# The Power of Flower

## Purchasing & Consumption Trends in the U.S. Cannabis Market

New Frontier® data

# The Power of Flower

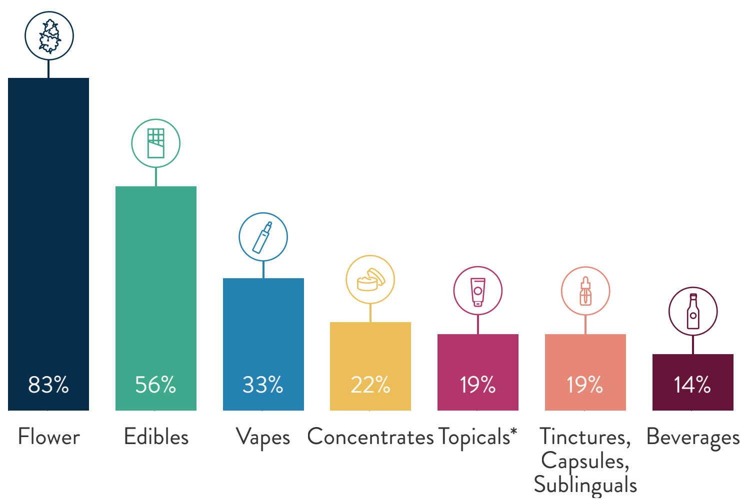
THE CANNABIS INDUSTRY is evolving. Destigmatization, innovation, and rapid expansion have combined to introduce cannabis to a wide range of current and potential consumers. Those consumers are evolving as well, becoming more intentional about their use of the plant, and seeking out specific products or formulations to achieve their desired outcomes. More than half (57%) of consumers now report using both flower and non-flower products.

Even in a fast-growing and highly dynamic marketplace, flower remains king. It accounted for 44% of total cannabis sales last year (and 50% if you include pre-rolls).

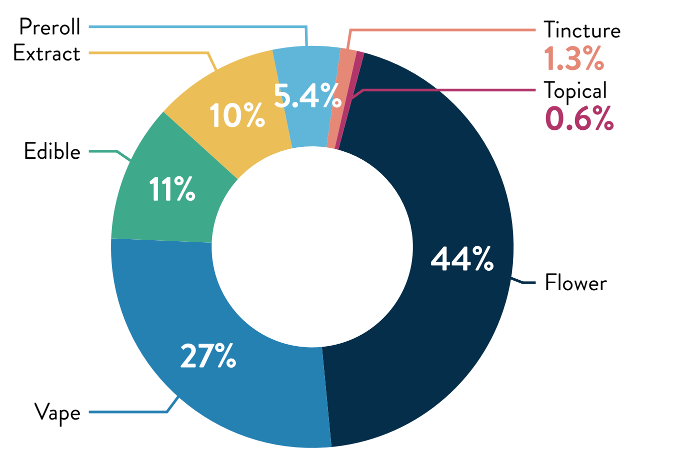
Smoking a joint remains the most common, popular way to consume cannabis. Understanding both the outsized role of flower and the consumers who enjoy it is essential to quantifying the broader trends influencing the growth of the cannabis industry.

**Top Forms**

*What % of current consumers use each form*




**Product Share of Sales:** 2021 Average

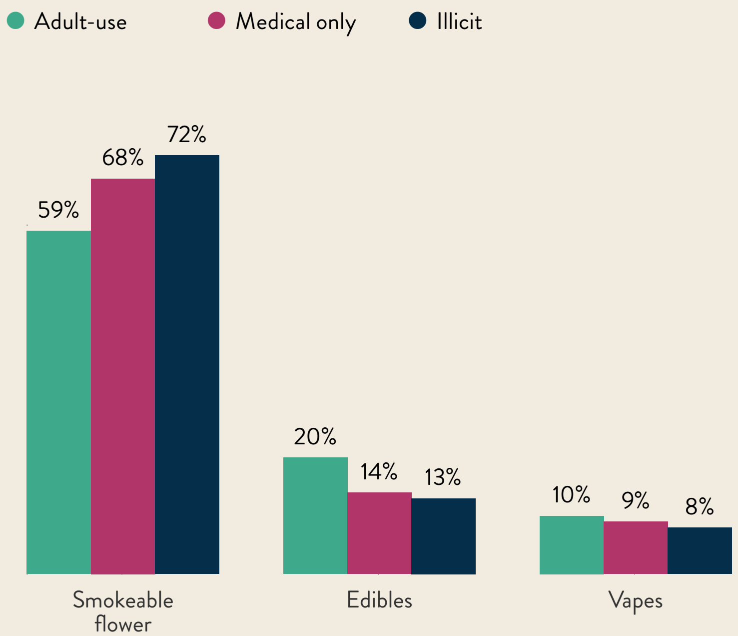



*Source (bottom): SAMHSA*

*Note: *Topicals includes transdermal patches. Among current (annual+) consumers.*

# Understanding the Flower Consumer

**Top 3 Most Frequent Forms:** by Market Type




Among current consumers, flower is both the most common (65%) and most favored (60%) form for consuming cannabis. That is especially true in illicit markets, where alternative, value-added products may be less readily available, or deemed riskier due to unreliable claims about potency, or a lack of safety standards.

Among cannabis users, men are more likely (87%) to have tried flower than are women (78%). Likewise, younger consumers are more likely than are older consumers to have tried flower.

| MOST FREQUENTLY USED FORM | |
|---|---|
| Flower | 65% |
| Edibles | 17% |
| Vapes | 9% |
| Topicals* | 3% |
| Tinctures, Capsules, Sublinguals | 3% |
| Concentrates | 2% |
| Beverages | 1% |

| FAVORITE FORM (regardless of frequency) | |
|---|---|
| Flower | 60% |
| Edibles | 22% |
| Vapes | 8% |
| Concentrates | 4% |
| Tinctures, Capsules, Sublinguals | 3% |
| Topicals* | 2% |
| Beverages | 1% |

*Note (this page): *Topicals includes transdermal patches. Among current (annual+) consumers.*

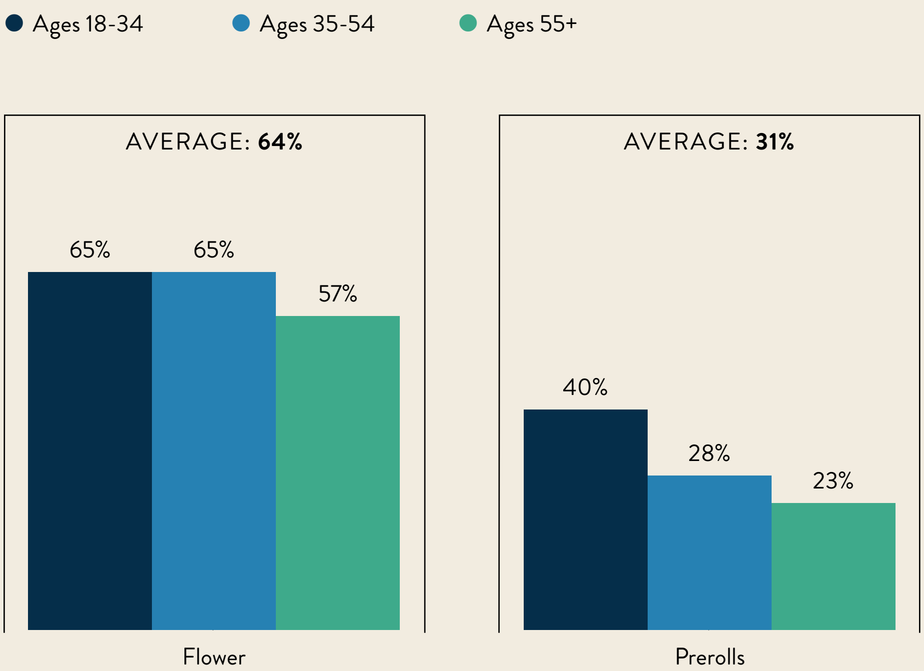
**83% of cannabis consumers use flower.**

