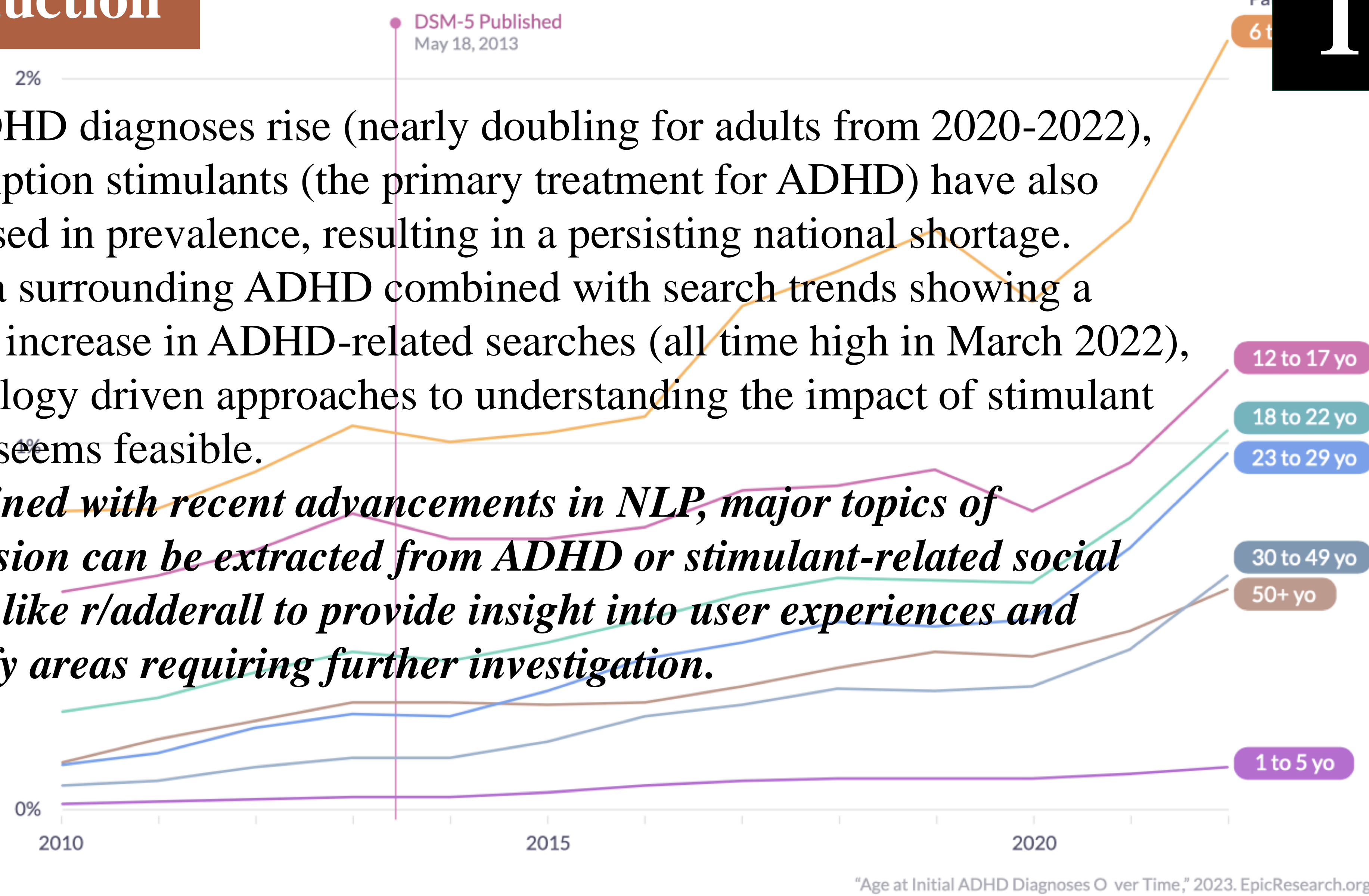


Introduction

- As ADHD diagnoses rise (nearly doubling for adults from 2020-2022), prescription stimulants (the primary treatment for ADHD) have also increased in prevalence, resulting in a persisting national shortage.
- Stigma surrounding ADHD combined with search trends showing a steady increase in ADHD-related searches (all time high in March 2022), technology driven approaches to understanding the impact of stimulant usage seems feasible.
- Combined with recent advancements in NLP, major topics of discussion can be extracted from ADHD or stimulant-related social media like r/adderall to provide insight into user experiences and identify areas requiring further investigation.*

