

ANALYZING HAZARDOUS COSMETIC CHEMICAL DISCLOSURES IN CALIFORNIA (2007–2020)

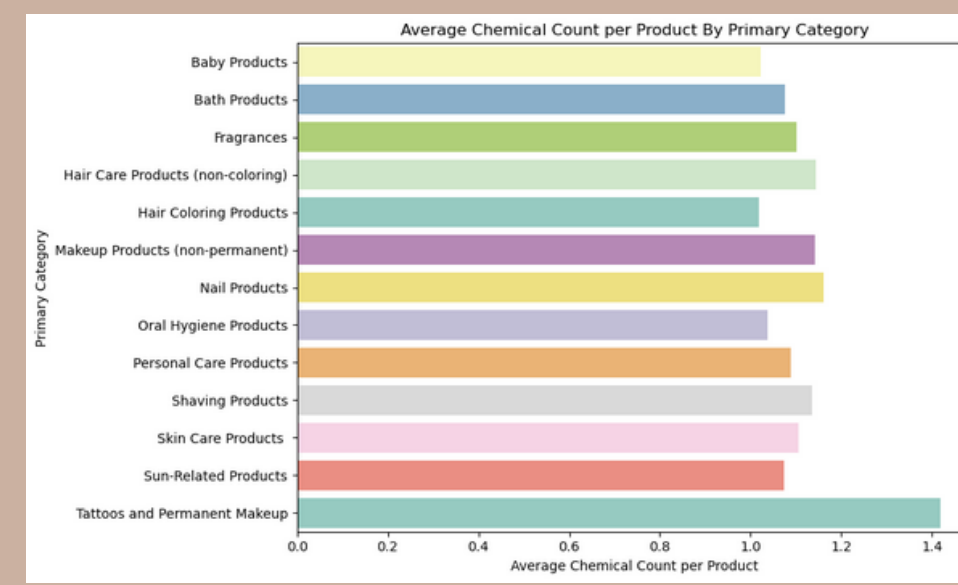
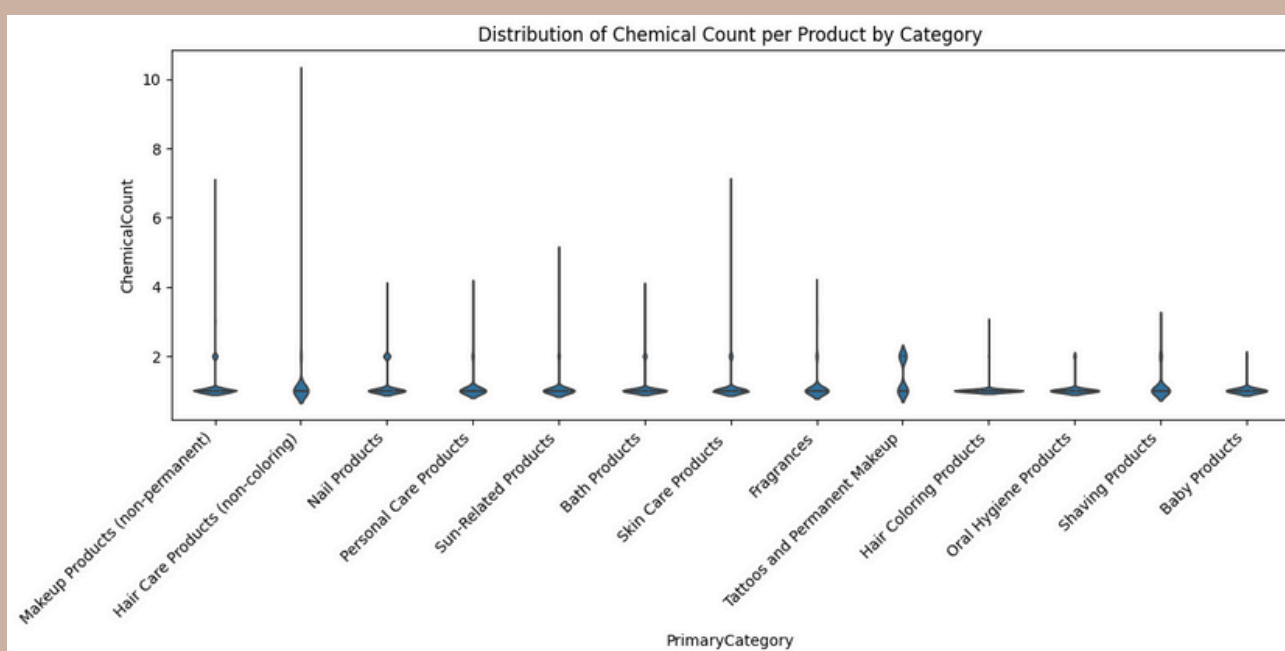
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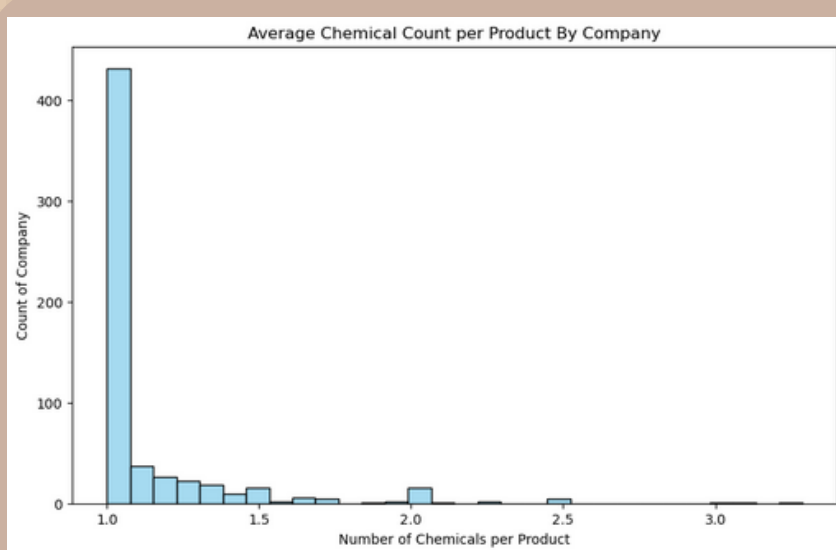
Products with the highest number of chemicals