**76% report purchasing flower themselves.**

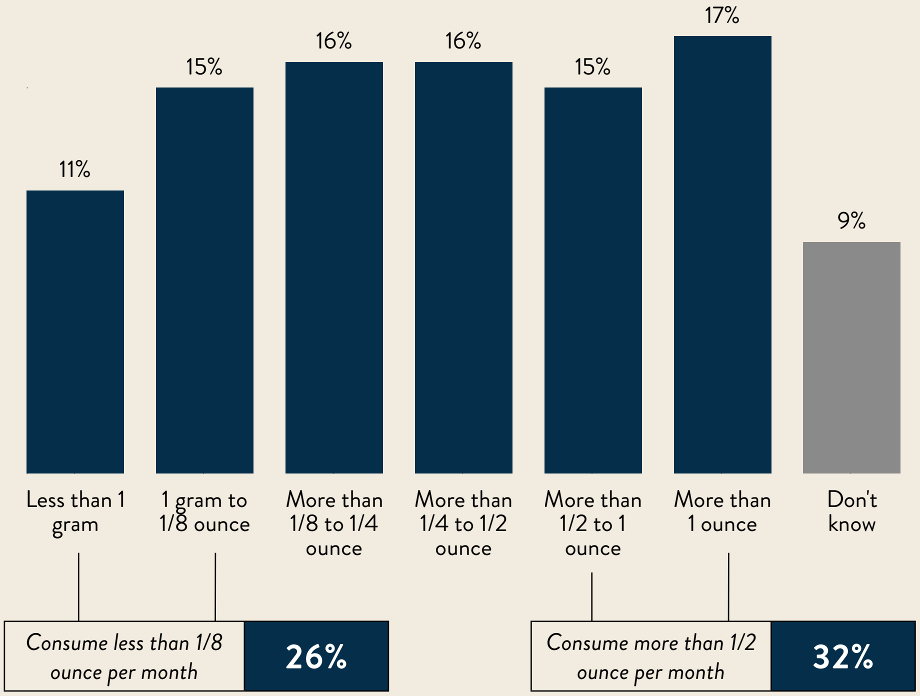
Consumers purchase flower (e.g., in eighth-, quarter-, or half-ounces) at twice the rate as buying pre-rolls (64% of consumers purchase flower, while 31% purchase pre-rolls).

The youngest cohort of consumers (ages 18-34) are considerably more likely to buy pre-rolls than are consumers ages 55 and older (40% vs. 23%).

**Flower Forms Purchased:** by Age

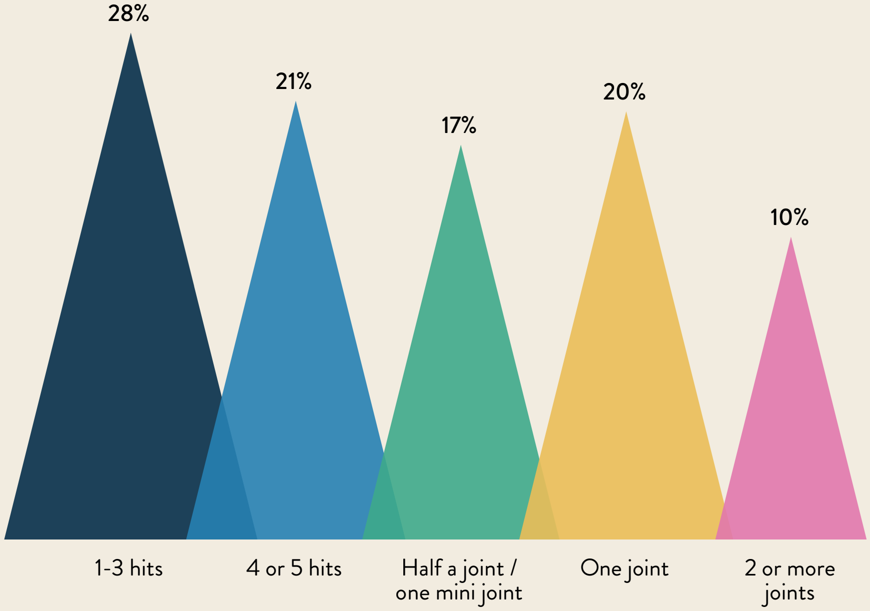



**Monthly Flower Consumption**

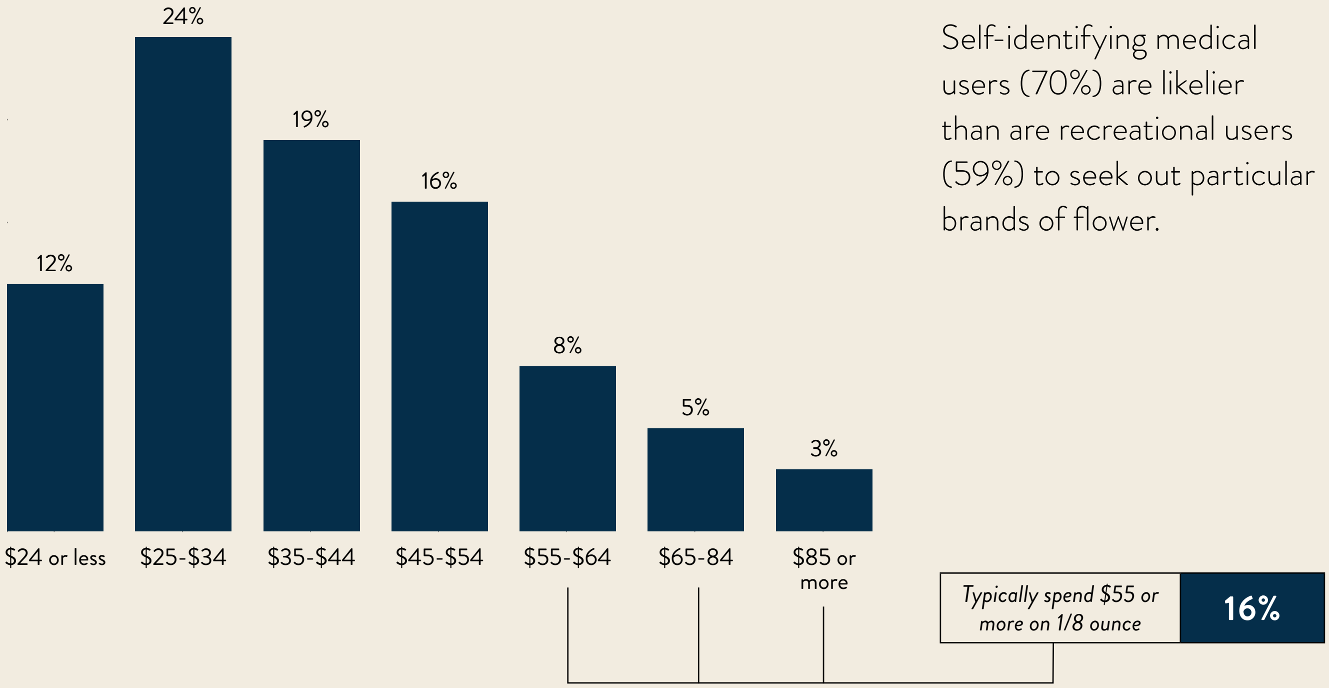



*Note (this page): Among current (annual+) consumers who smoke or vape flower.*

## How much do you typically smoke at a time?




## Typical Spend for 1/8th Ounce of Cannabis




Consumers aged 55+, female consumers, and consumers in adult-use markets all report being slightly more likely than their counterparts to smoke only a couple hits at a time.

