



Shamp You: **A Personalized Shampoo** **Recommender**

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Untangling the Problem

As of Oct 2024, Influenster.com has over 22,000 products in the shampoo category. How should we choose one?

- By number of sales/popularity? ...But even popular products have unhappy customers
- By product description? ...But product marketing =/= customer perception



Data Sources

For the top 100 shampoos, we extracted:



total review count and
average rating



50 most recent ratings
and reviews

But something is missing...what if our user wants to find a more
affordable alternative?



10,000 product prices →
fuzzy match to Influenster

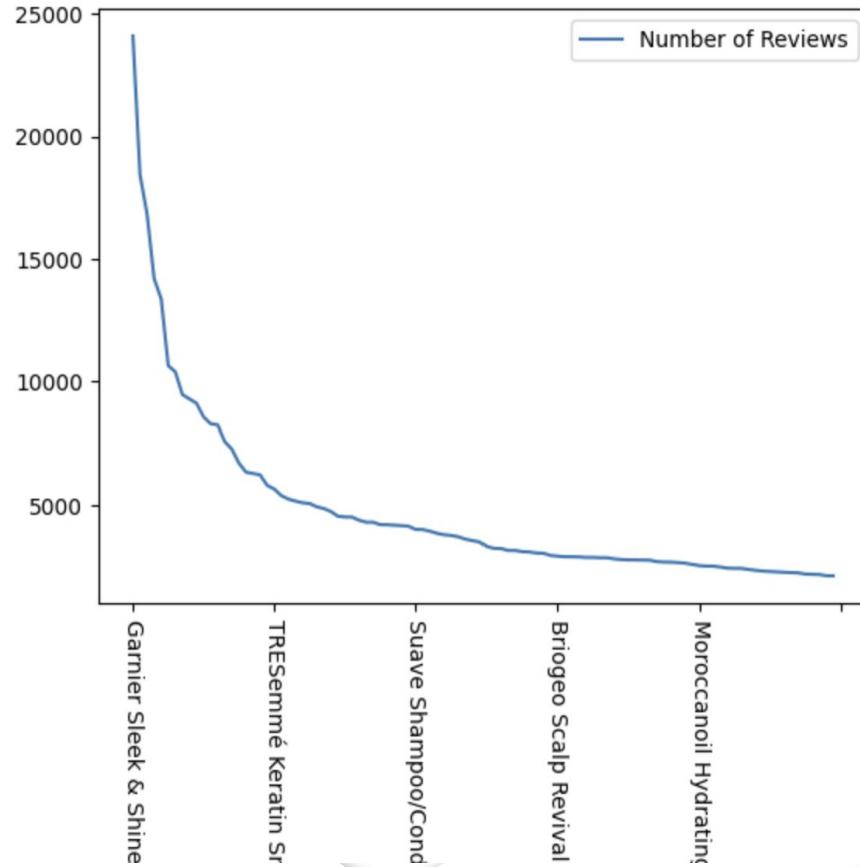
Our Analysis Process

Review Translation	Translate all foreign language reviews (many in German, Chinese, Spanish) into English
Word Frequency	Perform a frequency count of the unique words in reviews
Product Popularity	Investigate if the long-tail effect exists, based on the number of reviews per product
Lift for Attributes	Find top attributes and compare their lift values and find the co-mentions between them
Cosine Similarity & Vader Sentiment	Use Vader and Cosine similarity analysis to get recommended shampoos by particular attribute(s) - average it out by grouping at a product level
Spacy Similarity & Vader Sentiment	Use spaCy and Vader to compute an overall score and find the average overall score for each product.
Recommendation	Improve user recommendations through use of additional price data

How Do You Choose?

Most consumers will pick the most popular products. But what if there is a suitable alternative in the long-tail?

We used number of reviews as a proxy for unit sales.



Trusting the popularity



- | | | |
|--|--|------|
| | Garnier Sleek & Shine Intensely Smooth | 4.41 |
| | Head & Shoulders Classic Clean Anti-Dandruff Shampoo | 4.22 |
| | Pantene Daily Moisture Renewal Shampoo | 4.26 |

