

# SPILLING THE BEANS ON TRADE COFFEE



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# OUTLINE

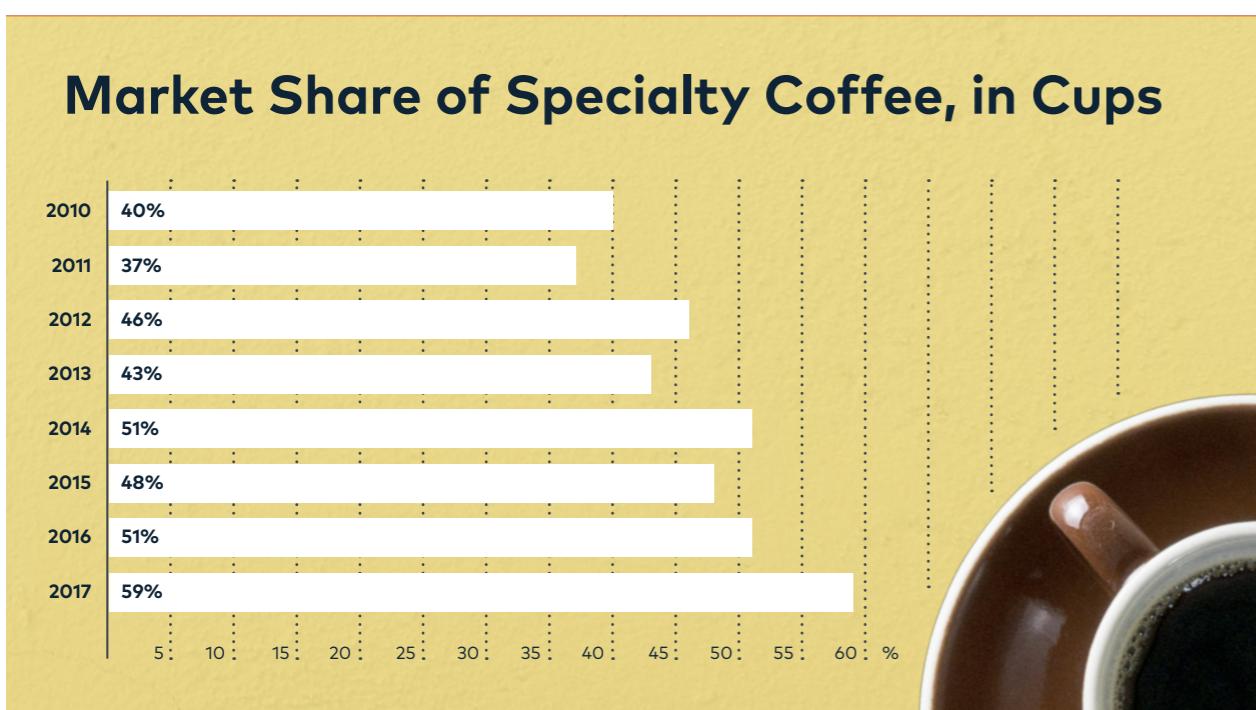
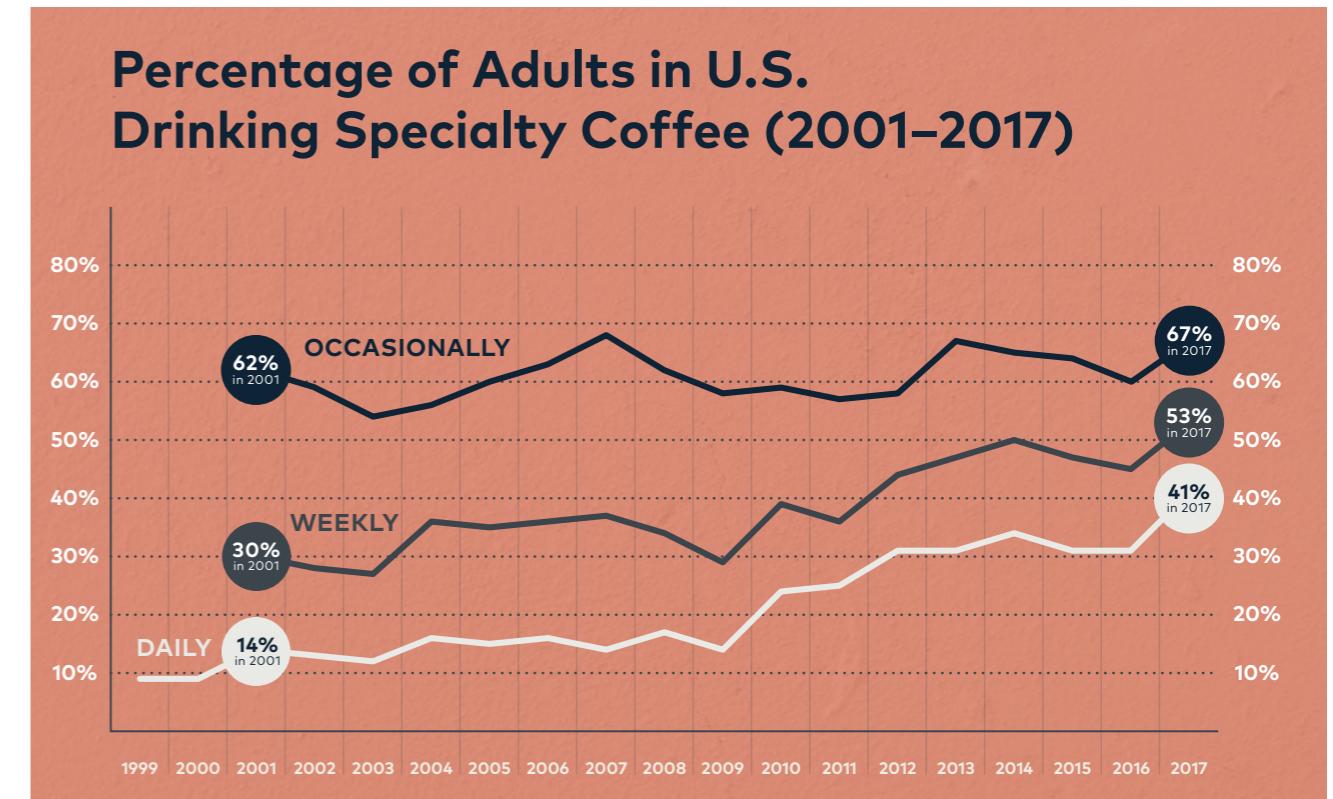
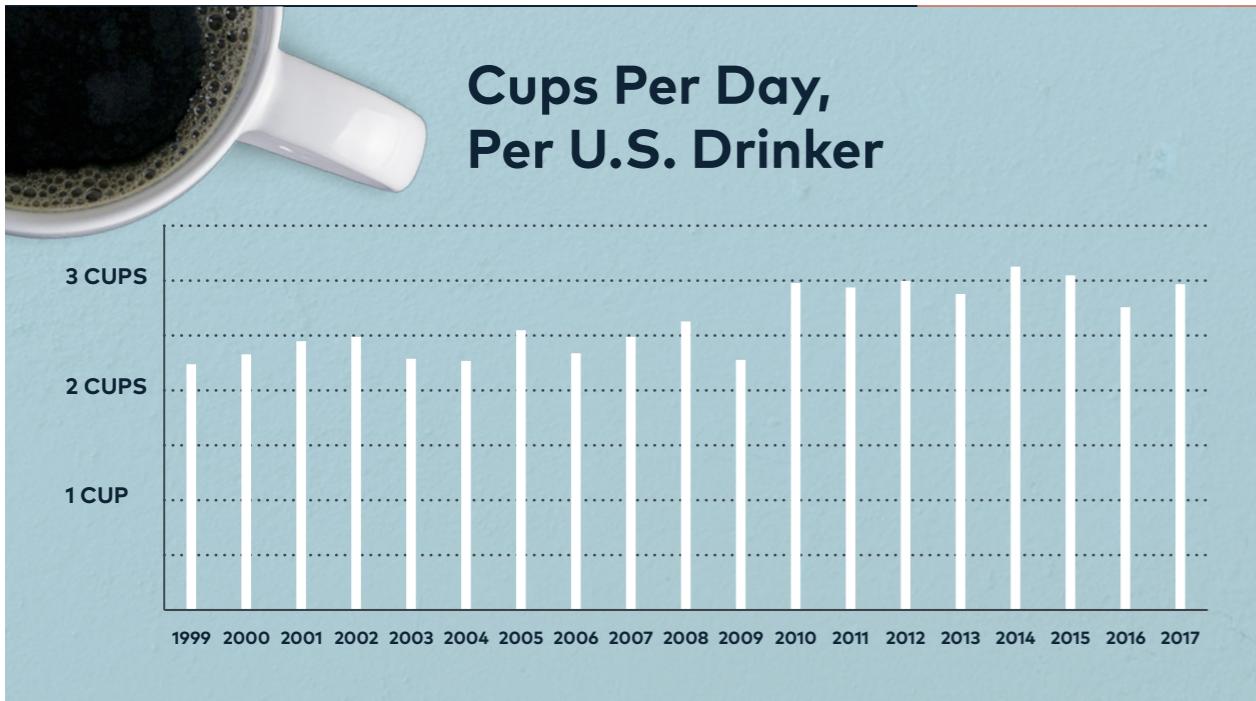
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- Background
  - Coffee Consumption in the US
  - Specialty Coffee and the Third Wave
- Trade Coffee
- Web Scraping Trade Coffee
- Data Processing and Analysis
- Insights and Observations
- Conclusions