**64% of consumers who use flower sometimes or always seek out flower from particular brands/companies.**

Male consumers are more likely than are female consumers to sometimes or always seek out flower from specific brands (71% vs. 53%).

Self-identifying medical users (70%) are likelier than are recreational users (59%) to seek out particular brands of flower.

*Note (this page): Among current (annual+) consumers who smoke or vape flower. "Don't know" omitted.*

# Consumers Who Exclusively Use Flower Are a Shrinking Majority

**25% of consumers exclusively use flower products.**

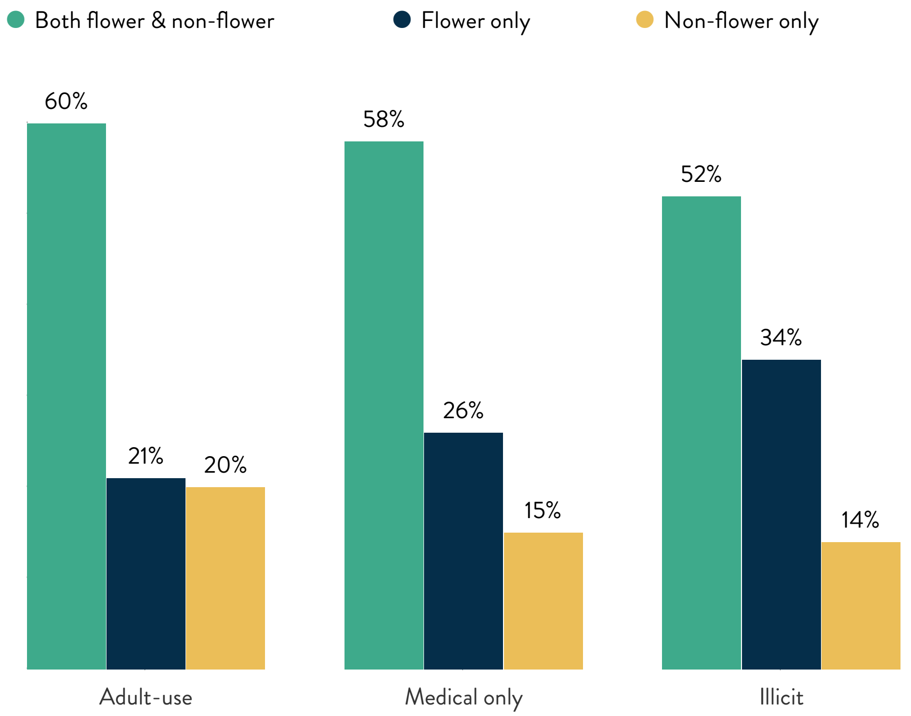
More than 4 in 10 (43%) of consumers in the "flower only" group say that they only consume flower for recreational reasons. One in three (33%) report consuming for medical reasons only, compared to more than half (54%) of consumers on average.

Consumers who use cannabis for both medical and recreational reasons tend to be more engaged with the market, and often better articulate why they choose to consume cannabis.

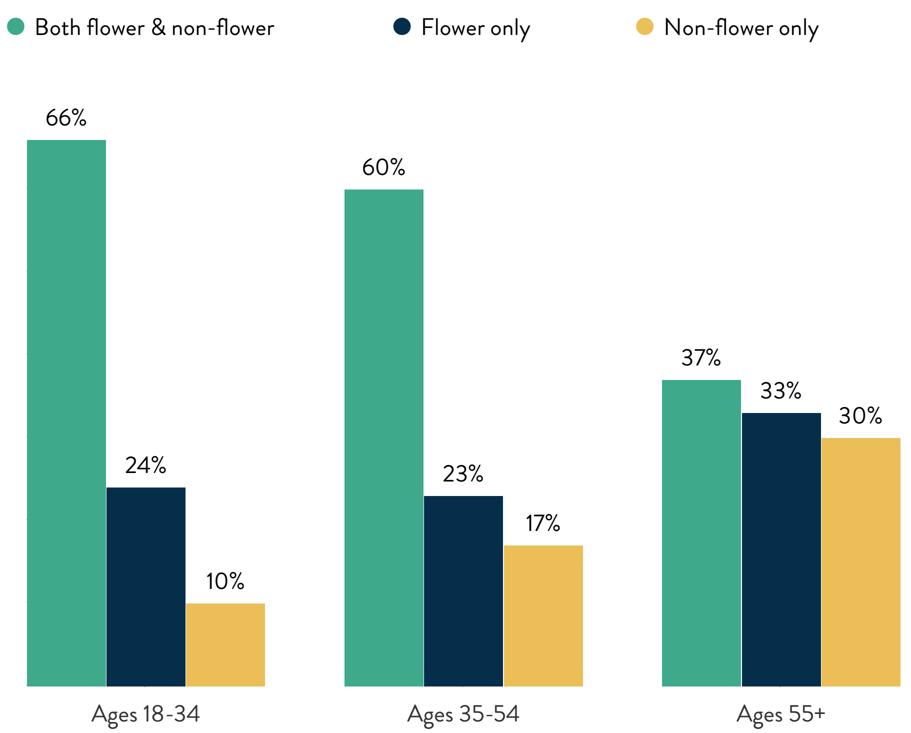
While a majority of consumers in all market types consume both flower and non-flower products,

**Self-Identified Consumer Type:** Average Current Consumer vs. Flower-Only

**Range of Product Use:** by Market




**Range of Product Use:** by Age




consumers in illicit markets are also more likely to exclusively use flower. Older consumers are also more likely to claim they either exclusively consume flower or non-flower products than are younger cohorts.

The factors together indicate several tailwinds for the industry: As legal access expands, a larger proportion of consumers should claim to enjoy both flower and non-flower products.

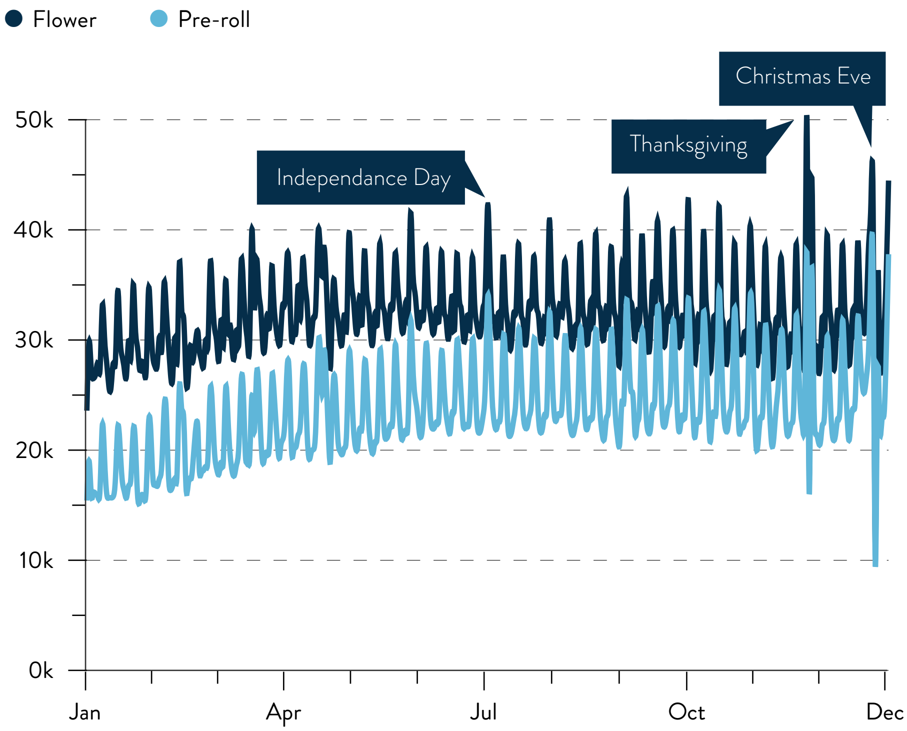
As markets come online and brands jockey for position, potential exists for dramatic evolution among consumer preferences, especially as nonconsumers — who are likelier to be interested in noncombustible products — come of age or turn cannacurious. Closer examination of a large, maturing market, such as California's, offers compelling insights into how flower sales are trending at the local market level, and how regional differences in demographics and socioeconomics drive marked differences in flower sales in major cities across the state.