ProductName	BrandName	PrimaryCategory	ChemicalCount
Interrupt Texturizing Clay	Regis Design Line	Hair Care Products (non-coloring)	9
Moisturizing Shampoo	Regis Design Line	Hair Care Products (non-coloring)	9

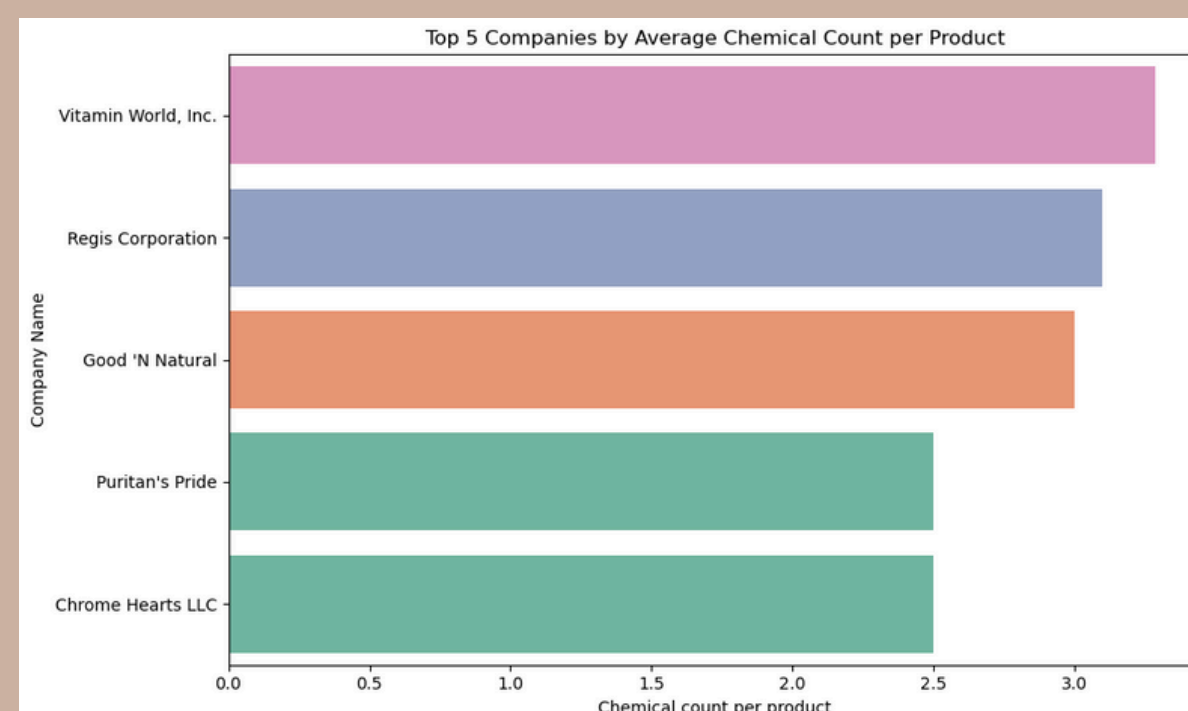
Which product categories carry the heaviest chemical load?