# US COFFEE CONSUMPTION



## 2017 U.S. Specialty Coffee Consumption Trends



- Average Price in the US: \$3.12
- Starbucks: \$1.95 to \$2.15
- Most expensive: \$18 at Extraction Lab in Brooklyn, NY

Source: UBS, Eater.com

# SPECIALTY COFFEE AND THE THIRD WAVE

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- The journey from bean to cup is very important.
  - From where and how the coffee beans are grown and harvested
  - Processing from cherry to green bean
  - Roasters
  - Consumer
- Single Origin Coffees
  - grown within a single known geographic origin



# WHAT IS TRADE?

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- Home delivery service launched in April 2018
- Partner with craft coffee roasters across America
- Offers a curated collection of seasonal, freshly roasted-to-order coffees.
- **seasonal coffees with exceptional taste, ethically sourced from respected farmers and producers**
- Variable availability of products (roast schedule, seasonality)

# WHY TRADE?

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- Is TRADE a good resource for procuring and learning about coffee?
- Do they truly offer a diverse selection of coffees that can appeal to different tastes, price points?
- Will it satisfy both the needs of the seasoned coffee enthusiast and coffee novices?
- Is it a good jump off point for those interested in getting into specialty coffee?



# WHERE IT ALL BEGAN: THE FIRST PAGE

The screenshot shows a web browser displaying the <https://www.drinktrade.com/coffee/all-coffee> page. The URL is highlighted with a red box. The page title is "Top-Rated Specialty Coffee". The main content area features large text: "Our 400+ specialty coffees come from the best in the nation and are roasted fresh only when you place your order! So whether you take it whole or ground, decaf or full throttle, your top-rated coffee is guaranteed a winner." Below this, there are filter and sort options. The filter section includes "Filter" (with a dropdown icon), "Clear", and a button labeled "458 Coffees" which is also highlighted with a red box. The sort section includes "Sort" and a dropdown menu set to "Relevance". On the left, there are three filter categories: "Price" (with a plus sign), "Roast Level" (with a plus sign), and "Flavor Profile" (with a plus sign). To the right, there are three product cards: one for "Ouills" (with a white background and dark text), one for a coffee with a bird logo (dark background with a white bird silhouette), and one for a coffee with a red and white logo (red circle with a white diagonal line).