# Seasonality of Sale

California originally legalized medical cannabis in 1996 and recreational use in 2016. Combined legal sales in California totaled nearly $5.9 billion in 2021.

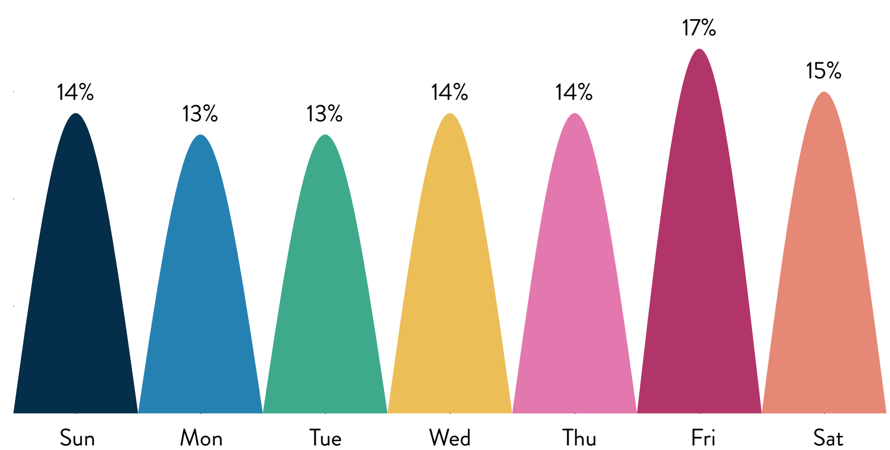
When considering California's flower sales in 2021, transactions follow a relatively consistent pattern week-over-week, with several larger spikes associated with holidays.

**California Flower / Pre-roll Daily Transactions:** 2021



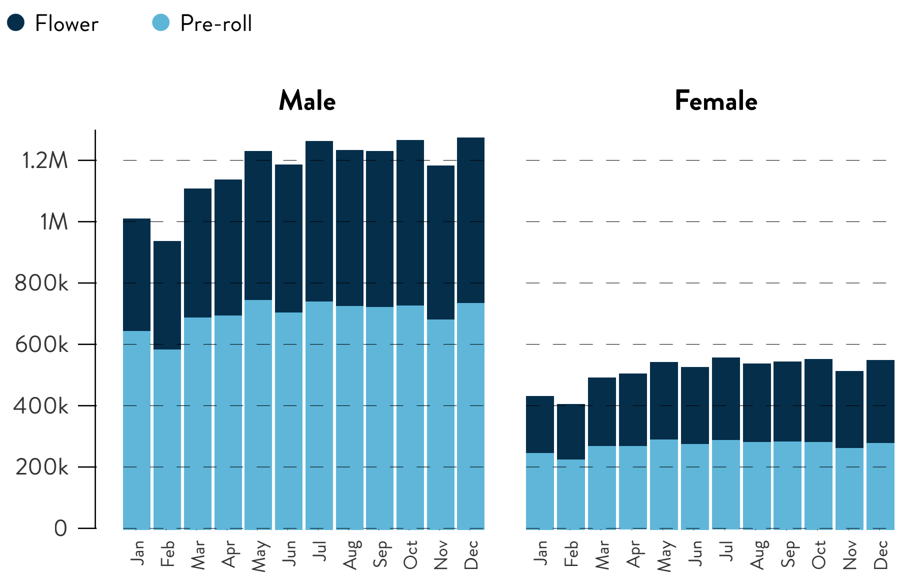

On a weekly basis, sales of flower are relatively consistent if skewing slightly towards the weekend.

**California Flower Transactions:** by Day of the Week

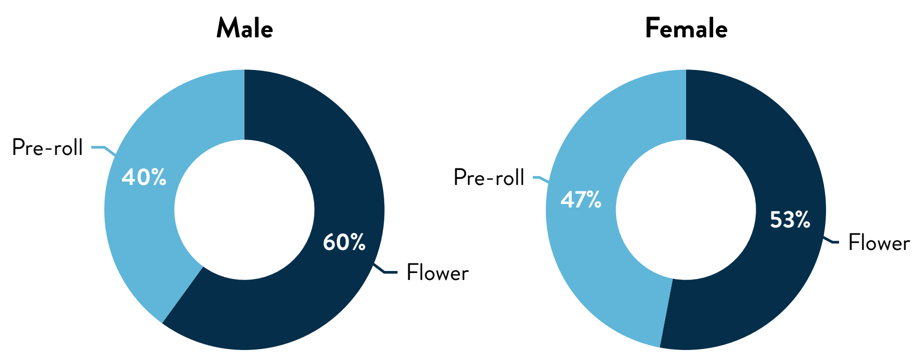



*Note: All chart data is from 2021 unless otherwise stated*

**California Monthly Flower / Pre-roll Transactions:** by Gender




**California Flower vs. Pre-roll Transactions:** by Gender

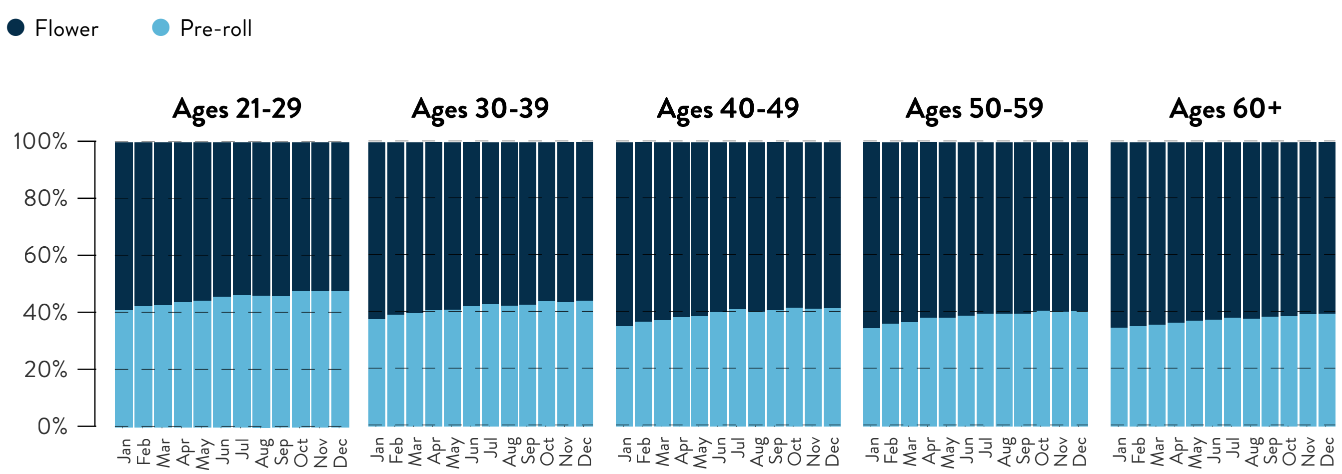



Men consistently purchase more flower (both dried flower and pre-rolls) than do women.

However, taken as a proportion of total flower purchases, women are more likely than are men to purchase pre-rolls.

Likewise, younger cohorts are likelier than are older consumers to purchase pre-rolls. Among all age groups, pre-rolls accounted for increasing proportions of total transactions as the year wore on. Whether the phenomenon is due in part to increased tourism, relaxation of COVID-19 restrictions, or a larger trend in purchasing behavior remains to be seen.

