GOOD & EVOO

An Information Visualization on Extra Virgin Olive Oil

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Project Goals

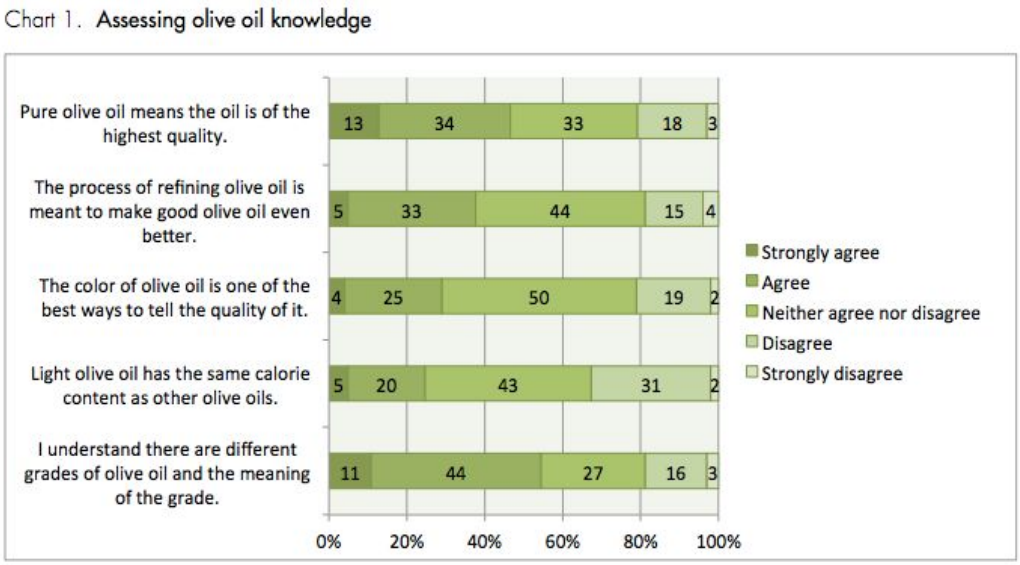
The UC Davis Olive Center conducted a survey in 2012 with 2,234 US Consumers to examine their perceptions and attitudes toward olive oil. The survey results showed that consumers believed that they knew more about olive oil than they actually do. Current standards for extra virgin olive oil also exist, but are widely unenforced and allow a wide range of olive oil qualities to be marketed as extra virgin.

The goal of the information visualization will be to allow the user to reflect on their current understanding of EVOO, inform them about the standards of EVOO and explore the quality of olive oil produced in different regions and how the quality of California/US produced olive oil could possibly be a better choice for the consumer. Our primary target will be to give the average consumer enough information to make more informed purchasing decisions about extra virgin olive oil. We recognize that there is much more information and data on EVOO that we could include, but we will attempt to create a primer of sorts for this specific topic and purpose, so we will refrain from deep diving into technicalities and limit our focus to the information that would be pertinent to the average consumer.

Related Work

New York Times - Extra Virgin Suicide by Nick Blechman
https://www.nytimes.com/interactive/2014/01/24/opinion/food-chains-extra-virgin-suicide.html
The New York Times published an infographic focused on exposing olive oil fraud. The narrative is easy to follow and uses cartoon images to keep the reader engaged. This infographic inspired us to dig deeper into the olive oil industry and focus on understanding the quality standards behind extra virgin olive oil. We wanted to follow a similar approach and focus on using icons rather than real images to convey our message in a fun, cute way.

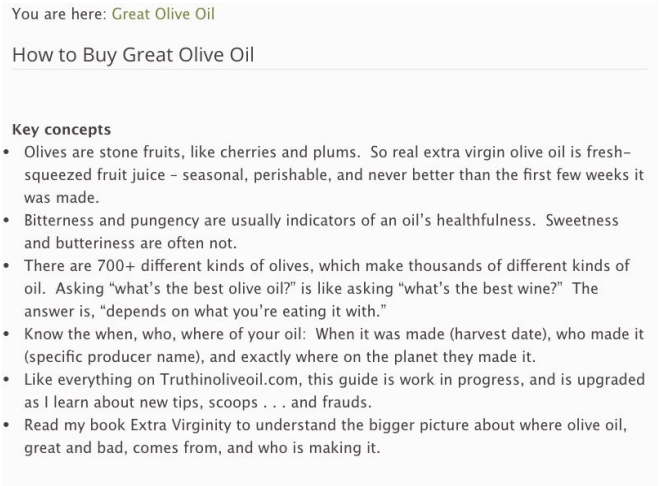
Consumer Attitudes on Olive Oil by Selina Wang, Ben Moscatello and Dan Flynn
https://1.oliveoiltimes.com/library/survey-olive-oil-preferences.pdf
The UC Davis Olive Center conducted a survey to assess consumer attitudes and perceptions regarding olive oil. The survey results showed that there was a disconnect between what people thought they knew about olive oil and what was actually correct knowledge. This inspired us to want to include a section to assess the user's current knowledge regarding olive oil. We believe that if the user is able to take a step back and reflect on their current knowledge, then they will be interested in learning more about what they don't know.



Olive Oil Times Special: Extra Virgin Olive Oil
https://www.oliveoiltimes.com/extra-virgin-olive-oil
The Olive Oil Times special on EVOO utilizes graphic illustrations to represent the positive attributes of EVOO. This seemed like an effective way for the user to be able to relate the attribute name with an image. We thought that this would be a particularly effective method to use when describing negative attributes.

Extra Virginity, http://www.extravirginity.com/

A good source of information for learning about quality EVOO with purchasing advice from an expert. However, the website is difficult to navigate, is very text heavy, and does not have many visualizations. The Buyer's Guide contains great info, but mostly uses bullet points. Overall, while the website contains lots of useful information, the way it is presented makes it less accessible to the average consumer.

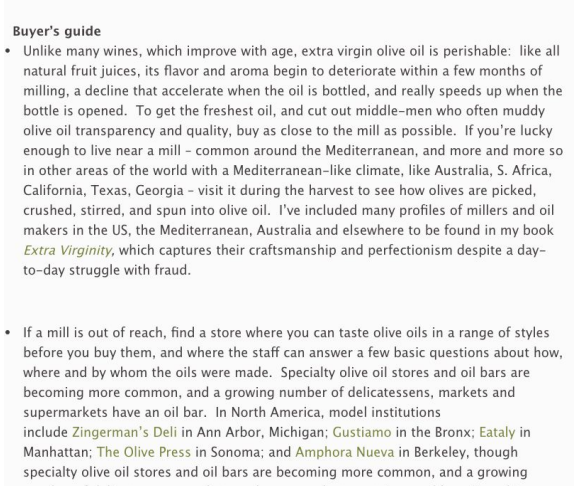


You are here: Great Olive Oil

How to Buy Great Olive Oil

Key concepts

- Olives are stone fruits, like cherries and plums. So real extra virgin olive oil is fresh-squeezed fruit juice – seasonal, perishable, and never better than the first few weeks it was made.
- Bitterness and pungency are usually indicators of an oil's healthfulness. Sweetness and butteriness are often not.
- There are 700+ different kinds of olives, which make thousands of different kinds of oil. Asking "what's the best olive oil?" is like asking "what's the best wine?" The answer is, "depends on what you're eating it with."
- Know the when, who, where of your oil: When it was made (harvest date), who made it (specific producer name), and exactly where on the planet they made it.
- Like everything on Truthinoliveoil.com, this guide is work in progress, and is upgraded as I learn about new tips, scoops . . . and frauds.
- Read my book Extra Virginity to understand the bigger picture about where olive oil, great and bad, comes from, and who is making it.



Buyer's guide

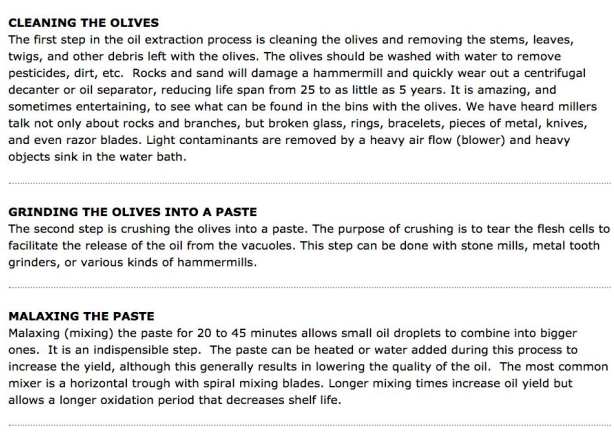
- Unlike many wines, which improve with age, extra virgin olive oil is perishable: like all natural fruit juices, its flavor and aroma begin to deteriorate within a few months of milling, a decline that accelerate when the oil is bottled, and really speeds up when the bottle is opened. To get the freshest oil, and cut out middle-men who often muddy olive oil transparency and quality, buy as close to the mill as possible. If you're lucky enough to live near a mill – common around the Mediterranean, and more and more so in other areas of the world with a Mediterranean-like climate, like Australia, S. Africa, California, Texas, Georgia – visit it during the harvest to see how olives are picked, crushed, stirred, and spun into olive oil. I've included many profiles of millers and oil makers in the US, the Mediterranean, Australia and elsewhere to be found in my book *Extra Virginity*, which captures their craftsmanship and perfectionism despite a day-to-day struggle with fraud.