Top-Rated Whole Bean and Ground Coffee

https://www.drinktrade.com/coffee/all-coffee

Trade

Coffee Roasters Equipment How-To's

GET MATCHED

Coffee › Top-Rated Specialty Coffee

# Top-Rated Specialty Coffee

Our 400+ specialty coffees come from the best in the nation and are roasted fresh only when you place your order! So whether you take it whole or ground, decaf or full throttle, your top-rated coffee is guaranteed a winner.

Filter

Clear

458 Coffees

Sort

Relevance

Price

Roast Level

Ouills

# THE SITE: ELEMENTS OF INTEREST

- Name
- Roaster
- Single Origin/Blend
- Price
- Flavor notes, Descriptors
- Origin
- Varietal
- Roast Level

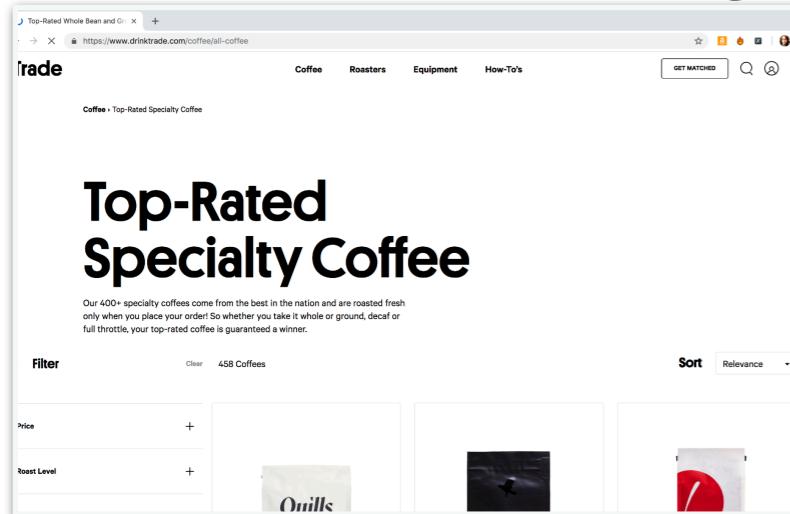
Screenshot of the Drink Trade website showing product details for Tarrazu Vienna coffee.

The page includes:

- Product Image:** A bag of Tarrazu Vienna coffee beans.
- Product Title:** George Howell Tarrazu Vienna
- Price:** \$14.00 | 12 oz.
- Description:** Enjoy this classic cup of coffee from a master among roasters. Rich, bittersweet caramel with dark chocolate undertones make this one worth savoring.
- Quantity Selection:** Options for 1, 2, or 3 bags.
- Grind Selection:** Whole (selected) or Ground (Unavailable).
- Roasting Schedule:** Roasts On Wednesday (Sun Mon Tue Wed Thur Fri Sat)
- Trade Roast Level:** Medium-Dark Roast (highlighted with a red box)
- Taste:** Chocolaty & Sweet
- Details:** Tarrazu Vienna (highlighted with a red box)
  - Process: Washed
  - Elevation: 1190 - 1890
  - Sub Region: Tarrazu
  - Harvest Time: January 2018
  - Varietal: Caturra & Catuai
- Roaster's Notes:** Tarrazu is a land of small farmers in a tumultuous landscape of lush green peaks, some rising over 10,000 feet, and valleys. The climate has well defined seasons: the long dry season, from December to April, coincides perfectly with the coffee harvest, leading to very even, full ripening - ideal for preparing quality coffee. Rich, bittersweet caramel with dark chocolate undertones and a whisper of citrus.

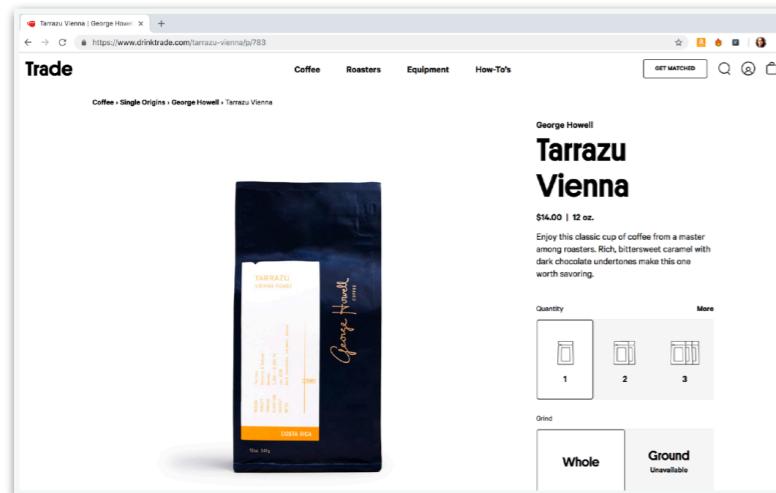
# FROM BEAN TO CUP... HOW I GOT MY DATA...

*Start: Main Product Page*



*How many products are available?  
Categories?*

*Individual Product Page*



*All you need to know about the Coffee!  
Basic: name, price, flavor profile, roaster  
Detailed: varietal, elevation, subregion, producer, harvest*

# FROM BEAN TO CUP... HOW I GOT MY DATA

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Scrape the Web Page



Attempt # 1: Scrapy - FAIL

- hidden elements
- dynamic webpage
- incomplete web scraping

Attempt # 2: Selenium - SUCCESS!