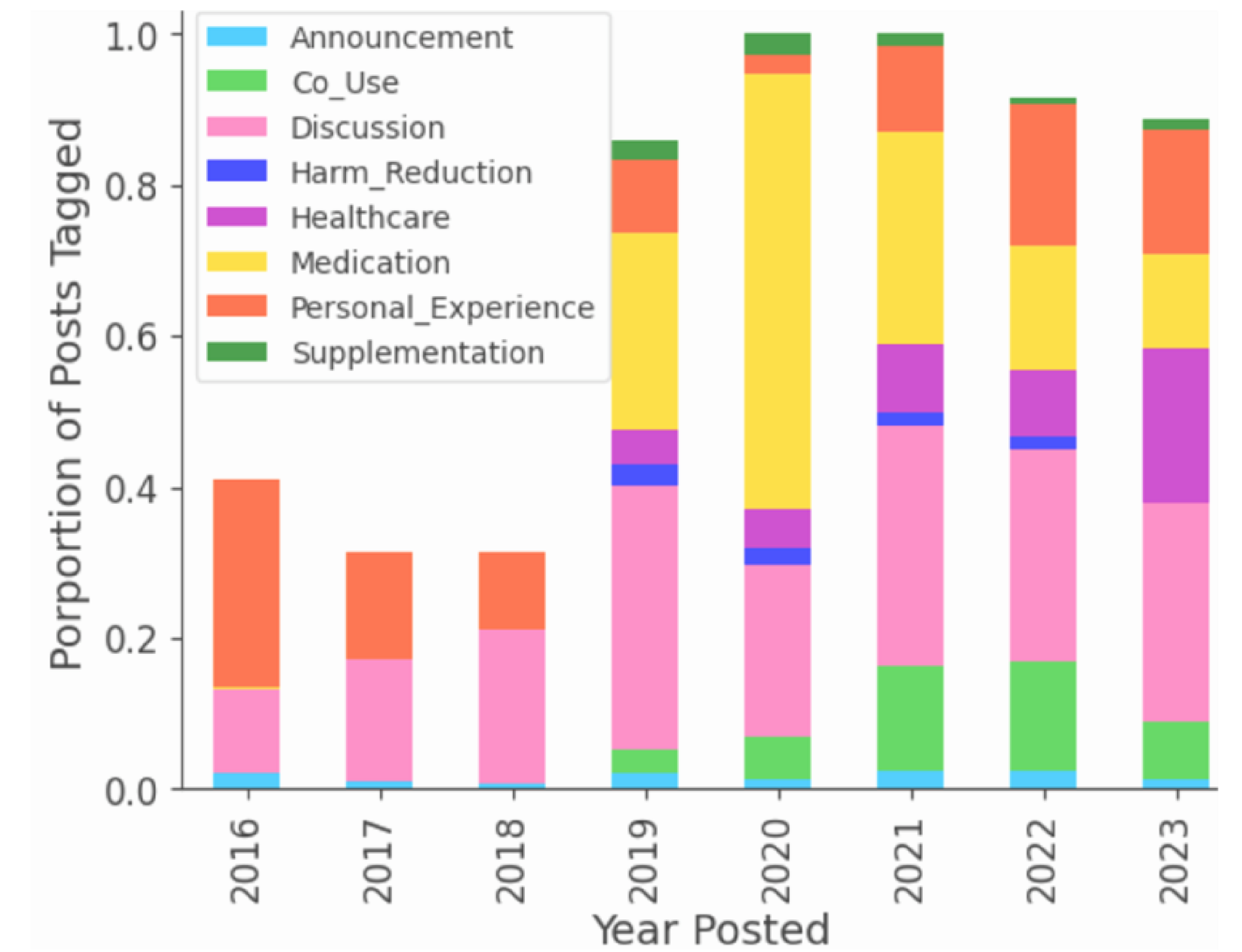


1

Methods

- Extracted 6,452 posts from r/adderall using Python Reddit API Wrapper and formatted according to DNM design specifications.
- Within the DNM design, user-derived tags in posts (if any) were extracted and manually categorized into 8 DNM Topics (Figure 1).
- Posts with irrelevant tags were filtered, leaving 6,417 posts for preprocessing