- If a mill is out of reach, find a store where you can taste olive oils in a range of styles before you buy them, and where the staff can answer a few basic questions about how, where and by whom the oils were made. Specialty olive oil stores and oil bars are becoming more common, and a growing number of delicatessens, markets and supermarkets have an oil bar. In North America, model institutions include Zingerman's Deli in Ann Arbor, Michigan; Gustiamo in the Bronx; Eataly in Manhattan; The Olive Press in Sonoma; and Amphora Nueva in Berkeley, though specialty olive oil stores and oil bars are becoming more common, and a growing

Olive Oil Source, "Extraction Process"

https://www.oliveoilsource.com/page/extraction-process

Contains information about the olive oil production process, but it is a list with all text. It's hard to tell at a glance how different production processes makes different grades of olive oils or that it is related at all.



CLEANING THE OLIVES

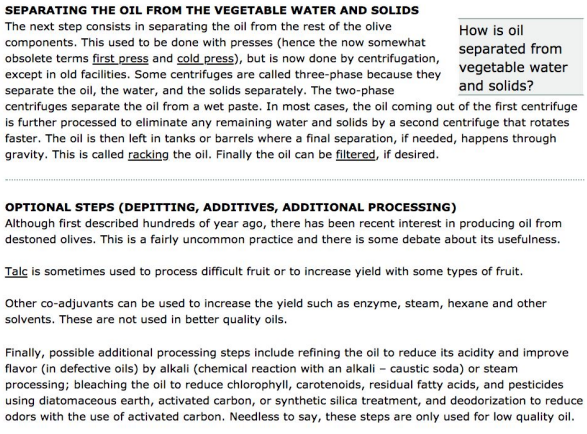
The first step in the oil extraction process is cleaning the olives and removing the stems, leaves, twigs, and other debris left with the olives. The olives should be washed with water to remove pesticides, dirt, etc. Rocks and sand will damage a hammermill and quickly wear out a centrifugal decanter or oil separator, reducing life span from 25 to as little as 5 years. It is amazing, and sometimes entertaining, to see what can be found in the bins with the olives. We have heard millers talk not only about rocks and branches, but broken glass, rings, bracelets, pieces of metal, knives, and even razor blades. Light contaminants are removed by a heavy air flow (blower) and heavy objects sink in the water bath.

GRINDING THE OLIVES INTO A PASTE

The second step is crushing the olives into a paste. The purpose of crushing is to tear the flesh cells to facilitate the release of the oil from the vacuoles. This step can be done with stone mills, metal tooth grinders, or various kinds of hammermills.

MALAXING THE PASTE

Malaxing (mixing) the paste for 20 to 45 minutes allows small oil droplets to combine into bigger ones. It is an indispensible step. The paste can be heated or water added during this process to increase the yield, although this generally results in lowering the quality of the oil. The most common mixer is a horizontal trough with spiral mixing blades. Longer mixing times increase oil yield but allows a longer oxidation period that decreases shelf life.



SEPARATING THE OIL FROM THE VEGETABLE WATER AND SOLIDS

The next step consists in separating the oil from the rest of the olive components. This used to be done with presses (hence the now somewhat obsolete terms first press and cold press), but is now done by centrifugation, except in old facilities. Some centrifuges are called three-phase because they separate the oil, the water, and the solids separately. The two-phase centrifuges separate the oil from a wet paste. In most cases, the oil coming out of the first centrifuge is further processed to eliminate any remaining water and solids by a second centrifuge that rotates faster. The oil is then left in tanks or barrels where a final separation, if needed, happens through gravity. This is called racking the oil. Finally the oil can be filtered, if desired.

How is oil separated from vegetable water and solids?

OPTIONAL STEPS (DEPITTING, ADDITIVES, ADDITIONAL PROCESSING)

Although first described hundreds of year ago, there has been recent interest in producing oil from destoned olives. This is a fairly uncommon practice and there is some debate about its usefulness.

Talc is sometimes used to process difficult fruit or to increase yield with some types of fruit.

Other co-adjuvants can be used to increase the yield such as enzyme, steam, hexane and other solvents. These are not used in better quality oils.

Finally, possible additional processing steps include refining the oil to reduce its acidity and improve flavor (in defective oils) by alkali (chemical reaction with an alkali – caustic soda) or steam processing; bleaching the oil to reduce chlorophyll, carotenoids, residual fatty acids, and pesticides using diatomaceous earth, activated carbon, or synthetic silica treatment, and deodorization to reduce odors with the use of activated carbon. Needless to say, these steps are only used for low quality oil.

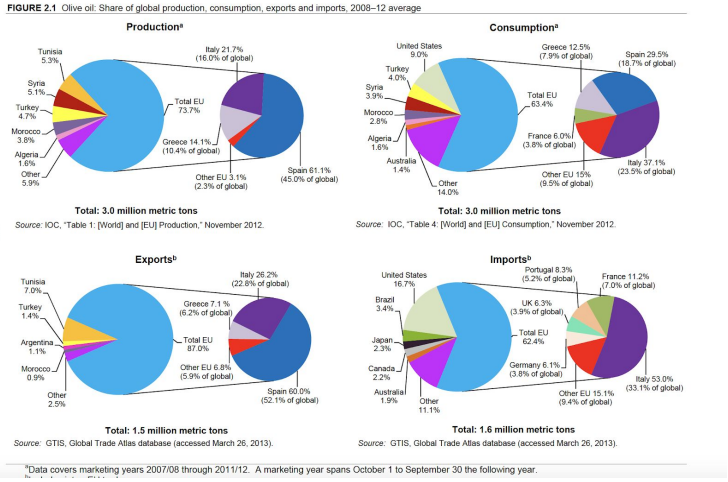
US International Trade Commision Publication 4419, "Olive Oil: Conditions of Competition between U.S. and Major Foreign Supplier Industries."
https://www.usitc.gov/publications/332/pub4419.pdf
The USITC compiled a very comprehensive report with a lot of detailed information that pertained to our topic. The visualizations in the report were useful and understandably traditional, but sometimes we felt that it could be improved. We wanted to bring the information they compiled to life in our project in a playful way.

TABLE 1.1 Olive oil grade descriptions

Grade	Description and notes
Virgin	Oils obtained from olives that have not undergone any treatment other than washing, decanting, centrifugation, and filtration. Virgin oil is obtained during the first pressing of whole olives.
Extra virgin	○ The highest grade of virgin olive oil, which exhibits some fruitiness and is free of taste defects.
Virgin	○ Oil that is fit for human consumption, has reasonably good flavor, but may exhibit taste defects.
Lampante virgin	○ Virgin oil that is not fit for human consumption without further processing and contains flavor and odor defects.
Olive oil	Oil that is made from blending virgin and refined olive oil. This oil is fit for human consumption and makes up the majority of global olive oil sales.
Refined olive oil	Olive oil that has been refined into an edible product yet maintains the initial glyceridic structure of olive oil. The refining process heats the oil to rid it of flavor flaws such as rancidity. Refined oil does not contain the same beneficial nutrients as virgin oil.
Olive pomace oil	Olive pomace is the solid remains (skins, pulp, seeds, etc.) left over from the first press of olives for oil. Olive pomace oil is extracted from the pomace using chemical solvents and must be refined to be fit for human consumption. Once refined, it is typically mixed with virgin oils for consumption.