- challenge: non unique XPaths... which led to challenges downstream

	name	roaster	descriptor	price	weight	location	roasternotes	blend_single	roastlevel	classification	flavornotes	extra
0	71 House	Irving Farm	This signature House Blend was crafted as the ...	\$14.75	12 oz.	New York, NY	Our signature House Blend was created as the h...	Blends	Medium Roast	Sweet & Smooth	A traditional base with hints of Milk Chocolate...	['Process', 'Washed', 'Varietal', 'Bourbon', 'Cafe...', 'Smooth', 'Sweet', 'Medium', 'Roast', 'Blends', 'Single', 'Origins', 'Light-Medium', 'Roast', 'Chocolaty & Sweet', 'A classic expression of Costa Rica with hints ...', 'Nostalgic with hints of Milk Chocolate and Swe...', 'Medium-Dark', 'Roast', 'Comforting & Rich', 'Ad Astra is a very heavy, dark roasted blend ...']
1	Costa Rica Santa Maria	Huckleberry	Smooth, lush, and clean, with soft apple acidity...	\$17.00	12 oz.	Denver, CO	Santa Maria is back in Huckleberry's lineup, h...	Single Origins	Light-Medium Roast	Chocolaty & Sweet	A classic expression of Costa Rica with hints ...	['Process', 'Washed', 'Sub Region', 'San Jose', 'Smooth', 'Sweet', 'Medium', 'Roast', 'Blends', 'Single', 'Origins', 'Light-Medium', 'Roast', 'Chocolaty & Sweet', 'A classic expression of Costa Rica with hints ...', 'Nostalgic with hints of Milk Chocolate and Swe...', 'Medium-Dark', 'Roast', 'Comforting & Rich', 'Ad Astra is a very heavy, dark roasted blend ...']
2	Ad Astra Signature Blend	PT's	If your coffee substitutes as breakfast, this ...	\$17.50	12 oz.	Topeka, KS	Ad Astra is a very heavy, dark roasted blend ...	Blends	Medium-Dark Roast	Comforting & Rich	Nostalgic with hints of Milk Chocolate and Swe...	['Process', 'Washed', 'Pulped Natural', 'Varietal', 'Smooth', 'Sweet', 'Medium', 'Roast', 'Blends', 'Single', 'Origins', 'Light-Medium', 'Roast', 'Chocolaty & Sweet', 'A classic expression of Costa Rica with hints ...', 'Nostalgic with hints of Milk Chocolate and Swe...', 'Medium-Dark', 'Roast', 'Comforting & Rich', 'Ad Astra is a very heavy, dark roasted blend ...']

# FROM BEAN TO CUP... HOW I GOT MY DATA

Scrape the Web Page



Clean Data

- duplicate entries, remove
- Convert into proper data types
- Convert prices/weights into same units
- From 470 products down to 452 coffees

	<b>name</b>	<b>roaster</b>	<b>descriptor</b>	<b>price</b>	<b>weight</b>	<b>location</b>	<b>roasternotes</b>	<b>blend_single</b>	<b>roastlevel</b>	<b>classification</b>	<b>flavornotes</b>	<b>extra</b>
0	71 House	Irving Farm	This signature House Blend was crafted as the ...	\$14.75	12 oz.	New York, NY	Our signature House Blend was created as the h...	Blends	Medium Roast	Sweet & Smooth	A traditional base with hints of Milk Chocolate...	['Process', 'Washed', 'Varietal', 'Bourbon', 'Ca...
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2	Ad Astra Signature Blend	PT's	If your coffee substitutes as breakfast, this ...	\$17.50	12 oz.	Topeka, KS	Ad Astra is a very heavy, dark roasted blend o...	Blends	Medium-Dark Roast	Comforting & Rich	Nostalgic with hints of Milk Chocolate and Swe...	['Process', 'Washed', 'Pulped Natural', 'Varieta...']

# FROM BEAN TO CUP... HOW I GOT MY DATA

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Scrape the Web Page



Clean Data

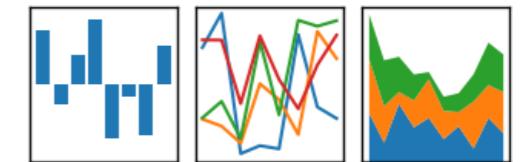


Analyze and Visualize Data



pandas

$$y_{it} = \beta' x_{it} + \mu_i + \epsilon_{it}$$



- Look for patterns, relationships
  - Single Origin vs Blend
  - Variety of Coffee flavor profiles
- Average, max, min product price
- Create plots and charts
- NLP analysis on descriptions, flavor profile

- 51 Roasters
- 39 Cities
- 14 Classifications
- 261 Single Origins
- 209 Blends

**Most Roasters**

location	
Oakland, CA	3
Seattle, WA	3
Chicago, IL	3
Portland, OR	2
Philadelphia, PA	2
New York, NY	2

**Most Beans**

	beans
Chicago, IL	33
Lancaster, PA	28
Philadelphia, PA	26
Seattle, WA	25
Denver, CO	21
New York, NY	20

*Brew Recipe (1:15 ratio):*

*20 g freshly ground coffee*

*300 mL water*

*Yield: ~250 mL of great tasting coffee*



# COFFEE PRICES

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- 51 Roasters
- 39 Cities
- 14 Classifications
- 261 Single Origins
- 209 Blends

*Brew Recipe (1:15 ratio):*

*20 g freshly ground coffee*

*300 mL water*

\* *Yield: 250 mL of great tasting coffee*

*Most expensive*



Fruity & Crisp

PASSENGER  
**Gesha Village 2016 Dry Process**  
\$85.00 | 10 oz.

