

# Distinctions in Amazon Product Advertising and Pricing

Christina Chen | Justine Schabel  
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# Problem Statement and Goals

- ❖ Expose the oversaturation of marketing jargon on products
- ❖ Analyze products cohesively, from titles to ingredients
- ❖ Understand the relationship between terms and product price
- ❖ Evaluate whether advanced NLP techniques perform better compared to manual text analysis
- ❖ Adapt a paper's method and apply it to a new domain or dataset

# Freedman & Jurafsky

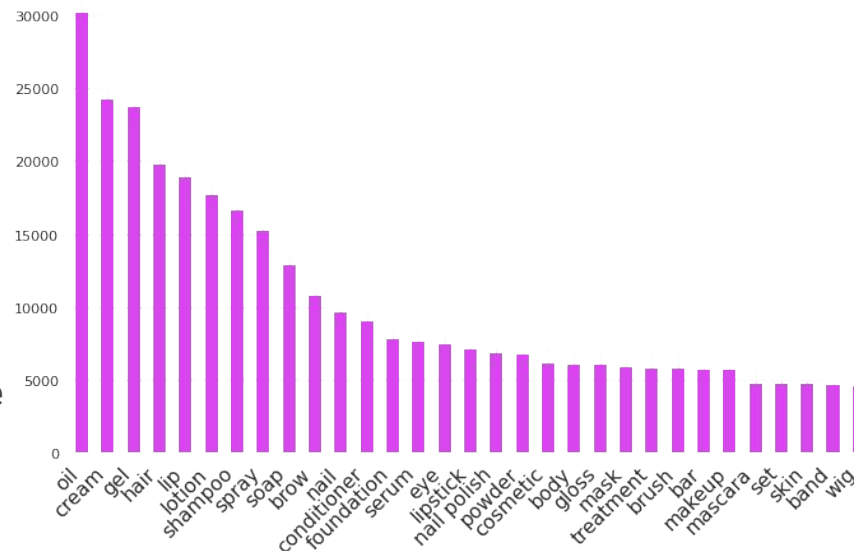
## Authenticity in America Class Distinctions in Potato Chip Advertising

- ❖ 12 potato chip bags: 6 lower-priced, 6 high-priced
- ❖ **Authenticity** - naturalness, locality, historicity
- ❖ **Health** - particularly bad ingredients
- ❖ **Falutin** - flesch-kincaid, tokens, word commonality
- ❖ **Distinction** - comparator, uniqueness, linguistic negation



# Data


- ❖ Hugging Face Amazon Reviews (Beauty and Personal Care)
- ❖ Jungle Scout Amazon Beauty Products
- ❖ Amazon Web Scrape
- ❖ California's Chemicals in Cosmetics Database (CDPH)



# Data

- ❖ Lotion & Hair products
- ❖ Extracted from Hugging Face and Jungle Scout product\_title
- ❖ Used ids to scrape and concatenate title, price, about, description, information, and tags
- ❖ Used BeautifulSoup, Selenium, requests-HTML, and Tor
- ❖ Scraped 33880 unique Amazon pages

Beauty & Personal Care > Skin Care > Body > Moisturizers > Creams



Roll over image to zoom in

**Eucerin Original Healing Cream | Body Moisturizer for Extremely Dry Skin, Compromised Skin | Emollient Enriched Body Cream | Fragrance Free | Dermatologist Recommended Brand | 16 Ounce Jar (Pack of 2)**

Visit the Eucerin Store  
★★★★★ 4,526 ratings | 68 answered questions  
Amazon's Choice in Body Creams by Eucerin

List Price: \$90.96  
Price: **\$13.66** (\$0.43 / Ounce)  
You Save: \$76.70 (85%)

Get \$10 bonus when you reload \$100 or more to your gift card balance.

