HYDROCORTISONE (TOPICAL)	0.99	1.11	↑ -0.12
PREDNISON	1.05	0.56	↓ 0.49
ONDANSETRON	0.85	0.93	↑ -0.08
PEDIATRIC MULTIVITAMINS W/FL	0.88	0.86	↓ 0.02
HYDROCODONE-ACETAMINOPHEN	0.74	0.9	↑ -0.16
PSEUDOEPHED-BROMPHEN-DM	0.58	0.96	↑ -0.38
GUANFACINE HCL (ADHD)	0.82	0.74	↓ 0.08
OSELTAMIVIR PHOSPHATE	0.84	0.56	↓ 0.29
POLYETHYLENE GLYCOL 3350	0.47	0.81	↑ -0.34
BUDESONIDE (INHALATION)	0.63	0.65	↑ -0.03
PREDNISOLONE	0.71	0.64	↓ 0.08
ESCITALOPRAM OXALATE	0.59	0.67	↑ -0.07
NYSTATIN (TOPICAL)	0.6	0.64	↑ -0.03
LEVOTHYROXINE SODIUM	0.12	0.95	↑ -0.83
NORGESTIMATE-ETHINYL ESTRADIOL (TRIP)	0.61	0.55	↓ 0.06
EPINEPHRINE (ANAPHYLAXIS)	0.55	0.59	↑ -0.04
SODIUM FLUORIDE	0.69	0.47	↓ 0.22
HYDROXYZINE HCL	0.59	0.59	↓ 0
CLINDAMYCIN PHOSPHATE (TOPICAL)	0.41	0.55	↑ -0.14
ATOMOXETINE HCL	0.56	0.39	↓ 0.17
MINOCYCLINE HCL	0.42	0.54	↑ -0.12
RANITIDINE HCL	0.39	0.53	↑ -0.14
POLYMYXIN B-TRIMETHOPRIM	0.52	0.39	↓ 0.13
RISPERIDONE	0.44	0.44	↓ 0
GUANFACINE HCL	0.42	0.46	↑ -0.04
OMEPRAZOLE	0.29	0.55	↑ -0.26

Figure 2: Average % of Total Prescriptions by Drug Classification: 2016–2019 vs 2021–2024



## Conclusion

- The comparison of average % of total prescriptions by drug classification pre pandemic and post pandemic showed that most therapeutic categories experienced increased utilization in the post-pandemic period.
- Amoxicillin and albuterol remain the top prescribed medications for children after the pandemic.
- The drug classifications with the largest changes pre to post pandemic were ADHD and antidepressant medications. These classes are consistent with changes seen in other references.

## Contact/Disclosures

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All authors on this presentation have nothing to disclose