*\$ 85.00 for 10 oz.*

*\$ 6.00 per cup*

*Least expensive*



Comforting & Rich

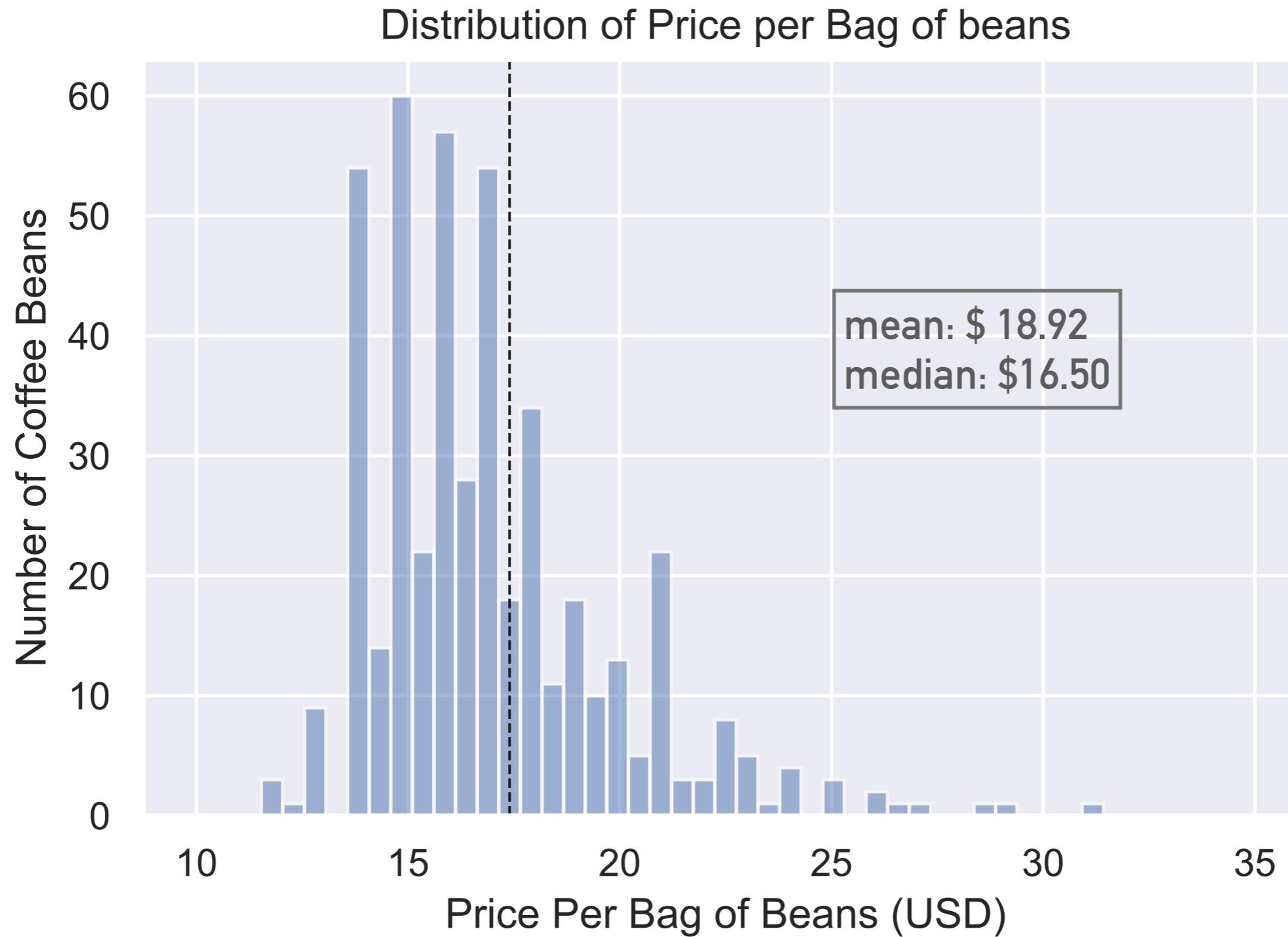
ANODYNE  
**Milwaukee Rockstar Blend**  
\$14.45 | 16 oz.

*\$ 14.45 for 16 oz.*

*\$ 0.64 per cup*

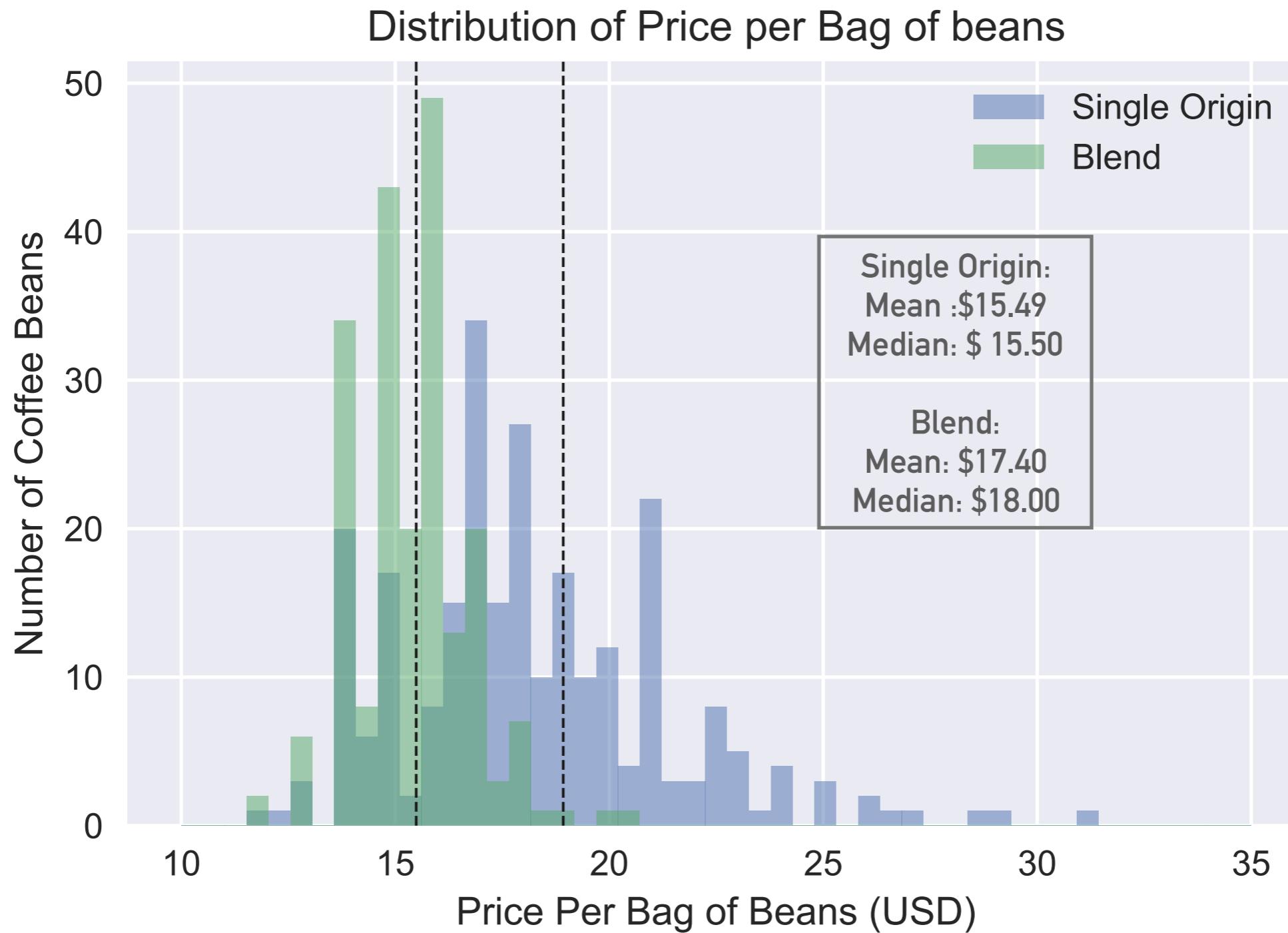
*\*20 g or 0.71 oz. of beans per cup of coffee*