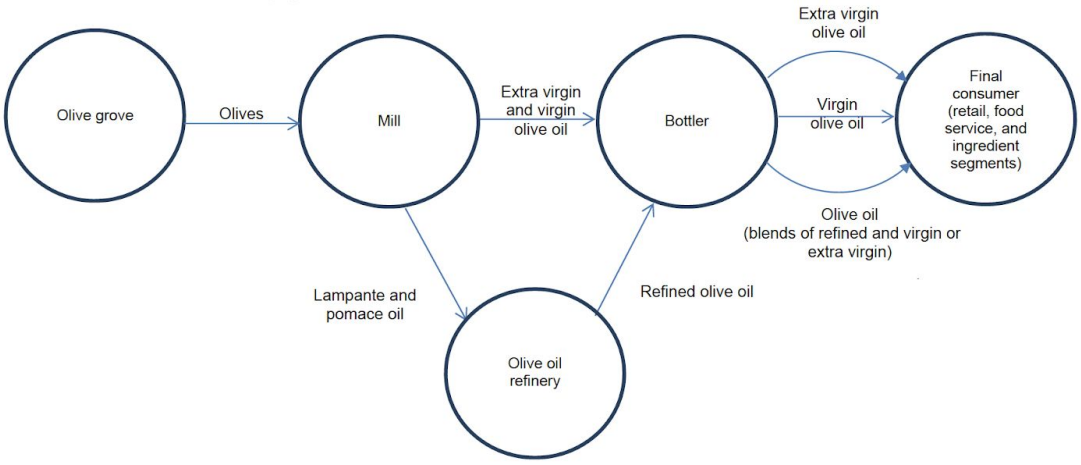
Source: Compiled by USITC staff.

FIGURE 2.1 Olive oil: Share of global production, consumption, exports and imports, 2008–12 average



[b]Data covers marketing years 2007/08 through 2011/12. A marketing year spans October 1 to September 30 the following year.

FIGURE 1.1 Production and marketing system for olive oil



UC Davis Olive Center, July 2010, P.5-P.9 "Tests indicate that imported "extra virgin"olive oil often fails"

https://1.oliveoiltimes.com/library/ucd-2010-report.pdf

This report shows the methodology for conducting sampling and testing on popular extra virgin olive oil brands. The chemistry and sensory test results support our hypothesis that many substandard olive oil in retail stores is mislabeled as extra virgin grade. These data are used for our visualization with Tableau.

Tests indicate that imported "extra virgin"olive oil often fails international and USDA standards
UC Davis Olive Center, July 2010

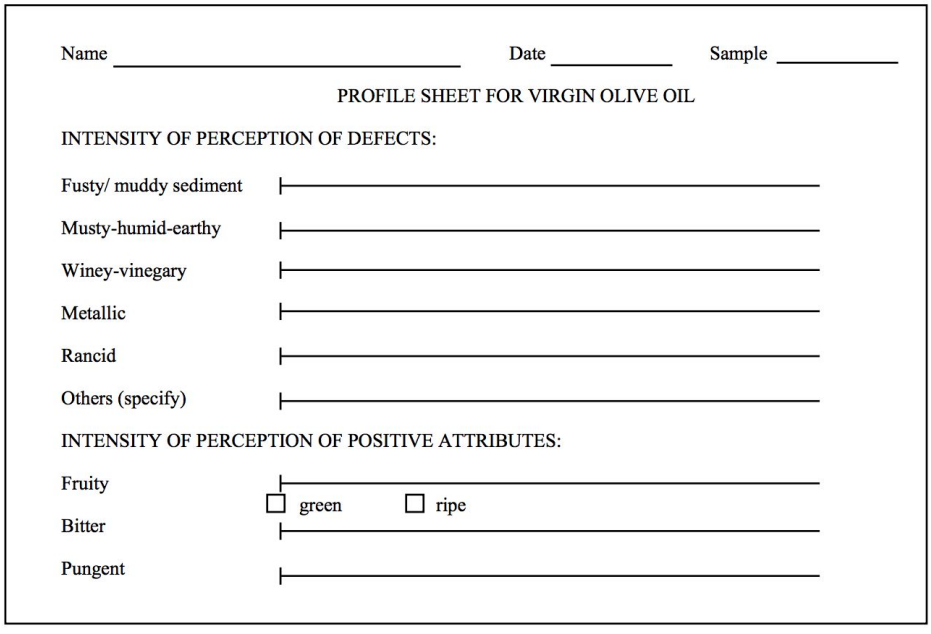
Table 3. Chemistry and sensory data provided by Australian Oils Research Laboratory

Brand / Extra Virgin Standards*		PV (<20)	K232 (≤2.50)	K268 (≤0.22)	ΔK (≤0.01)	FFA (≤0.8)	Stigma (≤0.10)	Poly N/A	PPP (≤15)	DAGs (≥40)	Sensory Defects = 0 Fruitiness > 0
Filippo Berio	SAC	11	2.46	0.18	<0.003	0.30	<0.03	200	10.3	42.2	EXTRA VIRGIN
	SF	12	2.18	0.14	<0.003	0.37	<0.03	212	12.0	40.7	VIRGIN
	LA	11	2.12	0.15	<0.003	0.35	<0.03	247	13.7	42.0	VIRGIN
Bertolli	SAC	9	2.29	0.19	<0.003	0.41	<0.03	195	17.8	38.1	VIRGIN
	SF	9	2.24	0.16	<0.003	0.38	<0.03	266	14.3	39.2	VIRGIN
	LA	12	2.42	0.17	<0.003	0.32	<0.03	199	20.8	43.4	VIRGIN
Pompeian	SAC	11	2.50	0.19	<0.003	0.59	<0.03	132	12.1	38.5	VIRGIN
	SF	13	2.60	0.16	<0.003	0.51	<0.03	111	10.5	31.5	VIRGIN
	LA	13	2.56	0.17	<0.003	0.49	<0.03	188	16.3	35.9	VIRGIN
Colavita	SAC	8	1.97	0.13	<0.003	0.44	<0.03	268	1.4	72.9	EXTRA VIRGIN
	SF	11	2.13	0.15	<0.003	0.57	<0.03	189	12.8	36.7	VIRGIN
	LA	15	2.88	0.25	0.01	0.72	<0.03	156	33.1	29.0	VIRGIN

IOC (International Olive Council) Olive Oil Sensory Evaluation Methodology

http://cesonoma.ucdavis.edu/files/48152.pdf

This document shows a clear summary how IOC's Taste Panel evaluates olive oil in a sensory test. The positive attributes and defects used for evaluation listed in this document are used for "Standards and Testing" section in our visualization.



Name _____ Date _____ Sample _____

PROFILE SHEET FOR VIRGIN OLIVE OIL

INTENSITY OF PERCEPTION OF DEFECTS:

Fusty/ muddy sediment

Musty-humid-earthy

Winey-vinegary

Metallic

Rancid

Others (specify)

INTENSITY OF PERCEPTION OF POSITIVE ATTRIBUTES:

Fruity

☐ green ☐ ripe

Bitter

Pungent

Olive Oil Standard Comparison: California State law, International Olive Council, and US Department of Agriculture

http://www.internationaloliveoil.org/estaticos/view/222-standards
https://www.oliveoiltimes.com/olive-oil-business/north-america/california-approves-olive-oil-standards/41296
https://www.oliveoiltimes.com/olive-oil-basics/olive-oil-grades/understanding-usda-olive-oil-standards/6320

During the research phase, we studied standards from different authorities and organizations, considering making a comparison for the audiences. However, we found that the chemistry and sensory standards of International Olive Council are most used and followed by other organizations. As a result, we didn't show those minor differences between standards but focus more on sharing information that helps olive oil buyer making purchase decision in daily life.