- The highest number of chemicals found in any single product is 9. The two products tied for this maximum are Interrupt Texturizing Clay and Moisturizing Shampoo, both from the Regis Design Line brand and categorized as Hair Care Products (non-coloring).
- The primary product category with the highest average number of chemicals per product is Tattoos and Permanent Makeup, with an average of approximately 1.42.
- The average chemical count across all primary categories is relatively low, generally ranging from around 1.02 (Hair Coloring Products) up to 1.42 (Tattoos and Permanent Makeup), suggesting most products contain only a small number of listed chemicals on average.



Which companies use the highest number of chemicals per product on average?



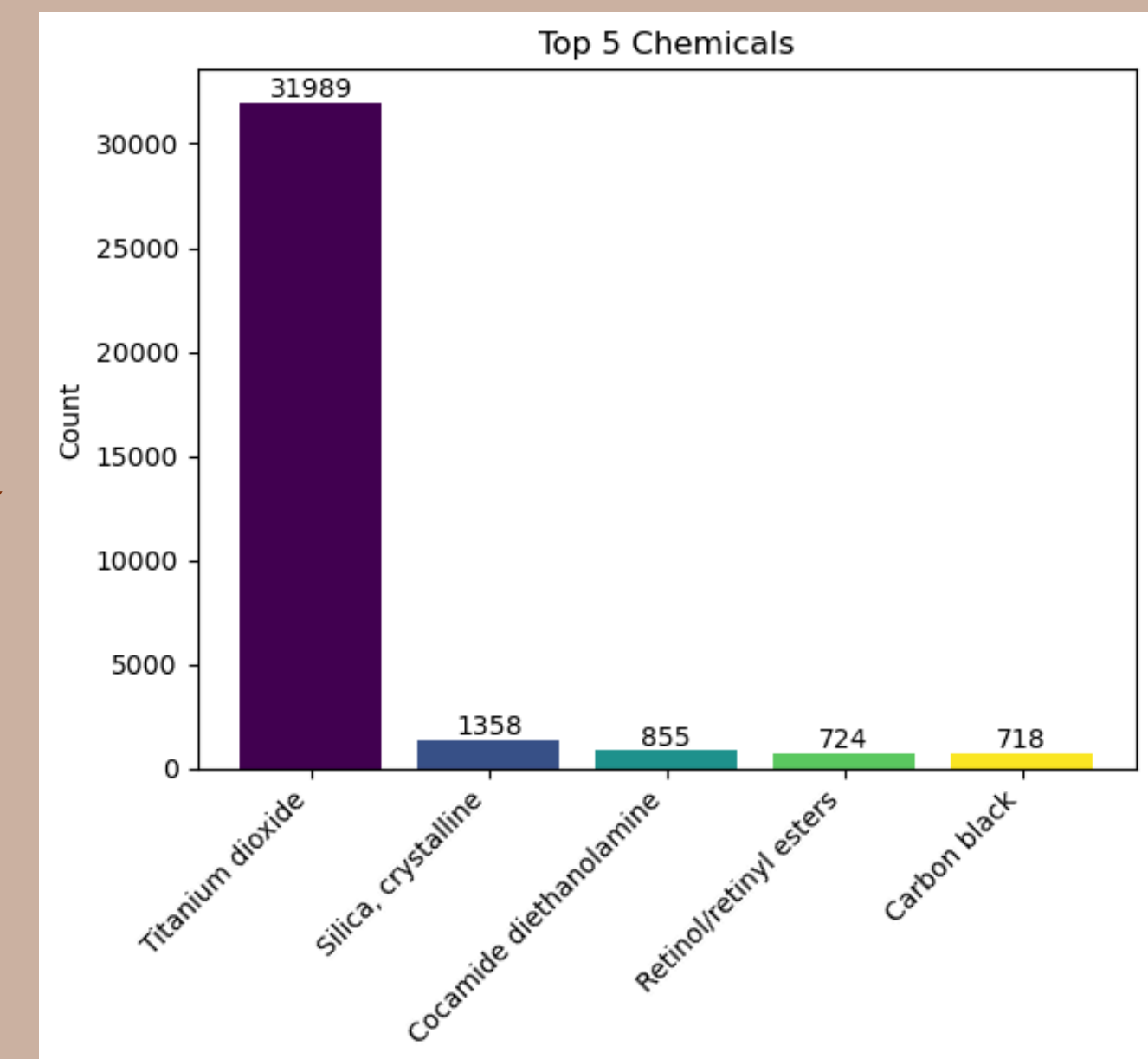
- The histogram shows that the vast majority of companies (over 400) have an average of approximately 1.0 chemical per product. The distribution is highly right-skewed, with very few companies having a higher average (up to around 3.0 chemicals per product).
- The bar graph ranks the top five companies by the average number of chemicals per product. Vitamin World, Inc. has the highest average at approximately 3.29, followed by Regis Corporation (3.10) and Good 'N Natural (3.00). The averages for these top five companies range from 3.29 down to 2.50.