# PRICE PER BAG

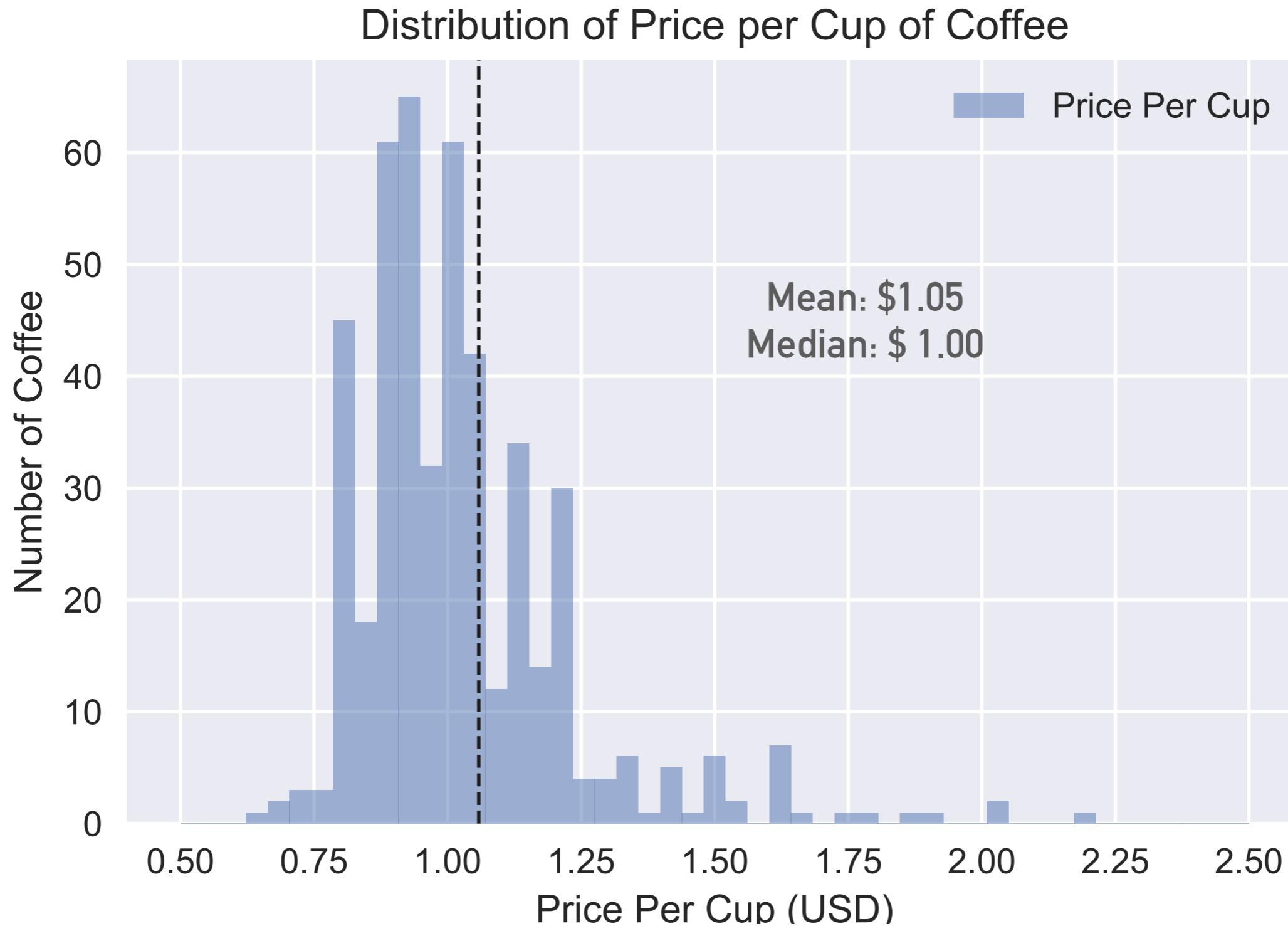


# PRICE PER BAG

....