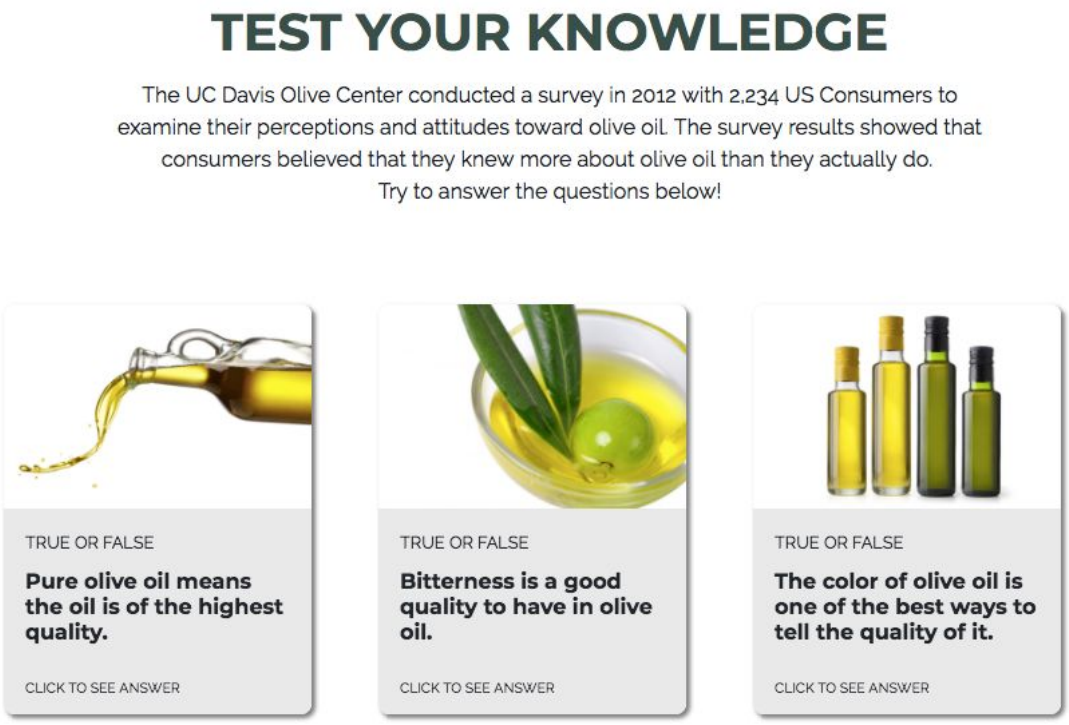
Visualization

Color Palette

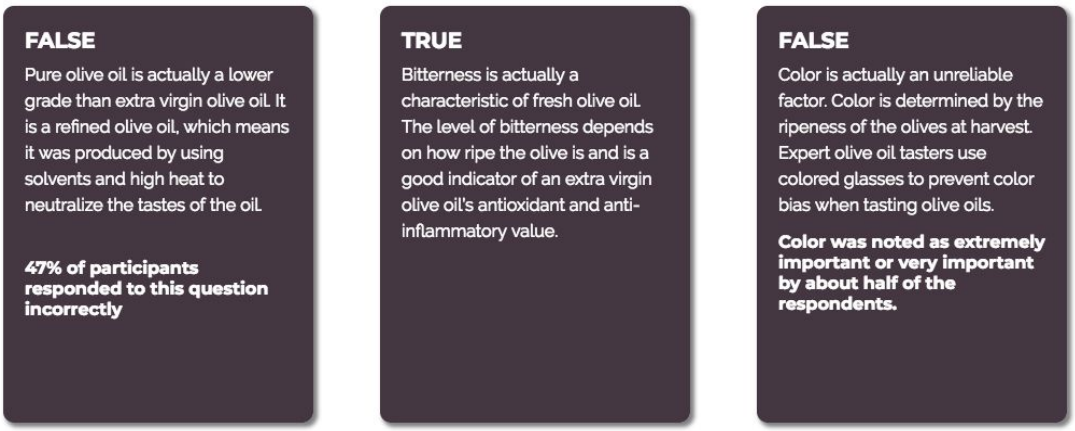
We stuck to a consistent color palette throughout the visualization. We drew inspiration from the colors of fresh olives (greens and deep purples), and the color of olive oil (golden yellow).

Test Your Knowledge

In order to draw users in and get them interested in the topic, we begin with an interactive ‘Test Your Knowledge’ section where the user is asked three true and false questions using flippable cards. This will allow the user to gauge their current understanding of EVOO. Some of the questions were ones that were asked in a survey conducted by the UC Davis Olive Center on consumer attitude and perceptions towards olive oil.

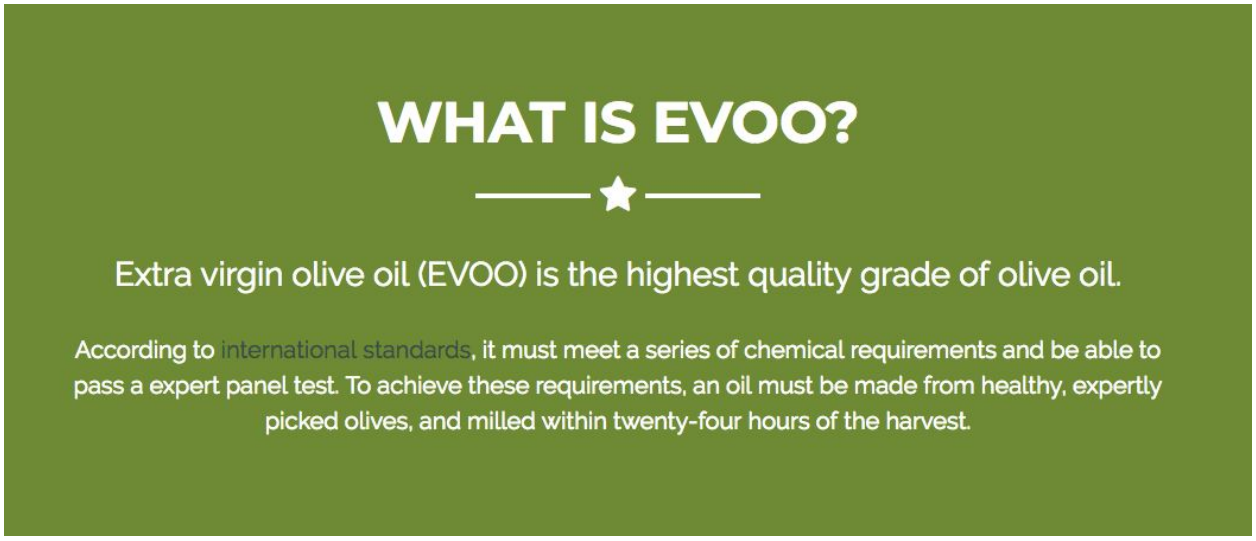


Cards flip to show answer, as well as survey findings related to the question, if said question was also asked in the survey:



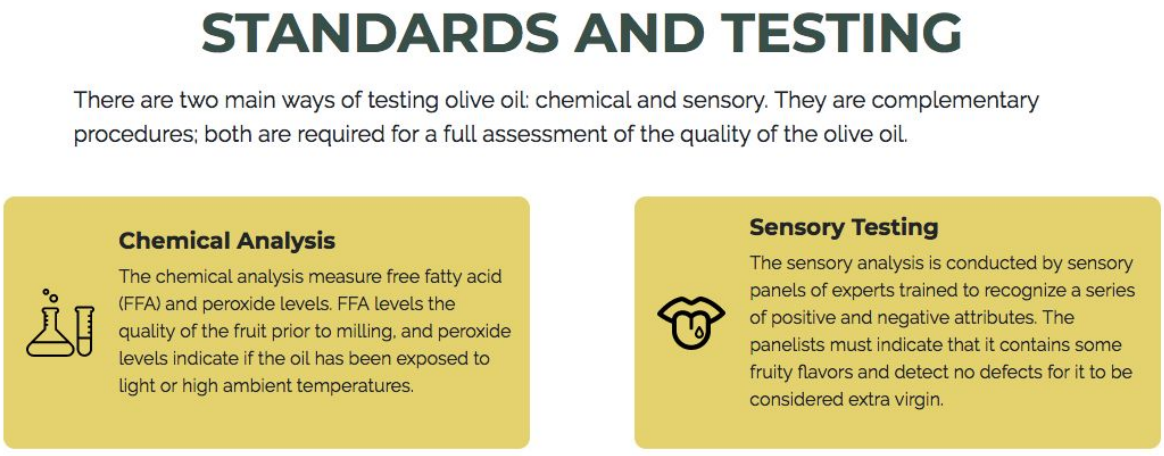
Definition

The definition section provides the user with a clear definition of EVOO and how the quality is determined.