Size: 16 Ounce (Pack of 2)  
2 Ounce (Pack of 6) \$22.45 (\$3.74 / Ounce)  
4 Ounce (Pack of 3) \$24.00 (\$8.00 / Ounce)  
16 Ounce (Pack of 2) \$28.78 (\$9.72 / Ounce)

**Ingredients** Water, Petrolatum, Mineral Oil, Ceresin, Lanolin Alcohol, Phenoxethanol, Piroctone Olamine  
**Scent** Fragrance Free  
**Item Form** Semi-solid  
**Brand** Eucerin  
**Skin Type** Dry/Sensitive

**About this item**

- **EMOLIENT ENRICHED MOISTURIZER** - Leaves a soothing layer on skin to lock in moisture
- **DRY SKIN RELIEF** - Long lasting, rich body cream helps heal very dry, compromised skin and leaves it feeling smooth
- **DERMATOLOGIST RECOMMENDED** - For over 100 years, Eucerin has pioneered skincare innovation. Today we are trusted as one of the leading and most recommended brands. Our products are designed to protect, support, moisturize, and enhance the look of skin
- **GENTLE DAILY MOISTURIZER** - Daily moisturizing body cream can also be used as a hand cream for very dry skin relief
- **GENTLE ON SKIN** - This cream is Fragrance, dye and paraben free

**Product description**

Size: 16 Ounce (Pack of 2)

Eucerin Original Healing Cream is a time-tested formula that helps heal and protect extremely dry, sensitive, and compromised skin. The thick, rich, formula provides intensive moisture replacement for dry skin. Original Healing Cream binds water to the skin to provide effective moisturization and helps prevent moisture loss by replenishing the skin's moisture barrier. Original healing won't irritate skin, is non-comedogenic and is free of fragrances and dyes. For over 100 years, Eucerin has pioneered skincare innovation, and today we are recognized and trusted by dermatologists as one of the leading and most recommended brands.

**Important information**

**Safety information**  
Caution: keep out of reach of children. For external use only. Avoid contact with eyes. Discontinue use if irritation occurs.

**Ingredients**  
Water, Petrolatum, Mineral Oil, Ceresin, Lanolin Alcohol, Phenoxethanol, Piroctone Olamine

**Directions**  
Smooth over very dry, compromised skin every day, or as directed by a physician. For best results apply immediately after bathing or showering.

**Read reviews that mention**

dry skin sensitive skin original healing highly recommend  
extremely dry long time goes a long long way years ago  
anything else wash my hands dermatologist recommended every day

**Other Sellers on Amazon**

**\$25.18**  
+ Prime  
Sold by Amazon.com  
**Add to Cart**

**\$28.60**  
+ Free Shipping  
Sold by ONE CLICK STORE  
**Add to Cart**

**\$28.65**  
+ Free Shipping  
Sold by essential  
**Add to Cart**

**Honest Beauty Magic Beauty Balm with Fruit & Seed Oils** ...  
\$8.99 \$9.99 -10%  
\$12.54 \$4.99 +prime  
Subscribe & Save  
Sponsored