Data Description

The California Safe Cosmetics Program requires companies to report chemicals linked to cancer, birth defects, or reproductive harm.

Goal: understand hazardous chemical patterns, company behavior, chemical usage, and discontinuation trends.

What are the most frequently used chemicals?

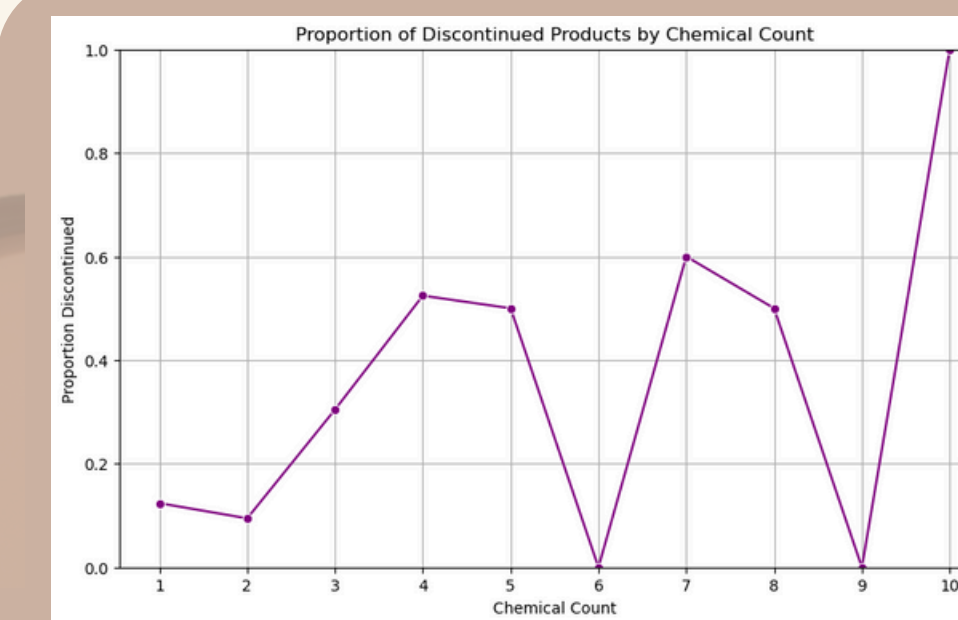


- The most prevalent chemical by a very large margin is Titanium dioxide, with 31,989 occurrences.
- The other four chemicals—Silica, crystalline, Cocamide diethanolamine, Retinol/retinyl esters, and Carbon black—have significantly lower counts, ranging from 1,358 down to 718.