**California Monthly Flower / Pre-roll Transactions:** by Age



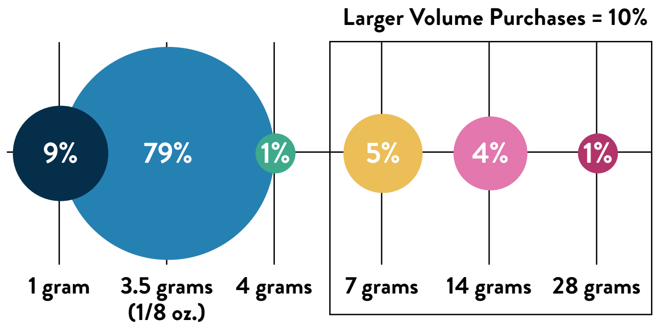

*Note: All chart data is from 2021 unless otherwise stated*

# Sales by Weight

Consumers overwhelmingly purchase their flower in measures of 1/8ths. Regardless of age or gender, nearly 4 in 5 (79%) of 2021 flower sales were sold in eighth-ounce units. An additional 1% of sales was attributed to a "farmer's eighth", which includes an extra 0.5 gram. Just 1 in 10 (10%) of transactions were associated with larger-volume purchases.

One potential explanation for the dominance of eighths, beyond their broad availability, is price elasticity. More than 6 in 10 (61%) of consumers cite price as either a very or extremely important factor when making a purchasing decision. Looking specifically at April 2021, the median gross sale for an eighth in the lowest price quartile was $20, with $60 being the highest. That range provides a great deal of flexibility for consumers throughout a variety of socioeconomic circumstances.

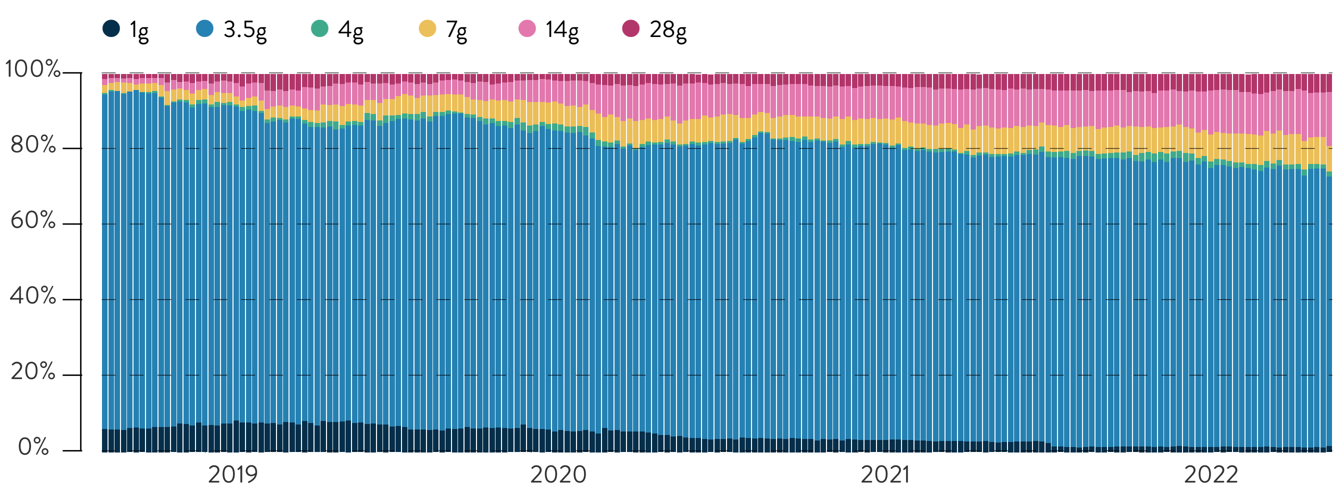
**California Flower Sales:** by Top Weight Categories



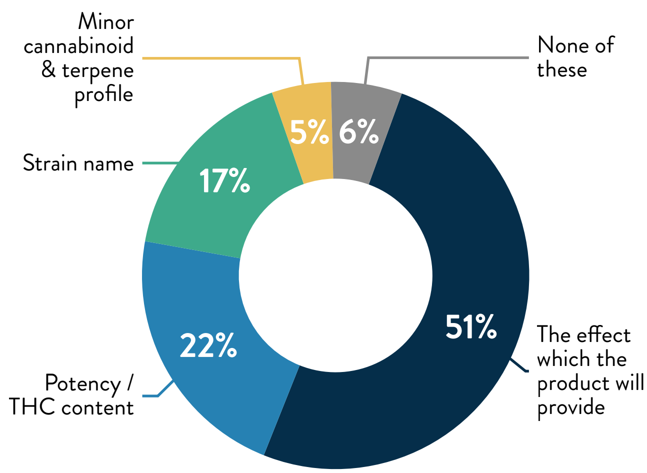

Over time, consumers have shifted towards higher-volume flower purchases, even as eighths have remained dominant.

This may be indicative of a maturing consumer base which is more confident of enjoying the flower purchased, and therefore more willing to buy in bulk. Alternatively, the introduction of more cost-competitive, higher-volume products selling smaller buds or pre-ground shake could be attractive to either cost-conscious or more frequent consumers.

**California Weekly Percent of Units Sold:** by Weight



**Most Useful Information About a Cannabis Product**




| **California Top 10 Cannabis Strains:** Eighths | | | |
|---|---|---|---|
| | **2019** | **2020** | **2021** |
| **1.** | Wedding Cake | Wedding Cake | Wedding Cake |
| **2.** | Blue Dream | Blue Dream | Ice Cream Cake |
| **3.** | Purple Punch | 805 Glue | GMO |
| **4.** | Banjo | GMO | Blue Dream |
| **5.** | Jack Herer | Jack Herer | Super Silver Haze |
| **6.** | Strawberry Banana | Ice Cream Cake | Kush Mints |
| **7.** | Sour Diesel | Durban Poison | Cereal Milk |
| **8.** | Durban Poison | Banjo | Jack Herer |
| **9.** | Banana OG | Lava Cake | Super Glue |
| **10.** | Gelato | Super Sour D | Fatso |

When it comes to product preferences, myriad factors influence purchasing decisions. More than half (51%) of consumers claim that the effect which the product will provide is the most useful information about their cannabis product. Nearly 1 in 5 (17%) of consumers cite the strain's name as being the most useful information.

Looking at flower as a broader category, non-strain-specific flower products have enjoyed widespread popularity. Over the past three years, shake and popcorn products have consistently found prominent placement among the top products sold by quantity.

- **Shake:** Pre-ground flower often sold in larger quantities for a discounted price, not unlike the presentation for rolling tobacco
- **Popcorn:** Small buds of flower generally labeled as indica, sativa, or hybrid, and sold in higher volumes for a discounted price

Looking specifically at eighths, where strain preference might be a more significant purchasing factor than for bulk purchases, and where data was available, Wedding Cake has dominated sales over the past three years.

Strain can be used as a powerful tool for brands and producers alike. Consumers may demonstrate strong desire for particular strains, which they will actively seek out. However, reasons for use are highly diverse and personalized. Consumers are becoming far more intentional about their uses. As the industry grows, brands which can best identify who their target consumers are, and articulate why they consume, are more likely to reach said customers.

Consumer education is an imperative. The specific mix of cannabinoids and various terpenes found in the plant can drastically affect a user's experience. Even subsequent crops from the same genetic stock can produce a fundamentally different product, depending on grow conditions and time of harvest.

