



Building Recommender Systems to Effectively Expand Beauty Product Offering

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Business Problem

- New to the beauty product industry
- Want to get an idea of what products are popular on Amazon
- Want to build a recommender system to find future products that might sell well
- Use recommender system to find products that might sell well, assuming that current customers give high ratings for the popular products on Amazon

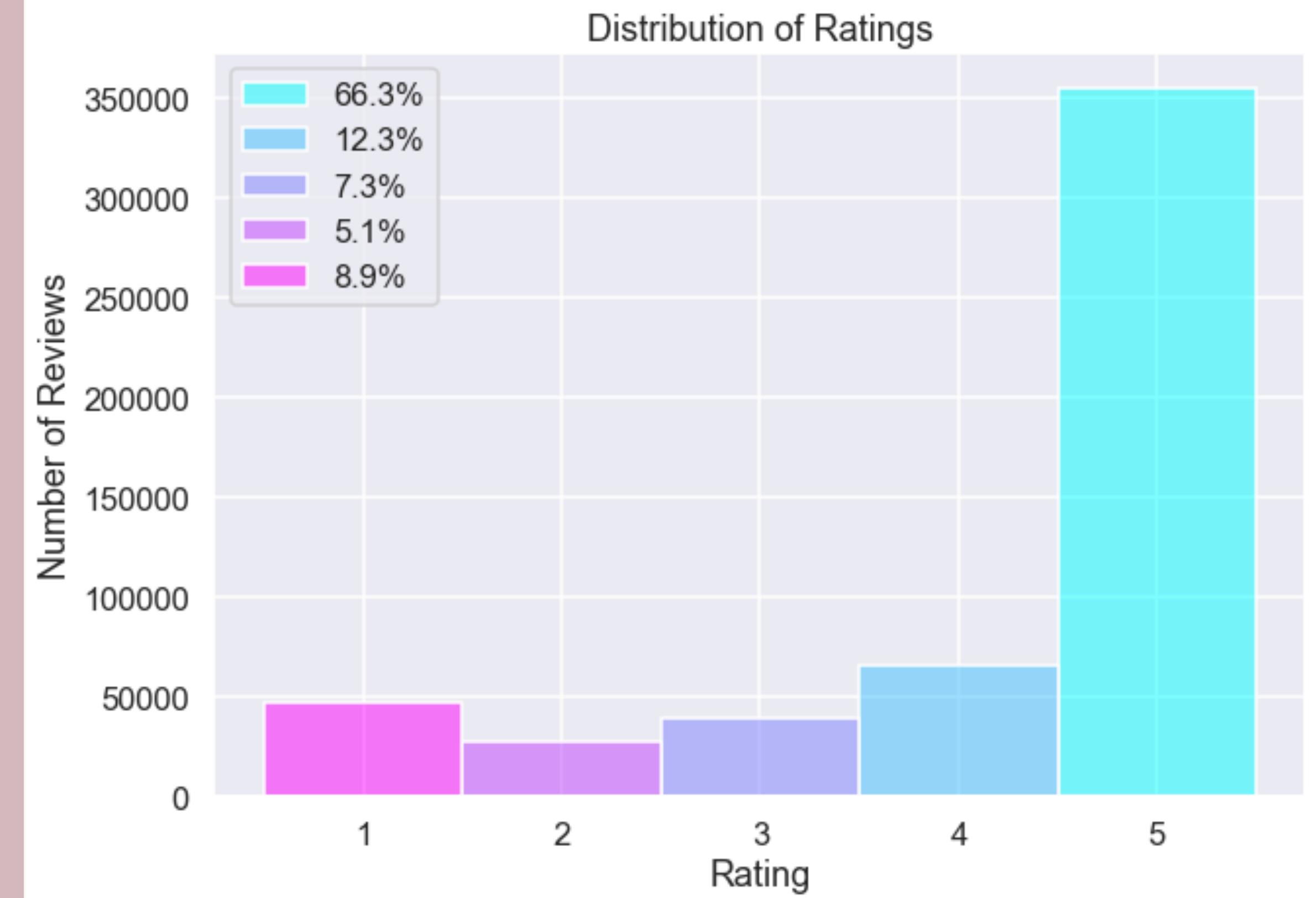


Data Overview

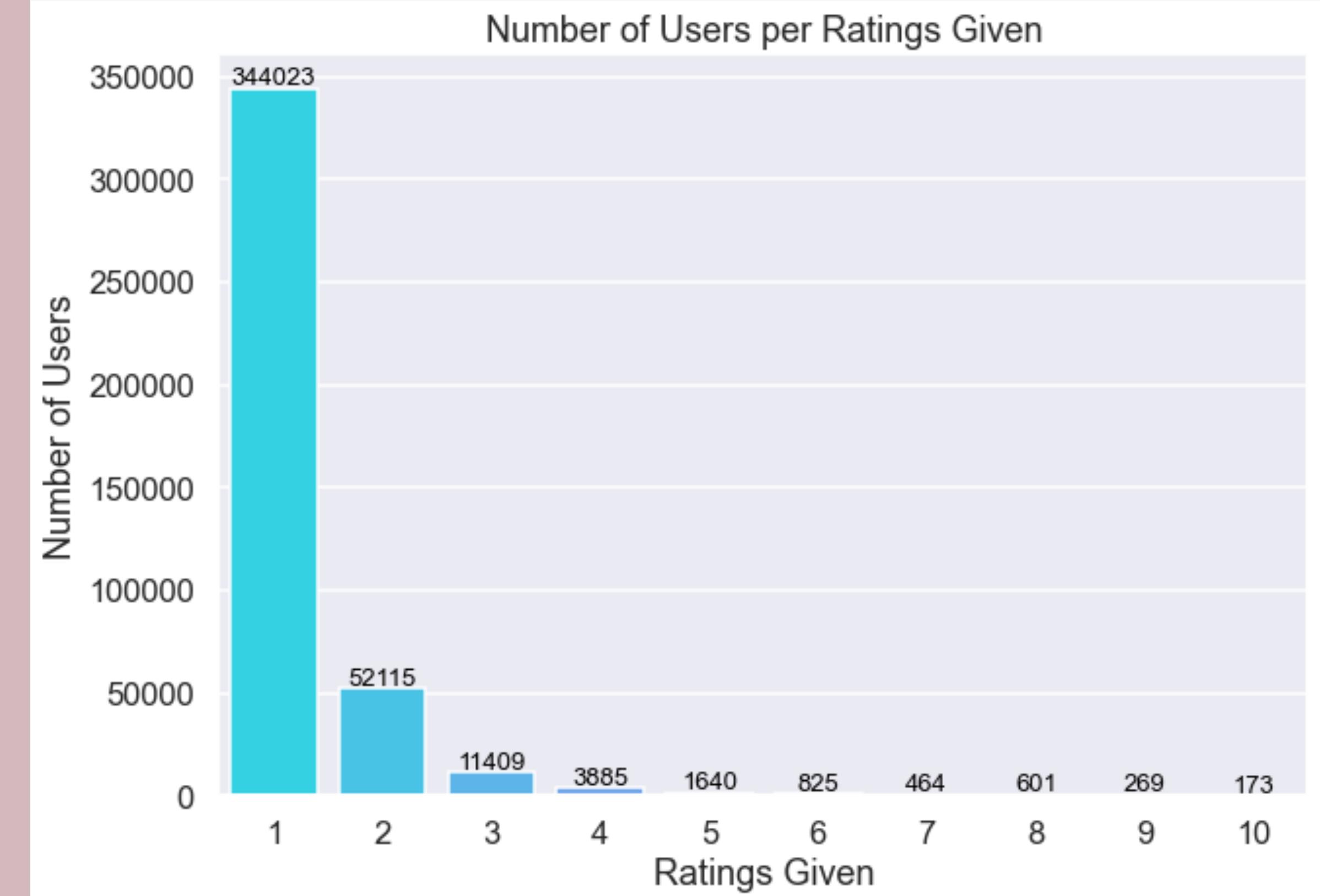
Amazon Ratings

- Contains ratings collected between May 1996 to Oct 2018
- Products under “Luxury Beauty” category
- 536,111 total ratings
- Contains product ASIN codes for 12,111 listings
- Includes ratings from 416,077 unique users
- Ratings are on a scale from 1 - 5