Figure 1: DNM Topic Proportions in Posts Stratified by Year



2

- Using BERTopic modeling with a target UMAP dimension of 5, a local neighborhood size of 15 and cosine as the similarity metric, lemmatized texts were passed to the model which produced topics along with their associated probabilities/keywords.
- These BERTopic Topics were manually analyzed and compared to the DNM Topics in Figure 1 for evaluation.

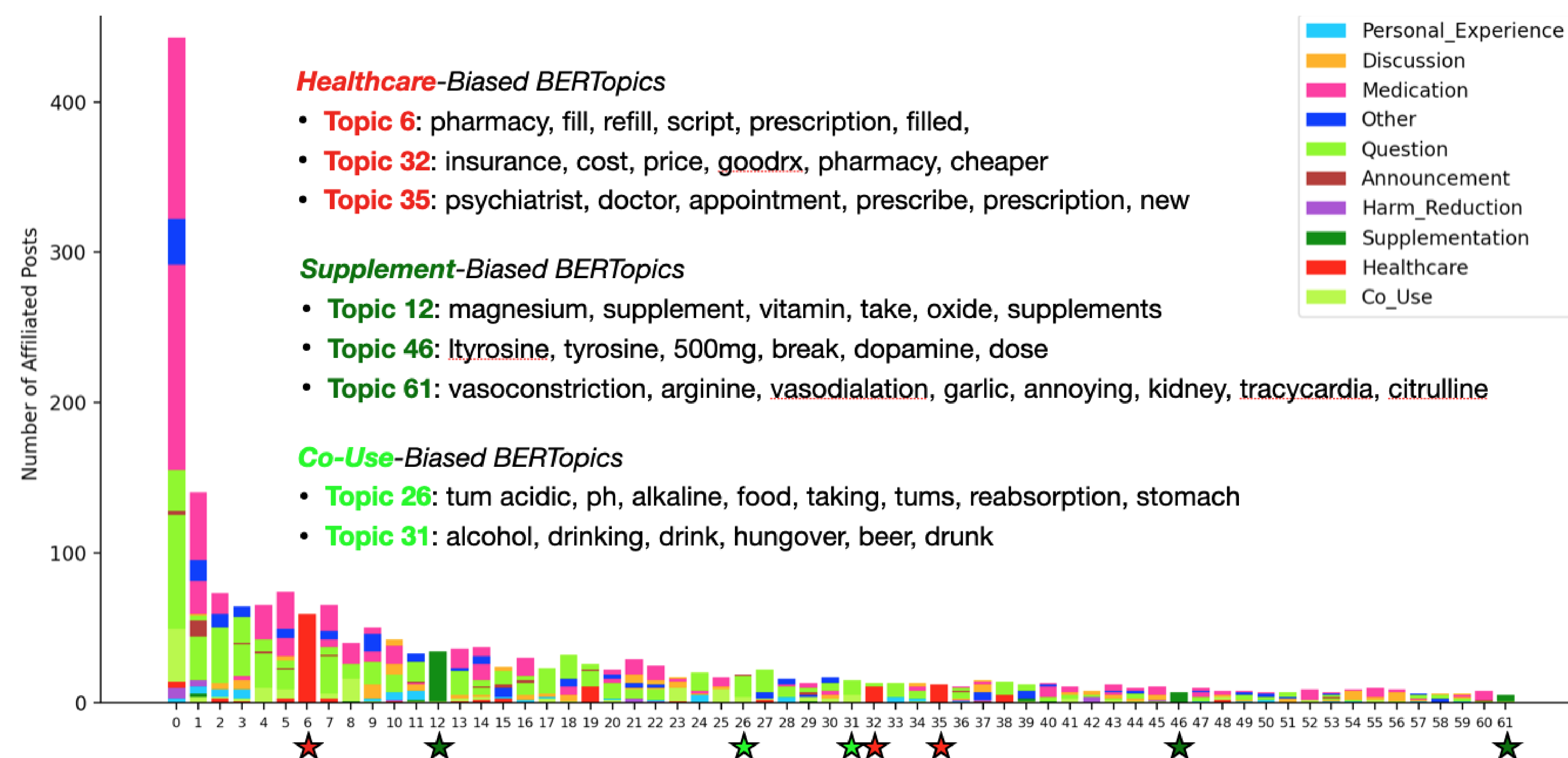
Results

Examples of Manually Curated Topic Titles based on Associated Keywords

- topic 1:** eat | weight | appetite | hungry | loss → **nutrition**
- topic 4:** sleep | asleep | wake | fall | night → **sleep**
- topic 5:** heart | blood | pressure | chest | pain → **cardiovascular**
- topic 4:** anxiety | xanax | anxious | panic | adderall → **anxiety**