Profile 1: Soft, Shiny, Silky



Cosine similarity



Suave Moroccan Infusion Shine Shampoo \$ 4.43



Pantene Pro-V Ultimate 10 Shampoo \$ 7.01



Herbal Essences Argan Oil of Morocco Shampoo
\$ 10.95

spaCy similarity



Pureology Hydrate Shampoo \$ 75.95



Herbal Essences Smooth Collection Shampoo
\$15.99



L'Oreal Paris Color Vibrancy Intensive Protecting Shampoo
\$ 4.99



Profile 2: Frizz-Free, Shiny, Affordable



Cosine similarity

- Pantene Pro-V Ultimate 10 Shampoo \$ 7.01
- Garnier Sleek & Shine Shampoo \$ 5.99
- Garnier Sleek & Shine Moroccan Sleek Oil Treatment \$ 25.95

spaCy similarity

- Herbal Essences Smooth Collection Shampoo \$ 15.99
- Pureology Hydrate Shampoo \$ 17.95
- Garnier Sleek & Shine Shampoo \$ 5.99

Profile 3: Curly, Nourishing, Fruity



Cosine similarity



Pantene Curl Perfection Shampoo \$ 18.99



Coconut & Hibiscus Curl & Shine Shampoo \$ 80.92



Tresemme Flawless Curls Shampoo with Coconut Oil
\$ 10.55

spaCy similarity



Herbal Essences Smooth Collection Shampoo
\$ 15.99



Pureology Hydrate Shampoo \$ 75.95



Garnier Smoothing Treat 1 Minute Hair Mask + Avocado Extract
\$ 80.92



Profile 4: Herbal, Hydration, Volume



Cosine similarity

- Pantene Sheer Volume Shampoo \$ 12.47
- Herbal Essences Body Envy Volumizing Shampoo \$11.15
- Tresemme 24 Hour Volumizing Shampoo for Fine Hair \$ 80.92

spaCy similarity

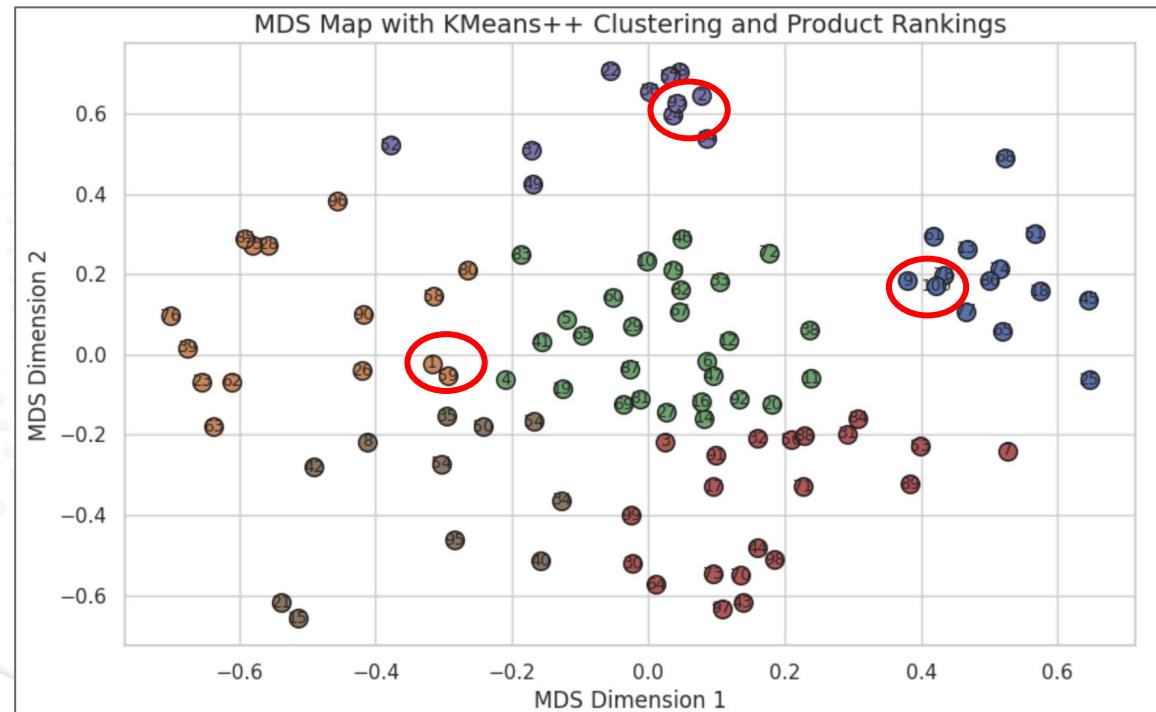
- Herbal Essences Smooth Collection Shampoo \$ 15.99
- Garnier Sleek & Shine Shampoo \$ 5.99
- L'Oreal Paris Color Vibrancy Intensive Protecting Shampoo \$ 4.99



The Lather Latitude Mapping the Shampoo Universe

Obtain product vectors based on how frequently a list of important attributes are talked about when reviewing a product

Based on the cosine similarity of various product vectors



Profile 5: Need a Substitute?