# Data

## Lotion

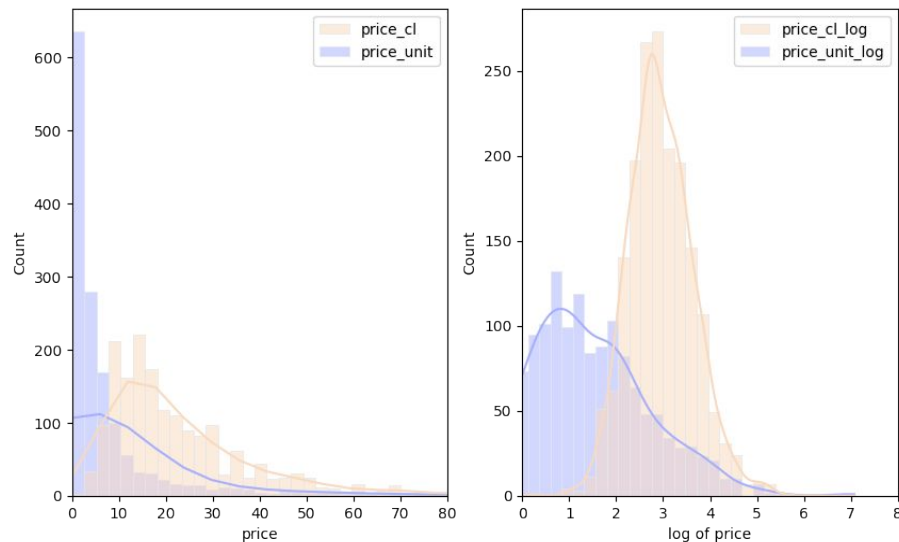
*lotions, creams, moisturi(z/s)ers*

- ❖ 2511 unique products with price
- ❖ median price: \$3.42 / oz

## Hair

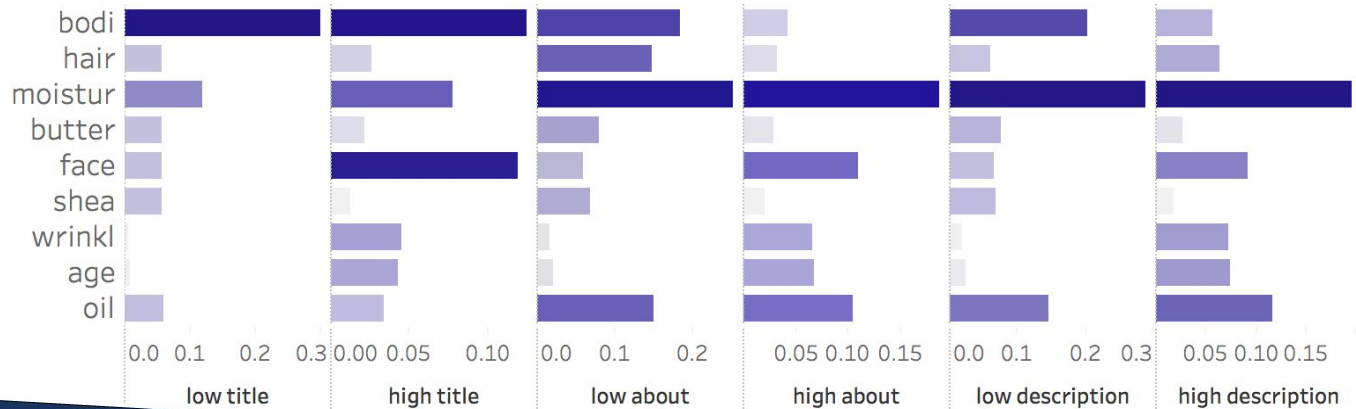
*shampoos, conditioners*

- ❖ 2464 unique products with price
- ❖ median price: \$1.72 / oz



# Freedman and Jurafsky Analysis I

	Metric	Lotion	Hair	Eucerin example
<b>Authenticity</b>	TF-IDF	Higher \$: FDA/Physician tested Lower \$: bias in locality	Higher \$: Recommended	dermatologist recommend
<b>Health</b>	Number of Toxic Chemicals	Higher Priced Higher (slightly)	Same	mineral oil