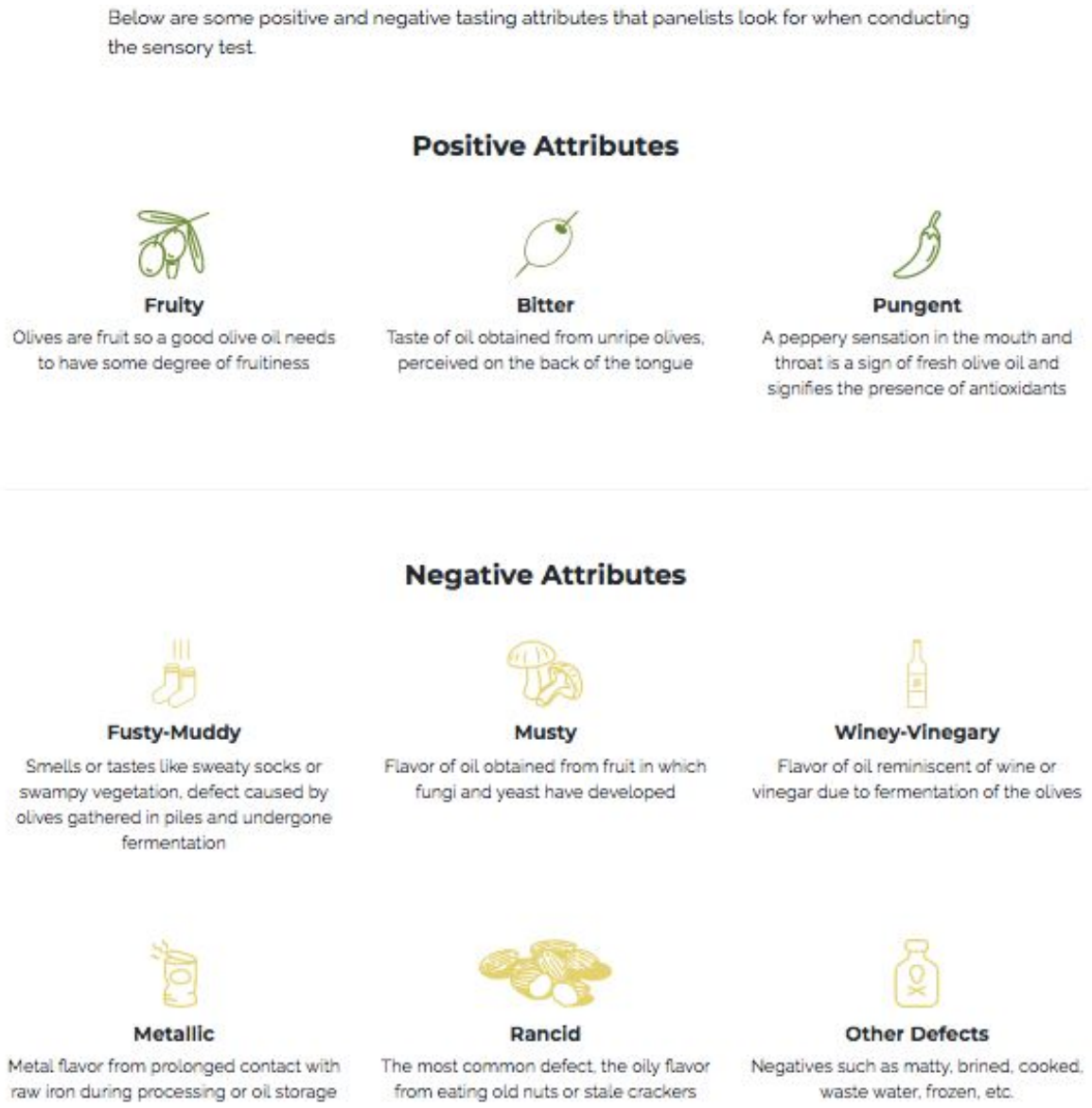
Standards and Testing

The standards and testing section describes the two tests to determine high quality EVOO - chemical and sensory tests. The chemical test measures the free fatty acids and peroxide levels in the olive oil. The sensory test is conducted by a panel of experts trained to recognize positive and negative attributes of olive oil. These two tests are complementary and are required to fully assess the quality of olive oil. We used cards to place the testing procedures side-by-side to give people a sense of the complementary nature of the procedures. We also used icons to give people an idea of what the tests involve at a glance.



Because the chemical analysis is highly technical and does not have much meaning to the average consumer, we chose to focus on the sensory testing as something that is more accessible and relevant to them. We elaborated on the sensory testing by highlighting positive and negative attributes that experts would focus on finding when they perform sensory testing.

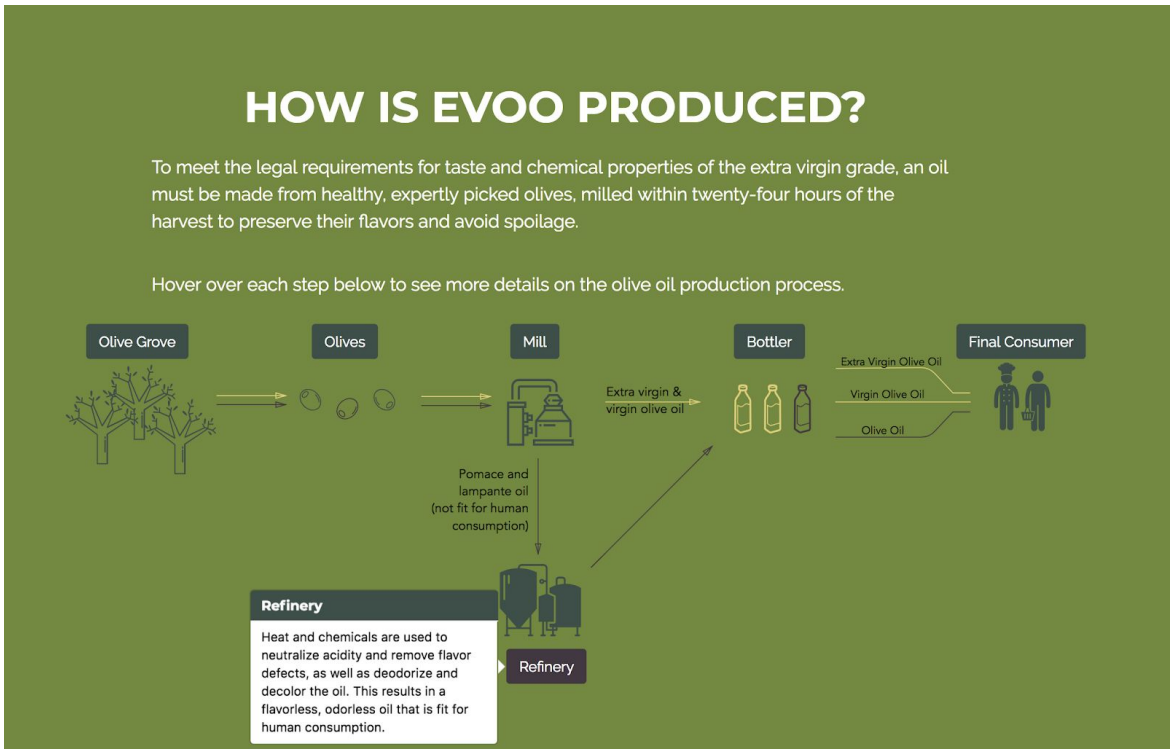
There are three main positive attributes (fruity, pungent, bitter) and 6 negative attributes (fusty-muddy, musty, winey-vinegary, metallic, rancid, other defects) of EVOO. We used icons to represent the different attributes in a way that the user can easily relate to and understand. We also used color as an indicator for the user to quickly group the positive attributes and negative attributes together.



Production

After talking about testing, we wanted to address olive oil production, specifically highlighting the differences in production that results in different grades of oils.

In order to help the user easily visualize the production process, we created a flow chart. The flow chart uses icons as a visual indicator for users to get an understanding of each step involved at a glance, and the user can also hover over each step for tooltips with more details about each step. The yellow and purple lines indicate the production of virgin and extra virgin olive oils versus the production of refined olive oils, respectively. Users should be able to see that extra virgin olive oil requires fewer steps in the production process, and that refined olive oil results non-virgin olive oil.