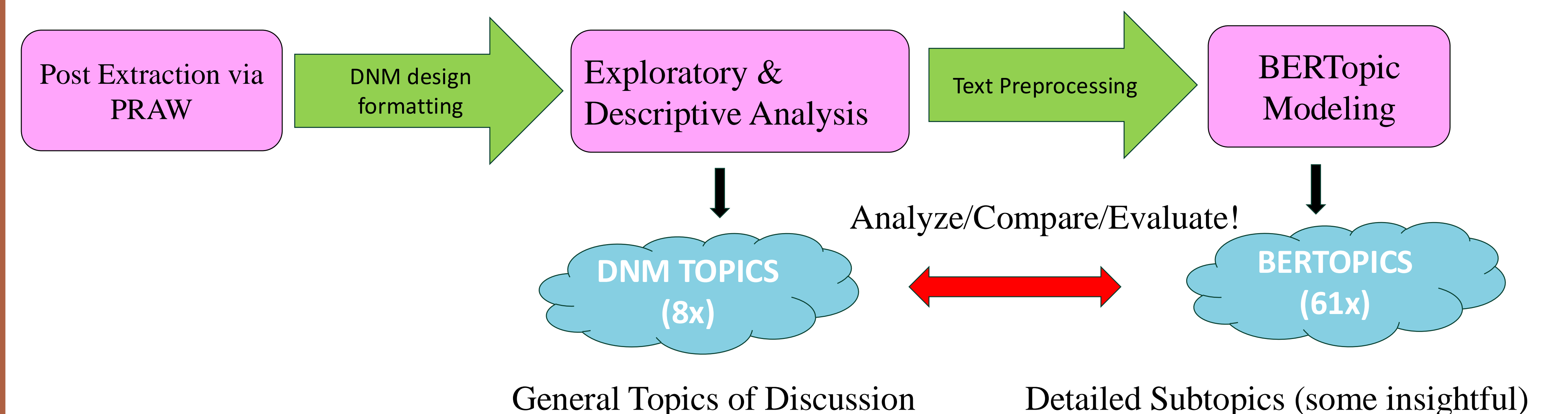
3

Figure 2: Extracted BERTopic Topics (0-61) Colored by DNM Topic Category (1-8)



Conclusions

Figure 3: Summary of NLP Framework to Assess Reddit Posts



4

- Many extracted topics represented challenges met by stimulant users, for example, general side effects like insomnia, cardiac irregularities, appetite changes as well as distress around stimulant shortages and a desire to find non-pharmaceutical approaches for managing ADHD.
- Further investigation into identified topics may help to improve ADHD treatments by catering to unmet needs of individuals which can in turn protect against prescription stimulant abuse.
- With this approach, we can begin to disambiguate controversies over current adult ADHD research, diagnosis, and clinical care to guide safe and appropriate prescribing practices.*