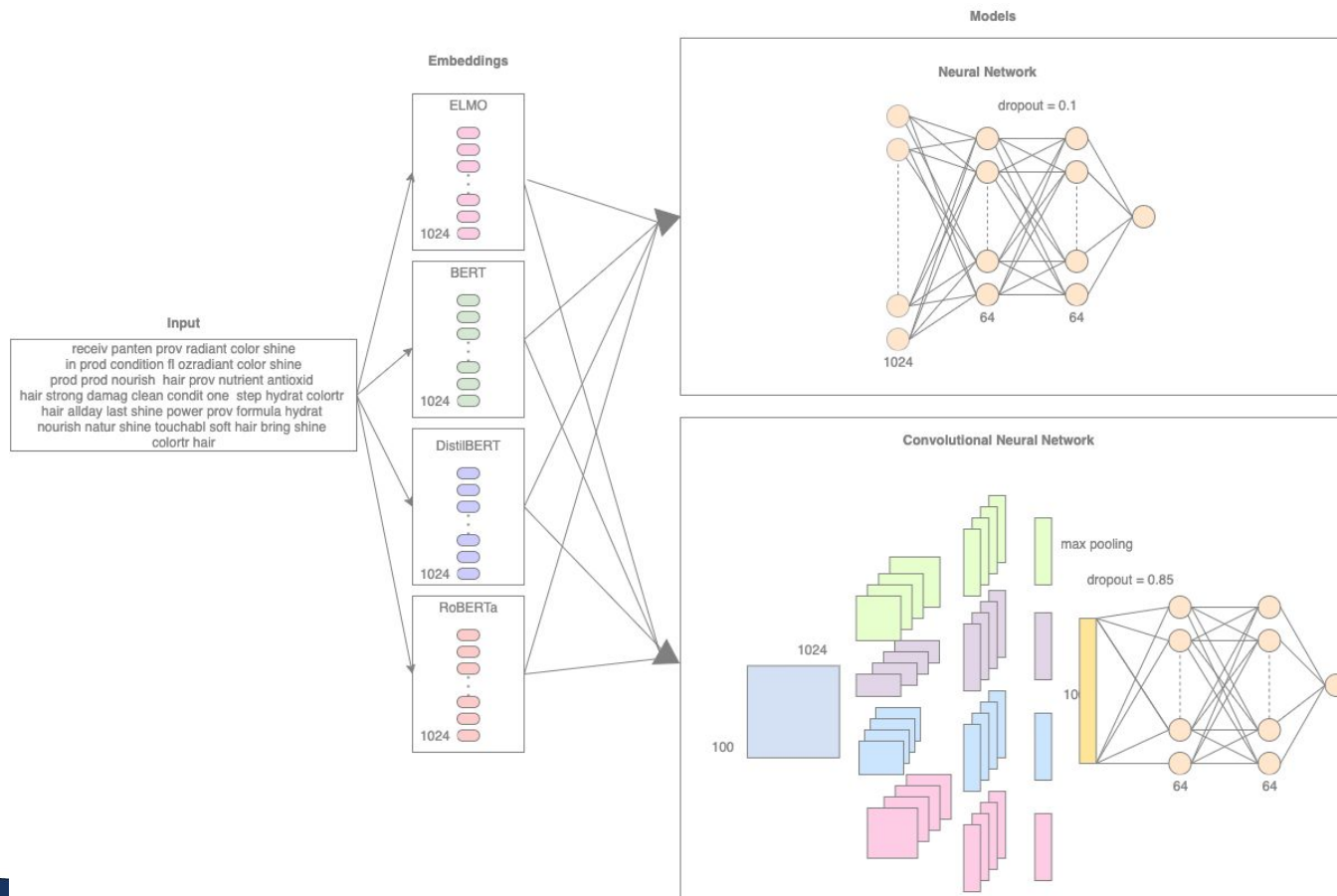
TF-IDF example for lotion

# Freedman and Jurafsky Analysis I

	Metric	Lotion	Hair	Eucerin
Falutin	Flesch-Kincaid	Lower Priced Higher	Lower Priced Higher	63.4
	Readability	Lower Priced Higher	Higher Priced Higher	-84.84
	Lexicon Count	Lower Priced Higher	Lower Priced Higher	154
	Marketing Terms	Lower Priced Higher	Lower Priced Higher	41
Distinction	Uniqueness/Comparator Terms (Method I: Word2Vec)	Lower Priced Higher	Higher Priced Higher	0
	Uniqueness/Comparator Terms (Method II: GloVe)	Lower Priced Higher	Lower Priced Higher	19
	Sentiment	Lower Priced Higher (overall)	Lower Priced Higher (overall)	0.9947



# Model



# Results

	Lotion		Hair	
	NN	CNN	NN	CNN
<b>Baseline</b>	MAE: 6.47602 MSE: 164.18031		MAE: 1.341023 MSE: 6.54206	
<b>ELMO</b>	MAE: 5.60341 MSE: 109.12967	MAE: 1.46995 MSE: 9.11648	MAE: 1.17774 MSE: 4.05250	MAE: 1.33889 MSE: 6.55943
<b>DistilBERT</b>	MAE: 5.76149 MSE: 125.25838	MAE: 1.46747 MSE: 9.11458	MAE: 1.42303 MSE: 6.64453	MAE: 1.33703 MSE: 6.56784
<b>RoBERTa</b>	MAE: 6.92886 MSE: 150.33186	MAE: 1.47146 MSE: 9.15317	MAE: 1.41537 MSE: 8.20574	MAE: 1.33853 MSE: 6.58643
<b>BERT</b>	MAE: 5.94064 MSE: 116.59265	MAE: 1.47007 MSE: 9.10584	MAE: 1.10211 MSE: 3.96293	MAE: 1.339913 MSE: 6.562949

# Thank You!

Christina Chen

[christinachen@ischool.berkeley.edu](mailto:christinachen@ischool.berkeley.edu)

Justine Schabel

[justinetaylor@ischool.berkeley.edu](mailto:justinetaylor@ischool.berkeley.edu)