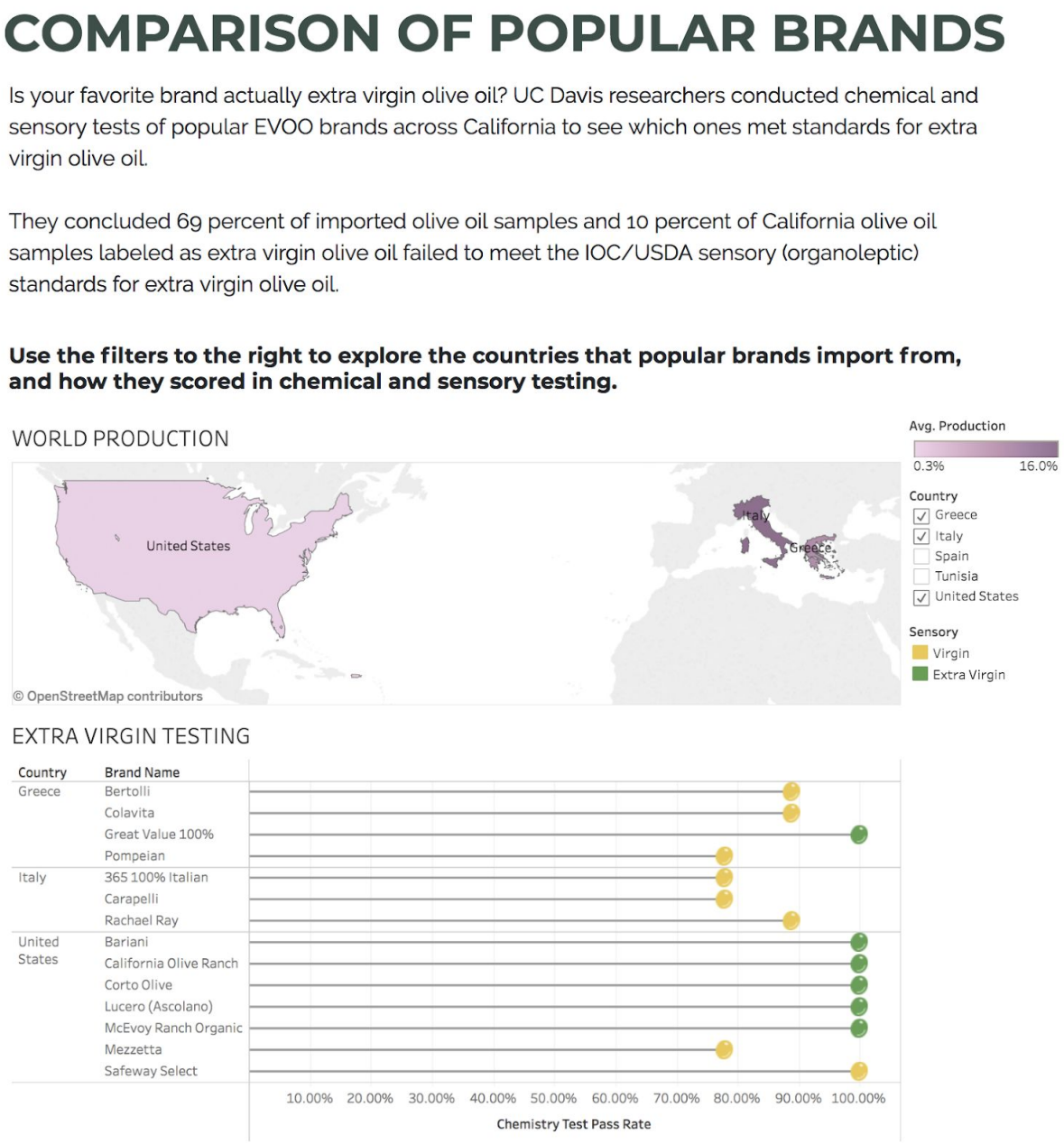
Comparison of Popular Brands

Next, we wanted to look at some studies to make some concrete comparisons for consumers between brands and countries of origin.

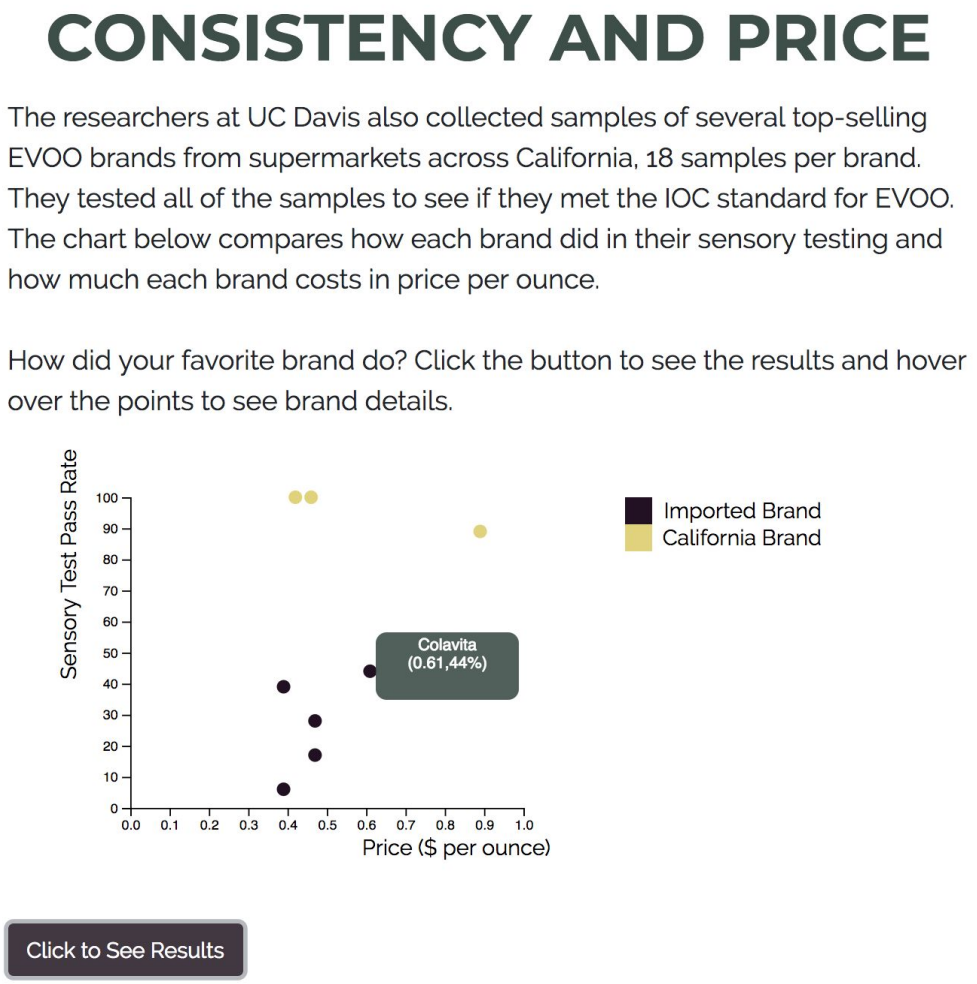
The UC Davis Olive Center conducted chemical and sensory tests on popular EVOO brands across California to see if they met standards for EVOO. They concluded 69 percent of imported olive oil samples and 10 percent of California olive oil samples labeled as extra virgin olive oil

failed to meet the IOC/USDA sensory (organoleptic) standards for extra virgin olive oil. We utilized Tableau to visualize the test results.

We chose to use a lollipop chart along with a map to help viewers explore brand, country of origin, and quality in one visualization. We used lollipop charts to allow for easy comparison of chemical test/fail rates between brands, and yellow and green olives to contrast EVOO that passed sensory testing for extra virginity with EVOO that did not. Lastly, users can use the filtering tool on the side to filter by country of production, which will give them an isolated view of the brands that import EVOO from that specific country.



We also wanted to show the price per ounce for top selling EVOO brands and the sensory testing success rates. This was shown using a scatter plot built with D3. The color differentiation allows the user to easily tell what brands were California brands versus imported brands. If they hover over the points, they will be able to see which brand the point belongs to. Lastly, we animated the points and allowed the users to click on the button to view results in order to make this visual more interactive.