Suppose you're a long time fan of the **Herbal Essences Smooth Collection Shampoo (\$ 15.99)**, but you want to shake things up. You need a **new product** with similar strengths!

From Other Brands

Pantene Pro-V Classic Clean Shampoo
\$ 10.99

Tea Tree Special Shampoo
\$ 16

Suave Professionals Rosemary + Mint Shampoo
\$ 8.99

From Herbal Essences

Herbal Essences Color Me Happy Shampoo for Color Treated Hair \$ 69.99

Herbal Essences Bio:Renew Refresh Blue Ginger & Micellar Water Shampoo \$ 6.99

Herbal Essences Argan Oil of Morocco Shampoo
\$ 10.95

Future Work

Find more standard pricing data

Market Basket Analysis: product bundling recommendations



Customer Segmentation: assist brands with launching new products

Symptom Based Recommendations: For example, dandruff, itchiness, brassy hair color

**Thank
you!
Questions?**



Appendix

- Rank 1: Garnier Sleek & Shine Intensely Smooth Leave-In Conditioning Cream
Rank 2: Head & Shoulders Classic Clean Anti-Dandruff Shampoo
Rank 3: Pantene Daily Moisture Renewal Shampoo
Rank 4: Tresemme Silky & Smooth Shampoo for Frizzy Hair
Rank 5: Pantene Pro-V Smooth & Sleek Shampoo & Conditioner
Rank 6: Ogx Beauty Coconut Milk Shampoo
Rank 7: Dove Nutritive Solutions Intensive Repair Shampoo
Rank 8: Garnier Sleek & Shine Shampoo
Rank 9: Garnier Repairing Shampoo Honey Treasures
Rank 10: L'Oreal Paris Total Repair 5 Repairing Shampoo
Rank 11: Aussie Miracle Moisit Shampoo
Rank 12: TRESemmé Purify and Replenish Deep Cleansing Shampoo
Rank 13: Pantene Repair & Protect Shampoo
Rank 14: Tresemme Rich Moisture Shampoo for Dry Hair
Rank 15: TRESemmé Keratin Smooth Infusing Shampoo
Rank 16: Dove Daily Moisture Shampoo
Rank 17: Pureology Hydrate Shampoo
Rank 18: Herbal Essences Hello Hydration Moisturizing Shampoo
Rank 19: Pantene Smooth & Sleek Shampoo
Rank 20: TRESemmé Anti-Breakage Strengthening Shampoo
Rank 21: TRESemmé Keratin Smooth Shampoo
Rank 22: Head and Shoulders Green Apple Daily-Use Anti-Dandruff Paraben Free Shampoo, 32.1 fl oz
Rank 23: Herbal Essences Smooth Collection Shampoo
Rank 24: Head & Shoulders Smooth & Silky Anti-Dandruff Shampoo
Rank 25: Suave Keratin Infusion Smoothing Shampoo
Rank 26: Ogx Beauty Biotin & Collagen Shampoo
Rank 27: Hair Food Manuka Honey & Apricot Shampoo
Rank 28: Tresemme 24 Hour Volumizing Shampoo for Fine Hair
Rank 29: Garnier Smoothing Treat 1 Minute Hair Mask + Avocado Extract
Rank 30: Shimmer Lights Purple Shampoo for Blonde & Silver Hair
Rank 31: Joico K-PAK Shampoo
Rank 32: L'Oreal Paris Moisture Sulfate Free Shampoo for Dry Hair
Rank 33: Jamaican Black Castor Oil Strengthen & Restore Shampoo 16oz
Rank 34: L'Oreal Paris Color Vibrancy Intensive Protecting Shampoo
Rank 35: Coconut & Hibiscus Curl & Shine Shampoo - Trial & Travel Size
Rank 36: Head & Shoulders Itchy Scalp Care Anti-Dandruff Shampoo
Rank 37: Tea Tree Special Shampoo
Rank 38: Live Clean Apple Cider Detox Shampoo, 12 oz. Bottle
Rank 39: Herbal Essences Bio-Renew Refresh Blue Ginger & Micellar Water Shampoo - 13.5 fl oz
Rank 40: Tresemme Revitalize Color Shampoo for Color Treated Hair
Rank 41: Suave Shampoo/Conditioner Rosemary Mint Twin Pack 25.2oz
Rank 42: Garnier Fructis Strength & Repair Shampoo
Rank 43: Joico Color Balance Purple Shampoo