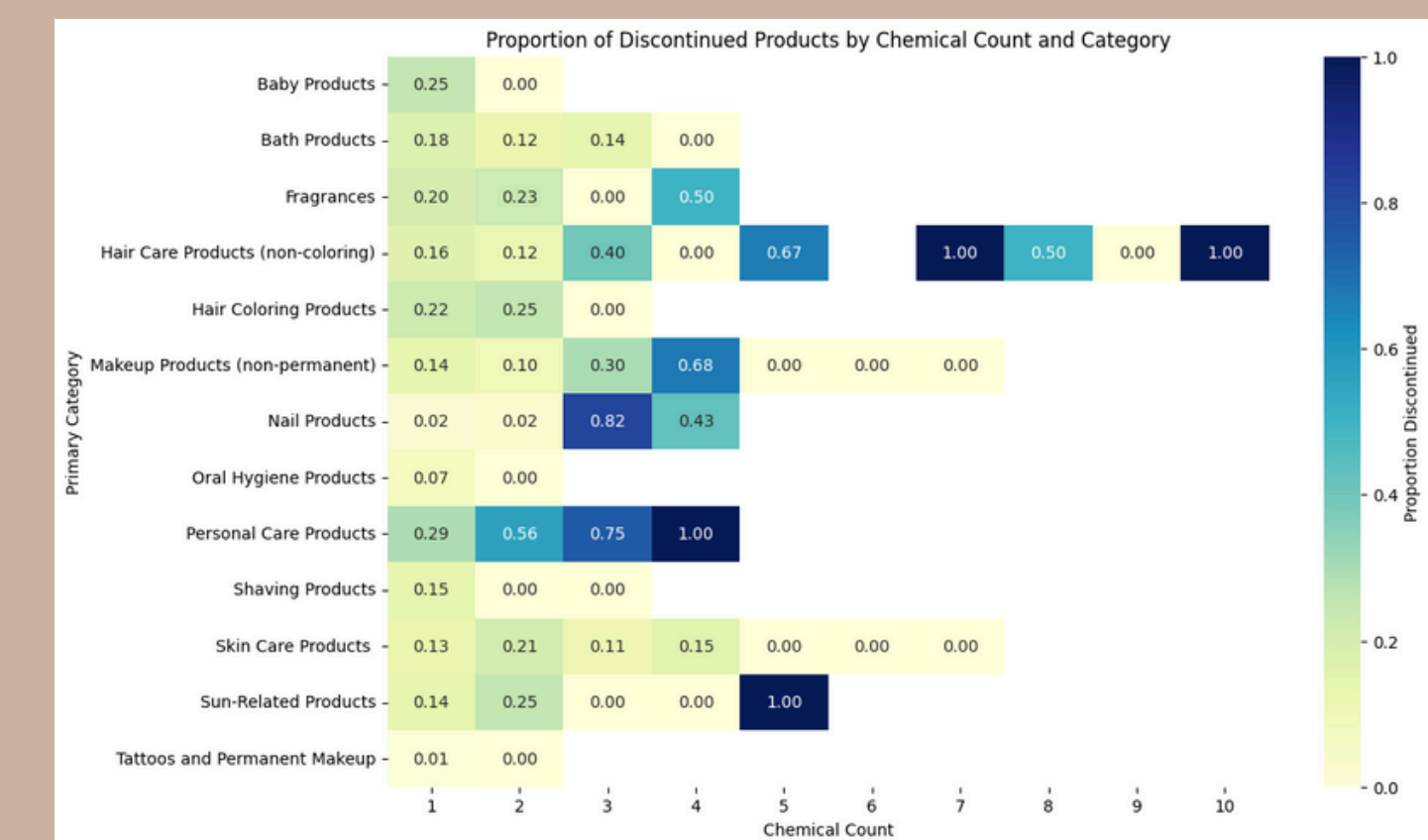
Summary of Findings

Main conclusions:

- A small number of chemicals dominate the industry
- Companies vary widely in chemical usage; a few are consistent heavy users
- Some product categories inherently require more chemicals, e.g., Titanium dioxide is safe on skin in cosmetics, but can be harmful if inhaled in fine powder form.
- More chemicals → higher chance of product discontinuation
- Suggests that complexity increases regulatory or performance risk



Are products with more chemicals more likely to be discontinued?



- There is a general trend showing that as the chemical count increases, the proportion of discontinued products also increases.
- Products with a very low chemical count (1 or 2) have a relatively low discontinuation rate (around 9% to 12%).
- The risk of discontinuation jumps sharply for products containing 4 or more chemicals, where the proportion is consistently 50% or higher (e.g., 52% for 4 chemicals, 60% for 7 chemicals).
- The data shows that 100% of products containing 10 chemicals have been discontinued, highlighting the extreme risk associated with the highest chemical counts, although this likely represents a small number of products.