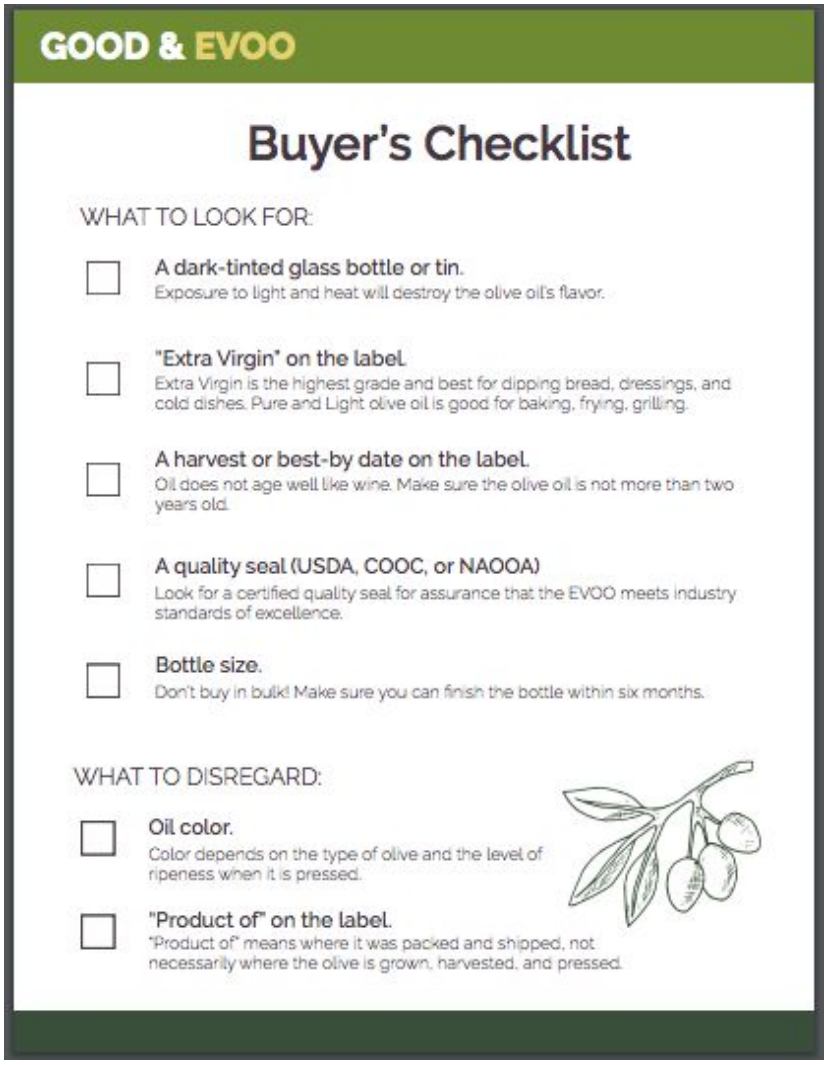
Recommendation

We provided a recommendation section to reinforce the results from the graphs and give the user a quick take-away, which is that although the US produces a very small percentage of the world's olive oil, the domestically produced EVOO is generally cheaper and just as high-quality. We chose to devote an entire section to this because we felt it was important to provide users a concise take-home point from all the data we presented, and we didn't want it to get buried in the text next to a visualization, where many users might skim over it.

Buyer's Guide

We end with a buyer's guide to help bring the message of the visualization home and inform the average consumer how to purchase high-quality EVOO. The buyer's guide section shows specific things the users can look for when they want to purchase high quality EVOO. The user can hover over each section to see more detailed information regarding each suggestion.

Lastly, the user can download a pdf cheat sheet that summarizes these tips so that they can quickly reference it the next time they go to the market.



GOOD & EVOO

Buyer's Checklist

WHAT TO LOOK FOR:

- ☐ **A dark-tinted glass bottle or tin.**
  Exposure to light and heat will destroy the olive oil's flavor.
- ☐ **"Extra Virgin" on the label.**
  Extra Virgin is the highest grade and best for dipping bread, dressings, and cold dishes. Pure and Light olive oil is good for baking, frying, grilling.
- ☐ **A harvest or best-by date on the label.**
  Oil does not age well like wine. Make sure the olive oil is not more than two years old.
- ☐ **A quality seal (USDA, COOC, or NAOOA)**
  Look for a certified quality seal for assurance that the EVOO meets industry standards of excellence.
- ☐ **Bottle size.**
  Don't buy in bulk! Make sure you can finish the bottle within six months.

WHAT TO DISREGARD:

- ☐ **Oil color.**
  Color depends on the type of olive and the level of ripeness when it is pressed.
- ☐ **"Product of" on the label.**
  "Product of" means where it was packed and shipped, not necessarily where the olive is grown, harvested, and pressed.

Data

What data were used to accomplish the goals.

We used data from the following sources:

1. Tom Mueller, *Extra Virginity: The Sublime and Scandalous World of Olive Oil.* Norton, New York (2011).
    a. The book provided a lot of expert insight into olive oil, but did not have much raw data. We mainly used this for establishing definitions and production methods, and getting interesting tidbits from industry experts.
2. US International Trade Commision Publication 4419, “Olive Oil: Conditions of Competition between U.S. and Major Foreign Supplier Industries”

    a. This report was the result of USITC's investigation into the olive oil market and the competition between foreign and domestic suppliers of olive oil. It is 284 pages long and very information-rich. This report provided us good background information on olive oil definitions, production processes, standards and enforcement, general consumer attitudes, and the industries in both America and foreign countries.
3. Various UC Davis studies on EVOO - These studies tested various brands of olive oils against chemical and sensory standards, and provided the data from their results. This was also very crucial for our visualization.
    a. Evaluation of Extra-Virgin Olive Oil Sold in California. Frankel, E. N.; Mailer, R. J.; Wang, S. C.; Shoemaker, C. F.; Guinard, J.-X.; Flynn, J. D.; Sturzenberger, N. D. 2011 http://olivecenter.ucdavis.edu/media/files/report041211finalreduced.pdf
    b. Survey: Consumer Attitudes on Olive Oil. Selina Wang, Ben Moscatello and Dan Flynn, 2013 http://olivecenter.ucdavis.edu/media/files/surveyfinal052913reduced.pdf
    c. Tests Indicate that Imported "Extra Virgin" Olive Oil Often Fails International and USDA Standards Frankel, E. N.; Mailer, R. J.; Shoemaker, C. F.; Wang, S. C.; Flynn, J. D. 2010 http://olivecenter.ucdavis.edu/media/files/oliveoilfinal071410updated.pdf
4. Olive Oil Times, a website about olive oil that collects and comments on information from across the olive oil world. Well maintained and organized, this was a useful place for finding additional resources as well.
    a. "Extra Virgin Olive Oil." https://www.oliveoiltimes.com/extra-virgin-olive-oil
    b. "Understanding the New USDA Olive Oil Standards." https://www.oliveoiltimes.com/olive-oil-basics/olive-oil-grades/understanding-usda-olive-oil-standards/6320
5. California Olive Oil Council, https://www.cooc.com. Buying tips and more information about their quality seal program.
6. North American Olive Oil Association, http://www.aboutoliveoil.org/qualityseal.html. Mainly used to get information about their quality seal program.
7. Various commercial websites
    a. McEvoy Ranch, https://www.mcevoyranch.com/about-olive-oil
    b. Real Simple, https://www.realsimple.com/food-recipes/shopping-storing/more-shopping-storing/olive-oil-buying-checklist

Tools

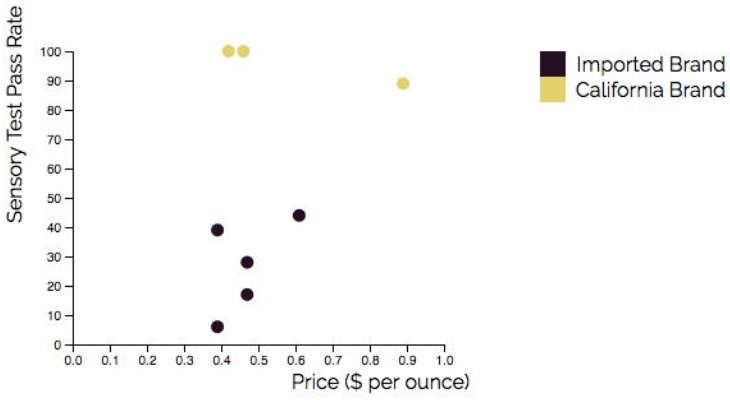
Development

Bootstrap

We utilized Bootstrap as a starting template and customized it according to our needs.

D3 (Data Driven Documents)

We used D3 to build a scatter plot to visualize the price per ounce for EVOO and the sensory test pass rate. This was a simple way to clearly highlight the differences between imported brands and California brands.

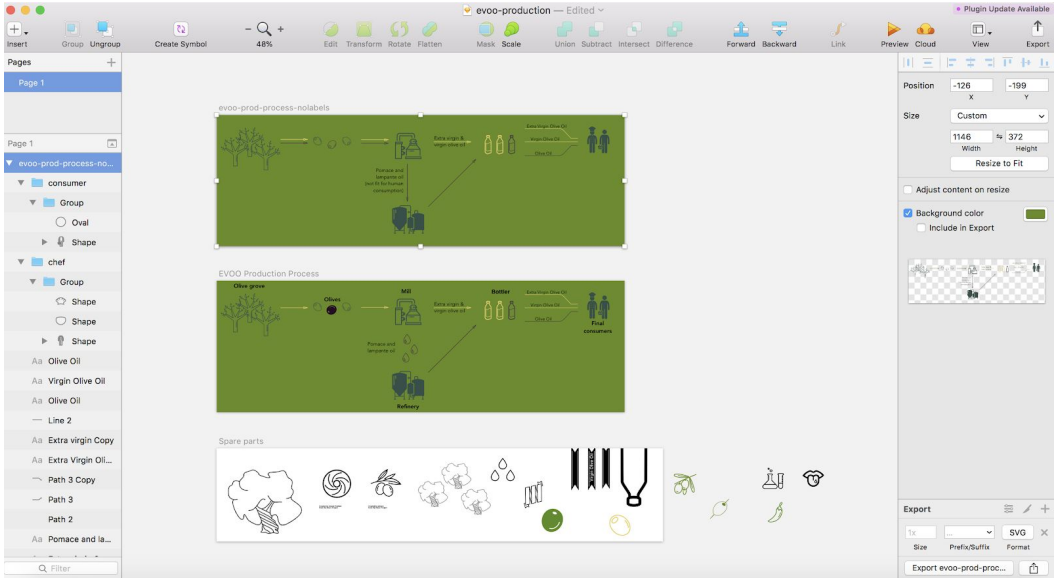


HTML / CSS / Javascript

We used HTML/CSS to build the structure and styling for our website and Javascript for animations, buttons, and popover details.