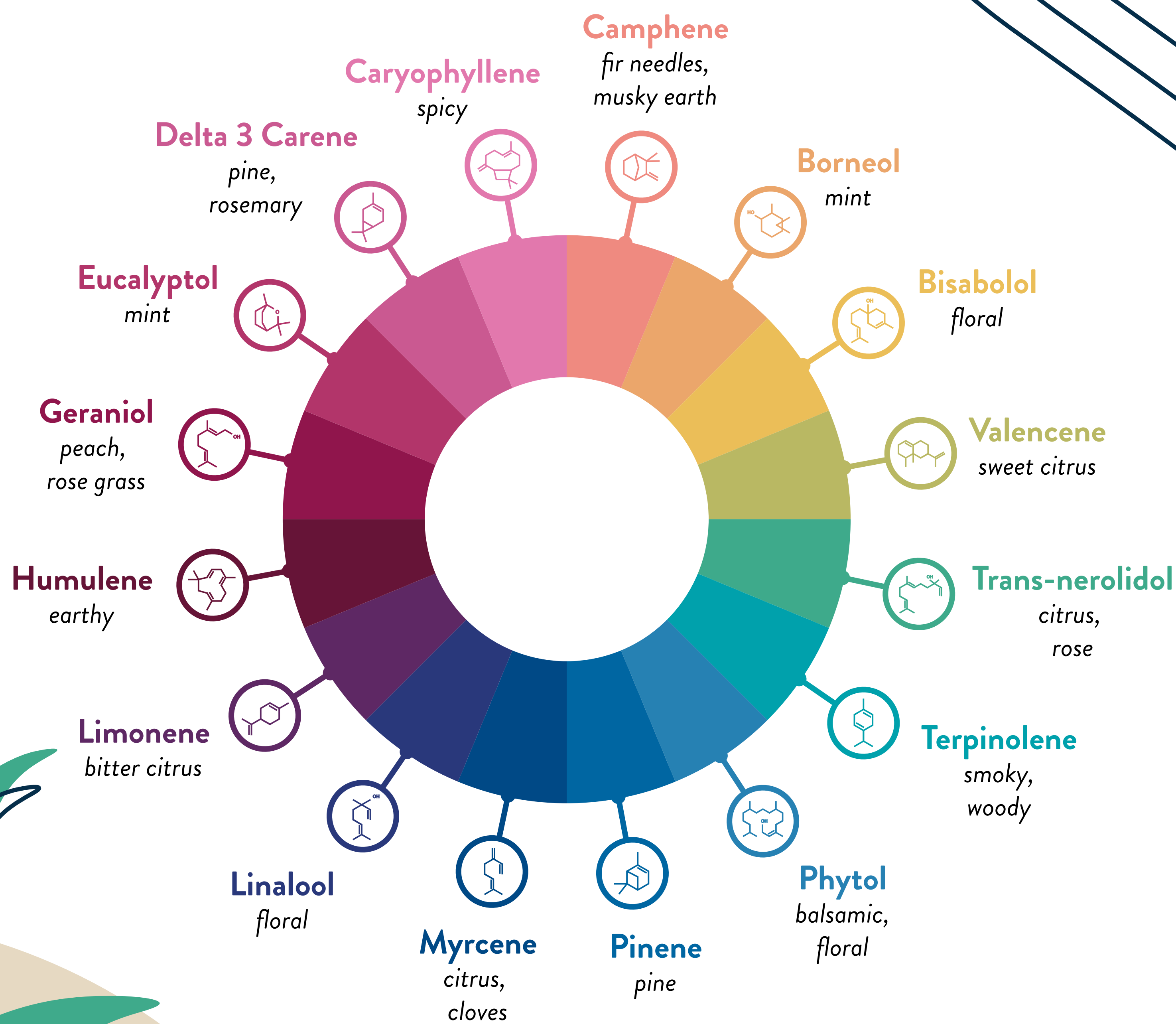
Likewise, when it comes to consumer experience, generations of hybridization have likely eroded whatever perceived insight that strain type might have provided. The general mantras that indica is associated with a relaxing body high, sativa with energized or head highs, and hybrids somewhere in the middle of both,

## SPOTLIGHT: WEDDING CAKE

Leafly's strain of the year in 2019, Wedding Cake, is an indica-leaning hybrid known for its high-THC content. Seven in ten (70%) of consumers say that potency is either very or extremely important when making a purchasing decision. Wedding Cake reportedly promotes relaxation and can help with stress and anxiety—three of the leading reasons cited by consumers for using cannabis.

For producers, higher potency often correlates with a higher price point. Wedding Cake reportedly offers an average yield, making it a potentially safe bet for cost-conscious growers.

## Some Common Cannabis Terpenes

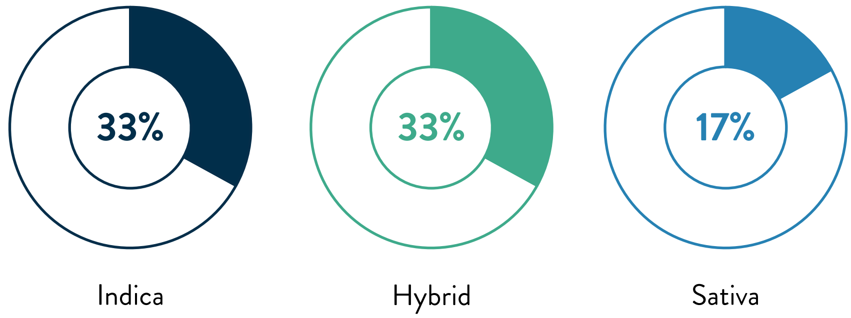


is potentially misleading. Brands that can educate consumers to convey exactly what factors influence their products' flavors, appearances, or user experiences can more easily produce a product that appeals to and resonates with consumers.

Where data is available, products identified as hybrid and indica each make up approximately 1/3 (33%) of sales. Products described as sativa account for less than 1/5th (17%). The remainder was described as either indica- or sativa-leaning hybrids.

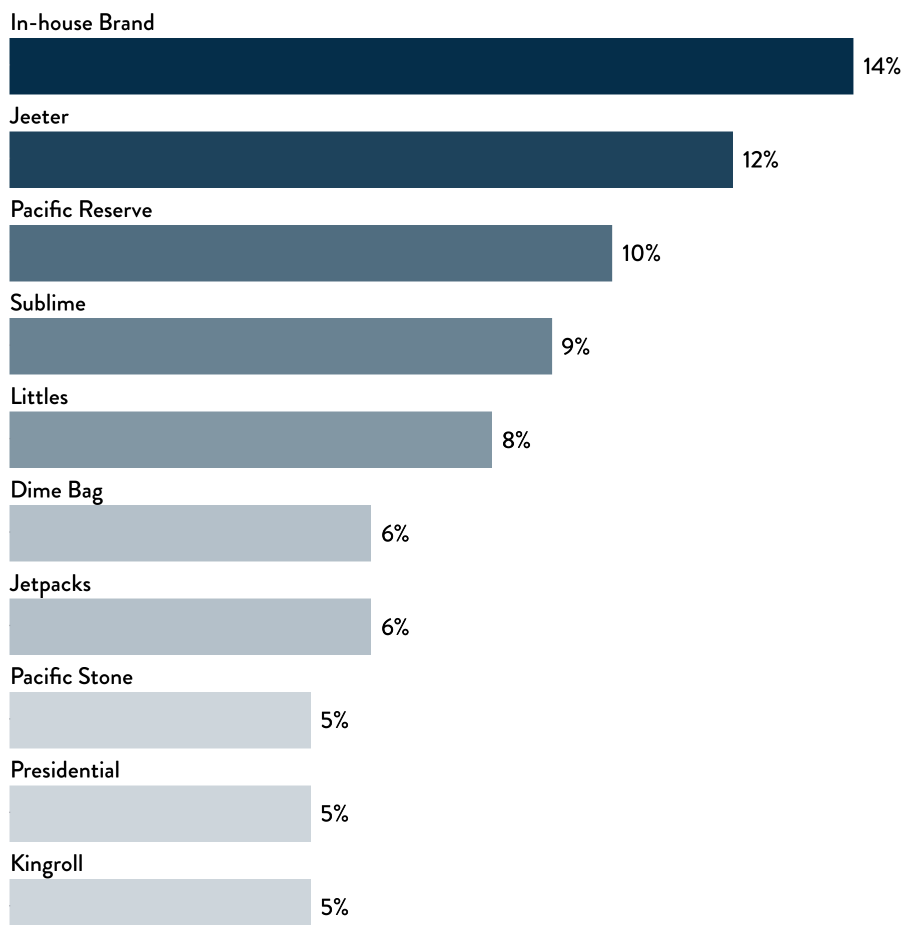
When it comes to pre-rolls, where branding could potentially play a more significant role, the top brand sold in California during 2021 was the generic in-house brand. In-house products are often part of giveaways or promotions. Again, that highlights how cost-conscious consumers can be when they are considering which products to purchase.