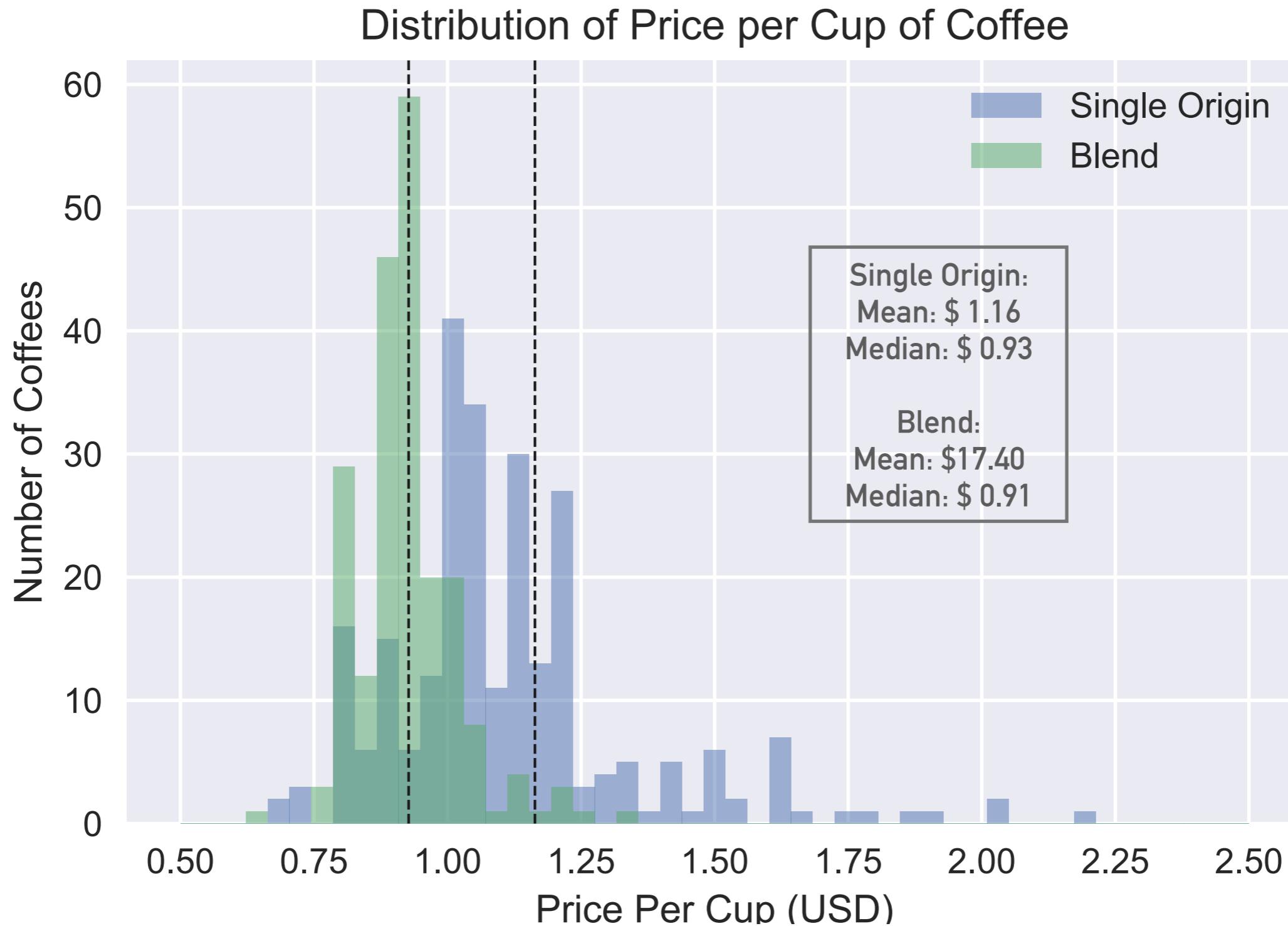


# PRICE PER CUP



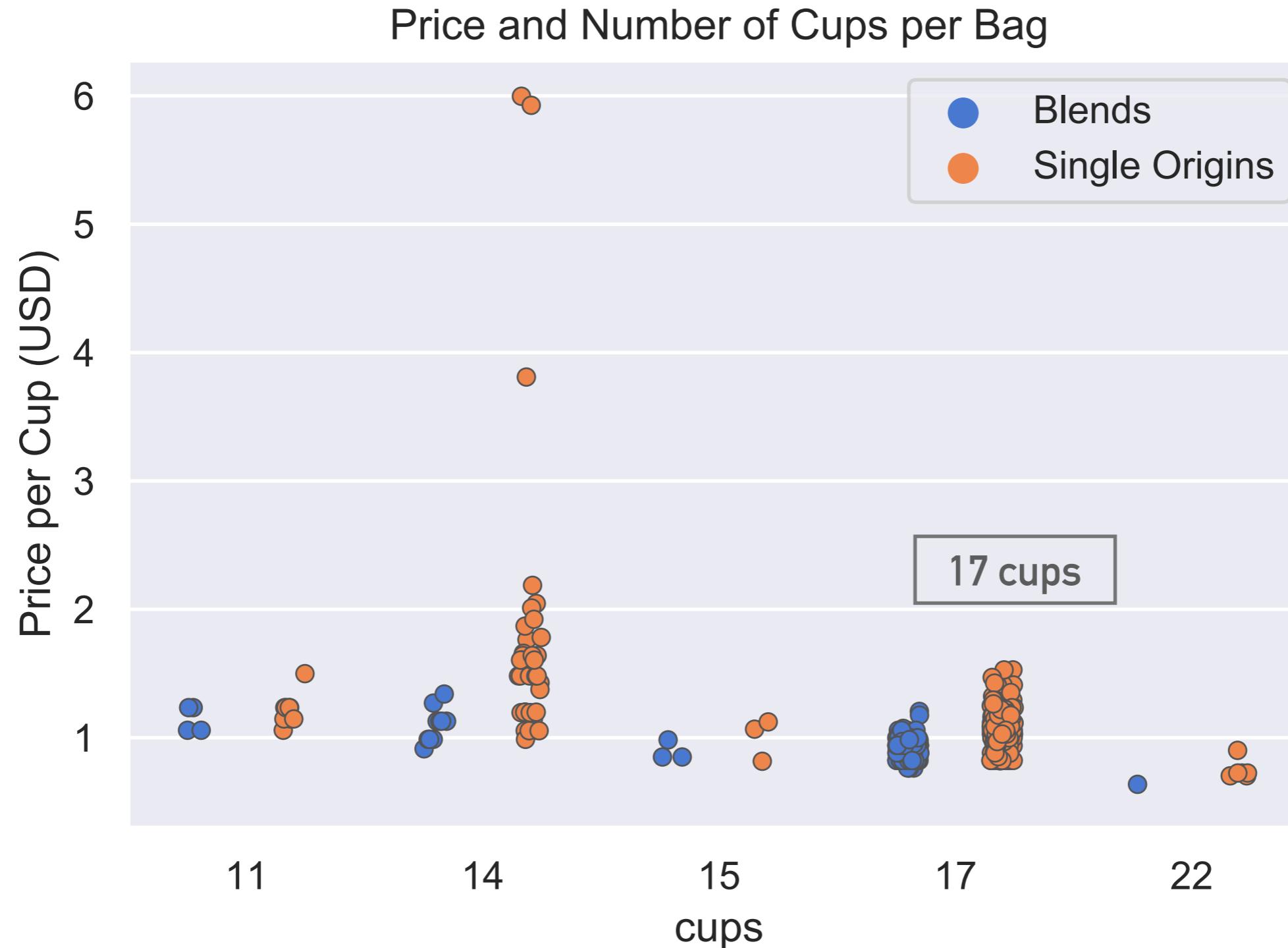
20 g or 0.71 oz. of beans per cup of coffee