Rank 44: Matrix Brass Off Blue Shampoo
Rank 45: L'Oreal Paris Brass Toning Purple Sulfate Free Shampoo
Rank 46: L'Oreal Paris Extraordinary Clay Shampoo
Rank 47: No. 4 Bond Maintenance™ Shampoo
Rank 48: Head & Shoulders Dry Scalp Care with Almond Oil Anti-Dandruff 2-in-1
Rank 49: Garnier Sleek & Shine Moroccan Sleek Oil Treatment
Rank 50: Pantene Pro-V Classic Clean Shampoo - 20.1 fl oz
Rank 51: Jamaican Black Castor Oil Bentonite Clay Shampoo Bar
Rank 52: Suave Keratin Infusion Dry Shampoo
Rank 53: Suave® Naturals Tropical Coconut Shampoo
Rank 54: Pureology Strength Cure Shampoo
Rank 54: TRESemmé Moisture Rich Shampoo & Conditioner Value Pack
Rank 56: Suave Professionals Almond & Shea Butter Moisturizing Shampoo - 12.6 fl oz
Rank 57: Head & Shoulders Paraben Free Dry Scalp Care Shampoo
Rank 58: Suave Professionals Rosemary + Mint Shampoo - 12.6 fl oz
Rank 59: Pantene Curl Perfection Shampoo
Rank 60: L'Oréal Paris Elvive Extraordinary Oil Shampoo
Rank 61: Briogeo Scalp Revival™ Charcoal + Coconut Oil Micro-Exfoliating Shampoo | Scalp Scrub
Rank 62: Herbal Essences Totally Twisted Conditioner - 11.7 fl oz
Rank 63: Herbal Essences Color Me Happy Shampoo For Color Treated Hair
Rank 64: Redken Color Extend Blondage Color Depositing Purple Shampoo
Rank 65: Pantene Pro-V Ultimate 10 Shampoo
Rank 65: Carol's Daughter Wash Day Delight Sulfate Free Shampoo For Curly Hair
Rank 67: OGX Extra Strength Hydrate + Repair Argan Oil of Morocco Shampoo
Rank 68: Head & Shoulders Instant Oil Control 2-in-1
Rank 69: Garnier Smoothing Shampoo with Coconut Oil & Cocoa Butter Extracts
Rank 70: Redken Color Extend Shampoo
Rank 71: Garnier Nourishing Treat 1 Minute Hair Mask + Coconut Extract
Rank 72: Biolage Ultra HydraSource Shampoo for Dry Hair
Rank 73: Biolage ColorLast Shampoo
Rank 74: Suave Moroccan Infusion Shine Shampoo
Rank 75: Pantene Sheer Volume Shampoo
Rank 76: Herbal Essences Body Envy Volumizing Shampoo - 33.8 fl oz
Rank 77: Tresemme Flawless Curls Shampoo with Coconut Oil
Rank 78: Dove Nutritive Solutions Anti-Frizz Oil Therapy Shampoo
Rank 79: Repair & Protect 7 Shampoo
Rank 80: Not Your Mother's® Way To Grow Long & Strong Shampoo
Rank 81: Moroccanoil Hydrating Shampoo 250mL
Rank 82: L'Oreal Paris Extraordinary Oil More Than Shampoo
Rank 83: Aussie Mega Moist 2-in-1 Shampoo + Conditioner
Rank 84: Raw Shea Butter Moisture Retention Shampoo
Rank 85: Aussie Aussome Volume Shampoo
Rank 86: Aussie Total Miracle 7N1 Shampoo
Rank 87: Pantene Pro-V Beautiful Lengths Shampoo
Rank 88: Mbib Gold Series Moisture Boost Shampoo
Rank 89: African Black Soap Bentonite Clay Shampoo Bar
Rank 90: L'Oréal Paris Fibralogy Shampoo and Conditioner
Rank 91: Nanoworks Gold Shampoo
Rank 92: Nexus Therappe Ultimate Moisture Shampoo for Normal to Dry Hair
Rank 93: Dove Dryness & Itch Relief Anti-Dandruff Shampoo
Rank 94: Mane 'n Tail® Daily Control Anti-Dandruff Shampoo 16 oz.
Rank 95: Strength Cure Blonde Shampoo
Rank 96: Herbal Essences Argan Oil Of Morocco Shampoo
Rank 97: Redken Color Extend Magnetics Shampoo 300mL
Rank 98: Nexus Color Assure Shampoo for Colored Hair
Rank 99: Dove Nutritive Solutions Color Care Shampoo
Rank 100: Maui Moisture Heal & Hydrate + Shea Butter Shampoo