**Flower Sales:** by Strain Type In California



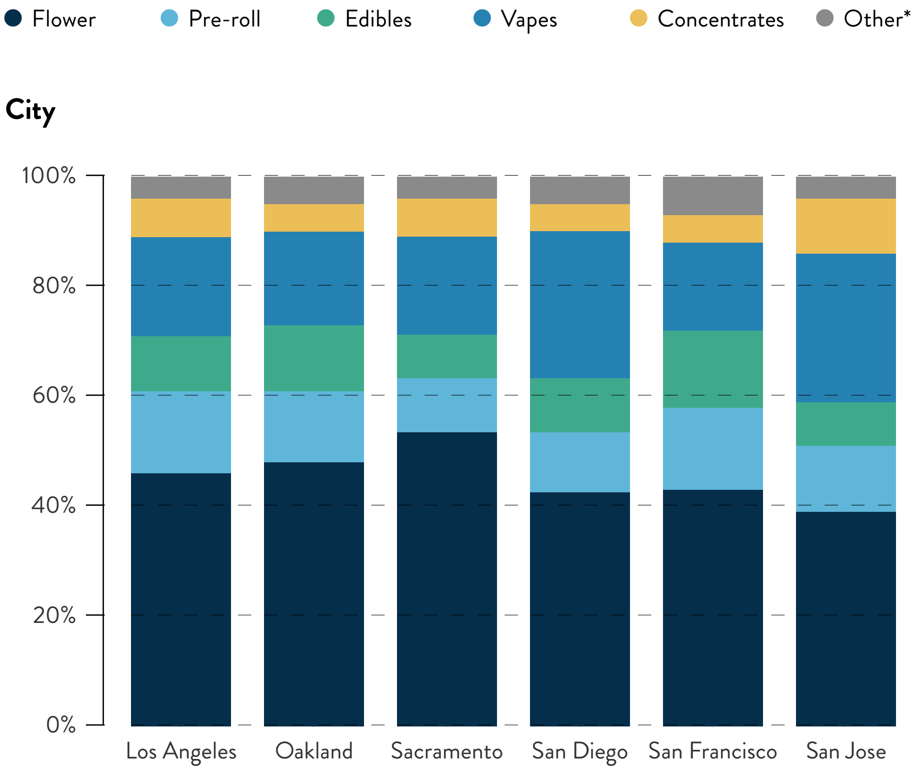

*Note: The remainder was described as either indica- or sativa-leaning hybrids.*

**Top 10 Pre-roll Brands:** by Units Sold In California

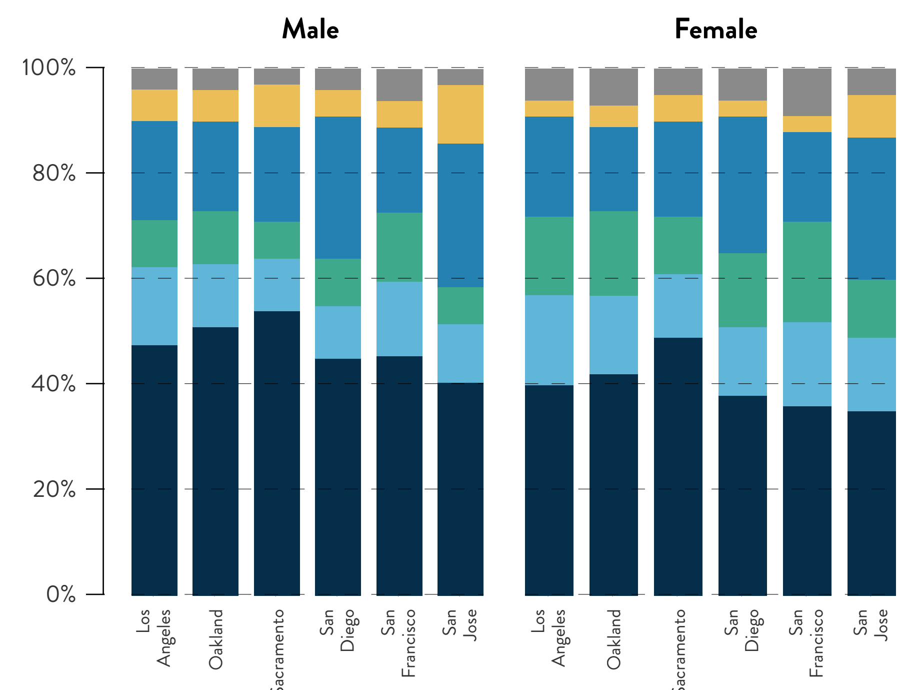



*Note: All chart data is from 2021 unless otherwise stated*

**Product Percent of Sales:** by Customer City




**Product Percent of Sales:** by Customer City & Gender



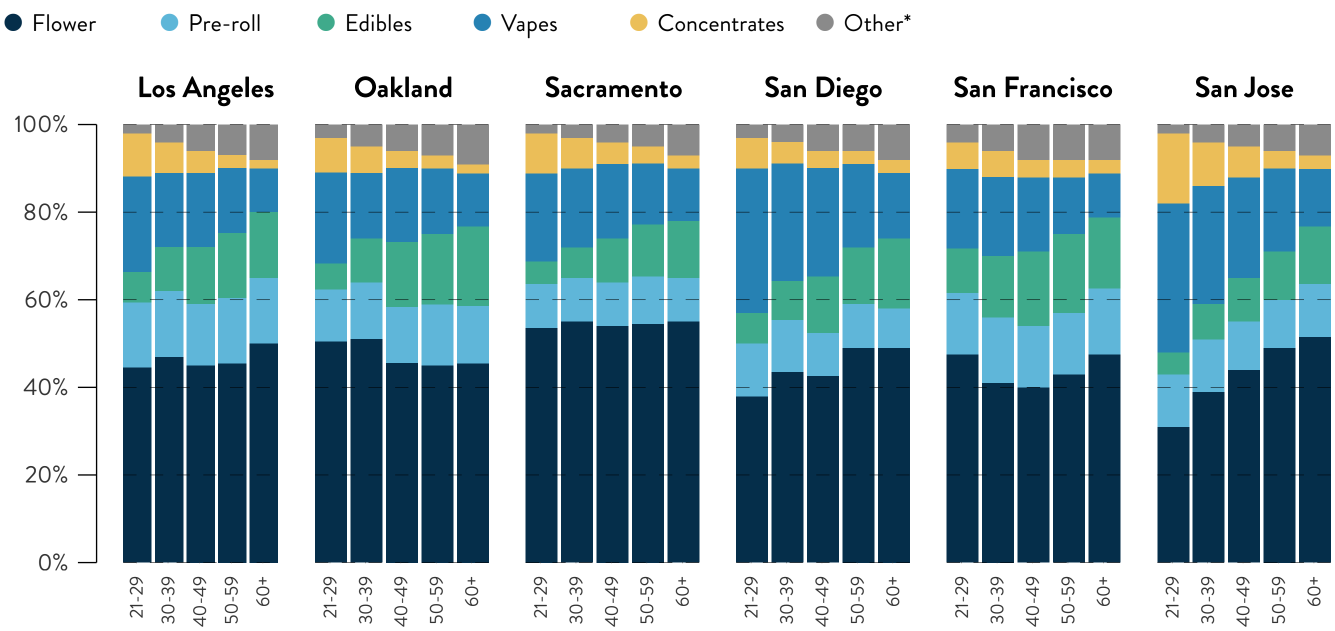

**Other includes: Topicals, Beverages, Pills and Tinctures.*

*Note: All chart data is from 2021 unless otherwise stated*

In a market as large as California, variability in market conditions and consumer population can have substantial impacts on flower's relative market share.