# PRICE PER CUP

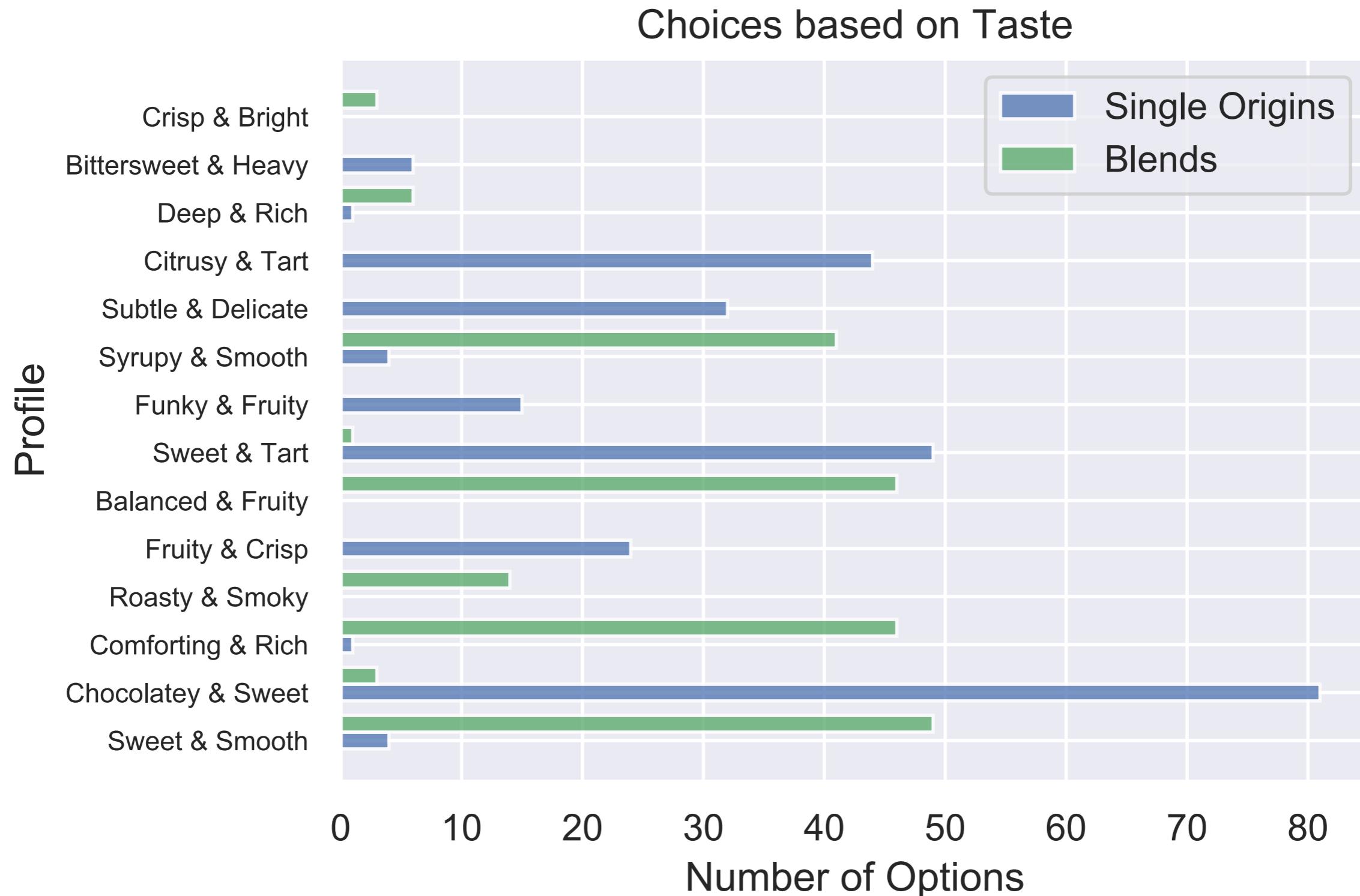


20 g or 0.71 oz. of beans per cup of coffee

# HOW MANY CUPS OF COFFEE CAN ONE BAG MAKE?



# COFFEE CHOICES



# FLAVOR NOTES AND PROFILES

# FLAVOR NOTES AND PROFILES

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traditional

ripe

complex

fresh

classic

fruit

citrus

milk

spice

florals

berry

brown sugar

nostalgic

acid

vanilla

nut

base

berry

brown sugar

nostalgic

acid

vanilla

nut

base

comforting

# FLAVOR NOTES AND PROFILES

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# SOME INSIGHTS AND CONCLUSIONS

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- Trade has a wide variety of coffees for all types of home brewers.
- Budget friendly options as well
- Special limited lots and roasts
- Home brewing is a cost-effective way of enjoying specialty coffee
- Didn't take into account shipping... Free shipping when you spend \$50.00

# NEXT STEPS...

- Trade changes its inventory regularly.
  - It might interesting to see trends in the products they offer.
  - Take a closer look into the specific details of products in addition to price points.
    - Trends on varietal, origin, sub region
    - Roasters



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Questions? Comments?