Rating Distribution



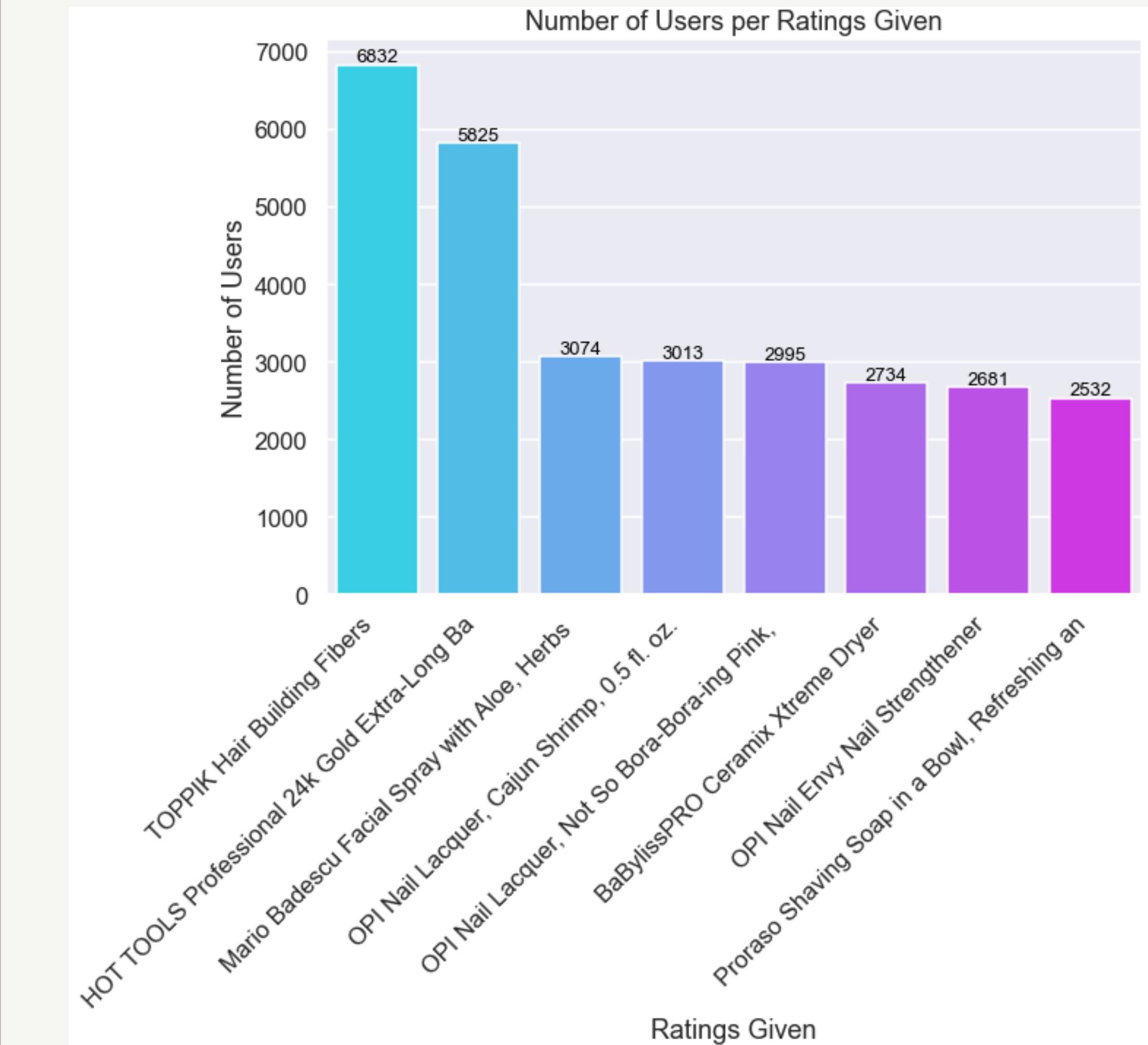
Users per Number of Ratings Given



What Products are Most Popular on Amazon?

Most Popular Products

by Number of Ratings



What Other Products Should We Consider Selling?

Building the Recommender Model

- Takes existing user ratings of items and breaks them down into item characteristics as well as user preferences that correspond directly to those characteristics.
- Final model breaks down our data into 150 item characteristics and 150 user preferences with respect to those characteristics

Recommended Products

- **Crabtree & Evelyn - Gardener's Ultra-Moisturising Hand Therapy Pump**
- **Crabtree & Evelyn Hand Soap, Gardeners**
- **Soy Milk Hand Crme**
- **Paul Mitchell Shampoo One**
- **Glytone Rejuvenating Mask**

Recommended Products

- **PCA SKIN Protecting Hydrator Broad Spectrum SPF 30**
- **jane iredale Amazing Base Loose Mineral Powder**
- **jane iredale So-Bronze, Bronzing Powder**
- **YU-Be: Japan's secret for dry skin relief. Deep hydrating moisturizing cream for face, hand and body**
- **Calvin Klein ETERNITY Eau de Parfum**

Further Analysis

- Amazon has a category for “All Beauty”, so it might be worthwhile to combine these ratings with the data used in this analysis
- Our model was capable of predicting user preferences with an average error of about 0.92 stars, which might be improved by adding more data
- Try using alternate modeling algorithms on combined dataset to improve recommendation accuracy

Thank You!