Flower and pre-rolls had the largest share of sales for consumers from Sacramento, accounting for nearly two-thirds (64%) of the cannabis consumed there. Notably, pre-rolls made up a smaller proportion of sales (10%) than did any of the other population sampled. Consumers in San Diego and San Jose, respectively, bought less flower compared to other cities; however, flower and pre-rolls nevertheless accounted for more than ½ (54% and 51%, respectively) of all sales. Breaking down purchasing behavior by gender reveals similar product preferences. In each analysis, men purchased more loose flower, while women purchased more pre-rolls.

**Product Percent of Sales:** by Customer City & Age Group




**Other includes: Topicals, Beverages, Pills and Tinctures.*
*Note: All chart data is from 2021 unless otherwise stated*

## PRODUCT HIGHLIGHTS:

- Cartridges and extracts were most popular with consumers in the youngest cohort, regardless of city of origin. Cartridges collectively enjoyed a larger proportion of total sales, potentially due to the continued broad access to high-quality flower in California's illicit market.
- Pre-roll purchases were largely consistent between age groups from the same city.
- Edibles represented a larger proportion of purchases among older cohorts.

For consumers in San Jose and San Diego in particular, older individuals were far more likely to purchase flower, while younger cohorts gravitated towards cartridges. The youngest subset of consumers (from San Jose) were far more likely to purchase extracts and cartridges — comprising half (50%) of purchases – while those products accounted for less than 1/6 (16%) of sales among consumers aged 60 or older.

Among populations where cartridges did not have such an outsized share for younger cohorts' purchases, flower sales were far more consistent per age bracket.

In Sacramento, where consumers purchase flower at the highest rates among the cities sampled, flower dominated sales across all age groups. Similarly, pre-roll sales were fairly consistent across age groups relative to their city. Edible purchases tended to grow along with the cohorts' age. However, that did not appear to cannibalize flower sales the way that cartridges do for younger consumers.

# Key Takeaways

## As product options expand, consumers are complementing, not replacing, their flower use.

The broadening availability of value-added products is offering consumers more ways in which to integrate cannabis into their lives. The range of product types used is fragmenting as consumers become more intentional in their use – selecting different products (and effects) for different intentions. For example, a consumer may select flower while relaxing at home, an edible or beverage while at a social gathering, a vape while hiking, and an edible for sleep. It is especially important for flower brands to understand how this hastening fragmentation of use will impact demand for their products, identify which applications their flower products are best suited for, and align the marketing and brand positioning to reflect the applications and intentions that best fit with their target audience's intended use.

## Consumers will continue to diversify their product preferences.

While flower remains top dog, consumers who use exclusively flower are a shrinking minority. Despite dominating sales in 2021, most consumers enjoy both flower and non-flower products. Older consumers, as well as those living in illicit markets, are more likely to claim they exclusively use flower. As legal access expands and nonconsumers come of age or turn cannacurious, the proportion of consumers claiming to enjoy both flower & non-flower products should continue to grow.

**There are significant differences in product demand at the state and municipal levels, making it critical to understand local context in brand building and retail strategy.**

As our analysis of municipal sales in California has shown, there are notable differences in local sales trends which are smoothed out when the data is viewed at the state or national level. As such, while the overall trend data is critical to understand the direction of the market, operators must also maintain a hyper-local view of the specific markets they serve to ensure their offerings are aligned with the interests of consumers in the markets they serve. Indeed, New Frontier Data's retail suite helps operators drill down to understand their consumers at the local market level, enabling retail optimization at municipal level while informed by broader regional and national trends and insights.

**As crossbreeding dilutes the value of strain names and the sativa/indica binary, brands need to understand and communicate the effects of their products.**

As our 2022 consumer report showed, cannabis users are most interested in learning about the effects the products will have. As the market becomes more crowded, and as the breadth of genetics available in the market grows, brands will need to transition beyond using strain names as the key identifier of their products. While consumers may be aware of the top 10 or 20 strains in the market, hybridized variants, and less well-known strains offer consumers little refence on which to base their selection. Additionally, while the sativa/indica binary has been a long-standing basis of reference (sativa's producing a more "energetic" high, indica's being more relaxing, hybrids sitting somewhere in between), variance in effects are produced by the different combinations of compounds in the plant. While there are no formal standards for classification of cannabis strain effects, brands should leverage consumer testing and feedback to understand what effects are more commonly experienced with their products, and reference those in their market.

**The gap in product preferences between illicit and legal is narrowing, requiring strategy adaptation for operators in newly legal markets**

In the early days of adult-use cannabis, flower sales would account for the vast majority of sales, then slowly taper as other products became more widely available. As markets have matured, and as differences in product availability between legal and unregulated markets has narrowed, newly legal markets are behaving increasingly like established markets, with consumers readily adopting non-flower products as soon as they become available. As such, brands launching in new markets should expect a more sophisticated consumer for whom flower is the dominant, but not exclusive, product they seek. In these markets, brands which launch with a clearly defined strategic vision and target market will be better competitively positioned than the one-size-fits-all flower brands whose messaging will get diluted in a crowded, diversifying market.

# About
## New Frontier Data

NEW FRONTIER DATA is the premier data, analytics, and technology firm specializing in the global cannabis industry, delivering solutions that enable investors, operators, advertisers, brands, researchers, and policymakers to assess, understand, engage, and transact with the cannabis industry and its consumers. New Frontier Data's global reach and reputation is evidenced by research and analysis citations in more than 85 countries. Founded in 2014, New Frontier Data is headquartered in Washington, D.C., with presence in Europe, Latin America, and Africa.

### Mission
New Frontier Data's mission is to inform policy and commercial activity for the global legal cannabis industry. We maintain a neutral position on the merits of cannabis legalization through comprehensive and transparent data analysis and projections that shape industry trends, dynamics, demand and opportunity drivers.

### Core Values
- Honesty
- Respect
- Understanding

### Vision
To be the nexus of data for the global cannabis industry.

### Commitment to Our Clients
The trusted one-stop shop for cannabis business intelligence, New Frontier Data provides individuals and organizations operating, researching, or investing in the cannabis industry with unparalleled access to actionable industry intelligence and insight, helping them leverage the power of big data to succeed in a fast-paced and dynamic market. We are committed to the highest standards and most rigorous protocols in data collection, analysis, and reporting, protecting all IP and sources, as we continue to improve transparency into the global cannabis industry.

## Report Contributors

**EDITOR**
**John Kagia,** Chief Knowledge Officer,
*New Frontier Data*

**AUTHOR**
**Noah Tomares,** Senior Research Analyst,
*New Frontier Data*

**CREATIVE DIRECTOR**
**Emily Watkins,** Director,
Brand & Creative, *New Frontier Data*

**COPY EDITOR**
**J.J. McCoy,** Senior Managing Editor,
*New Frontier Data*

**DATE PUBLISHED**
July 2022

## Copyright



For more information about New Frontier Data, please visit: NewFrontierData.com.

**HEADQUARTERS**
1400 I Street NW / Suite 350 / Washington, DC 20005

info@NewFrontierData.com 844-420-D8TA

@NewFrontierData

NewFrontierData.com

NXTeck.com

Equio.io