Sketch

We used Sketch to edit icons and create the production process flowchart.



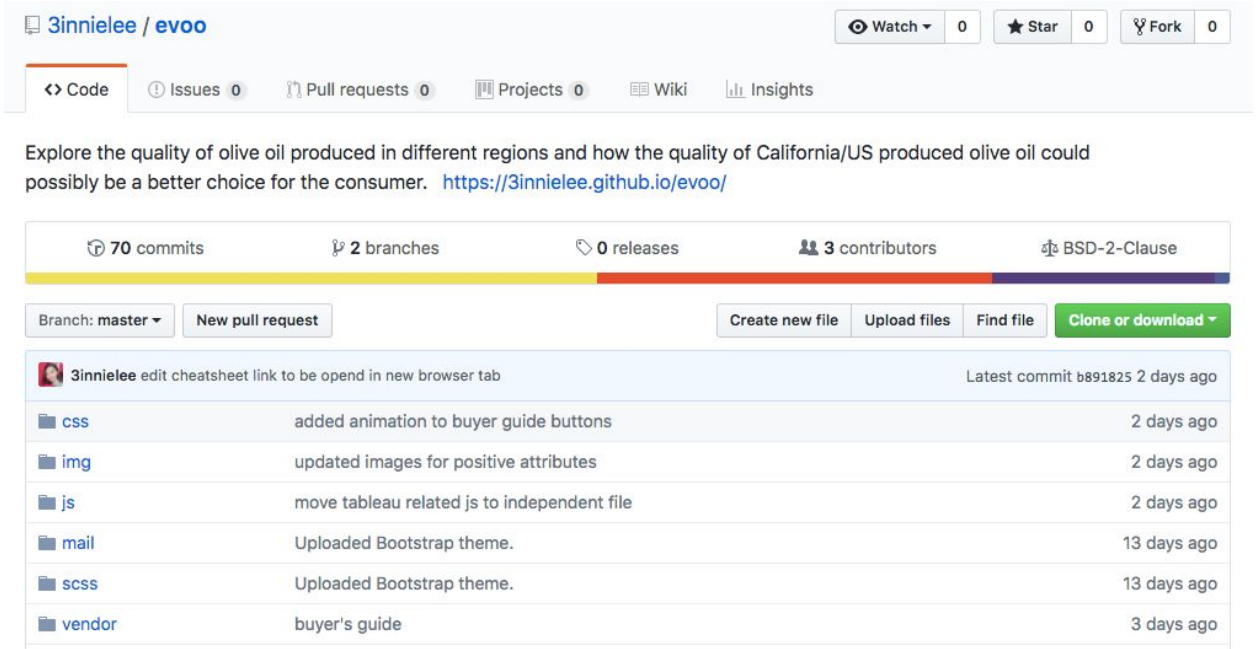
Tableau

We used Tableau to build our main graph which is a comparison of top selling imported and domestically produced EVOO brands. Tableau allowed us to easily build relationships between different data sets. For example, when a particular production region is filtered, we will be able to see the data for chemical tests to only reflect the brands from that region. We were also able to customize the colors in the graph to match our color scheme and update the icons to olives.

Collaboration

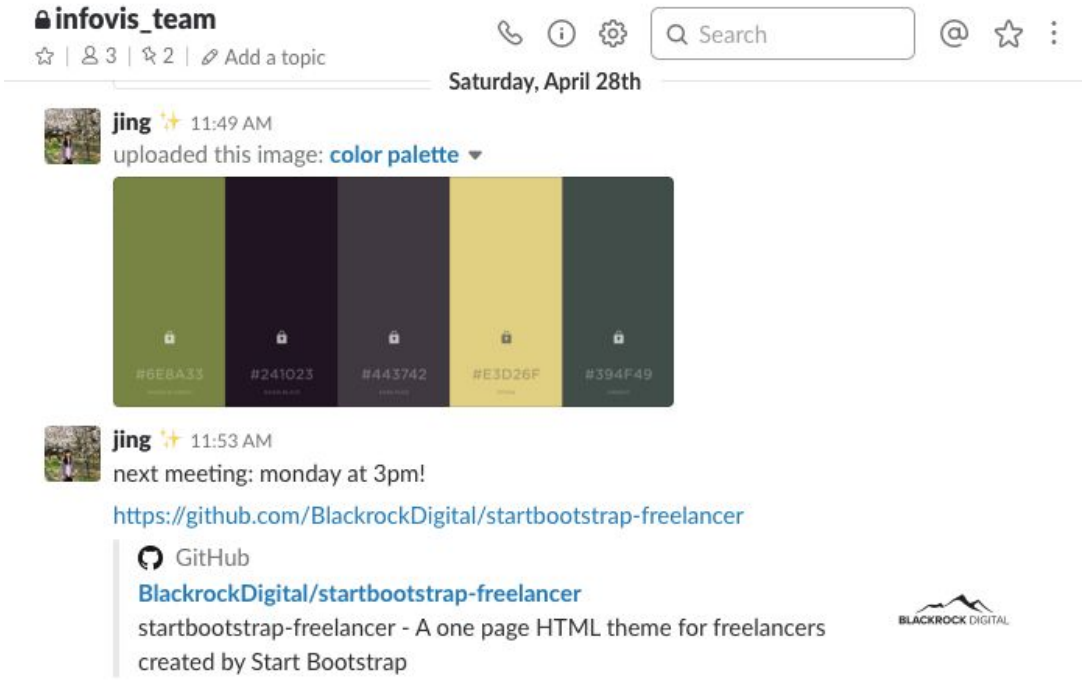
GitHub

We utilized GitHub to store our code and develop asynchronously.



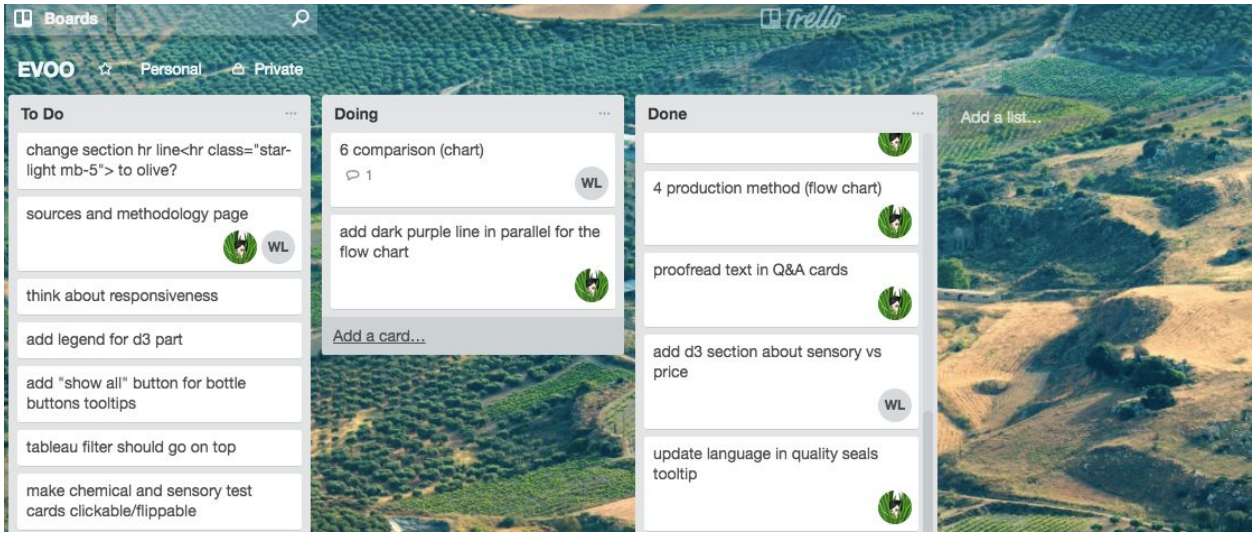
Slack

We created our own slack channel for communication purposes.



Trello

We utilized Trello to keep track of tasks and progress.



Testing Results

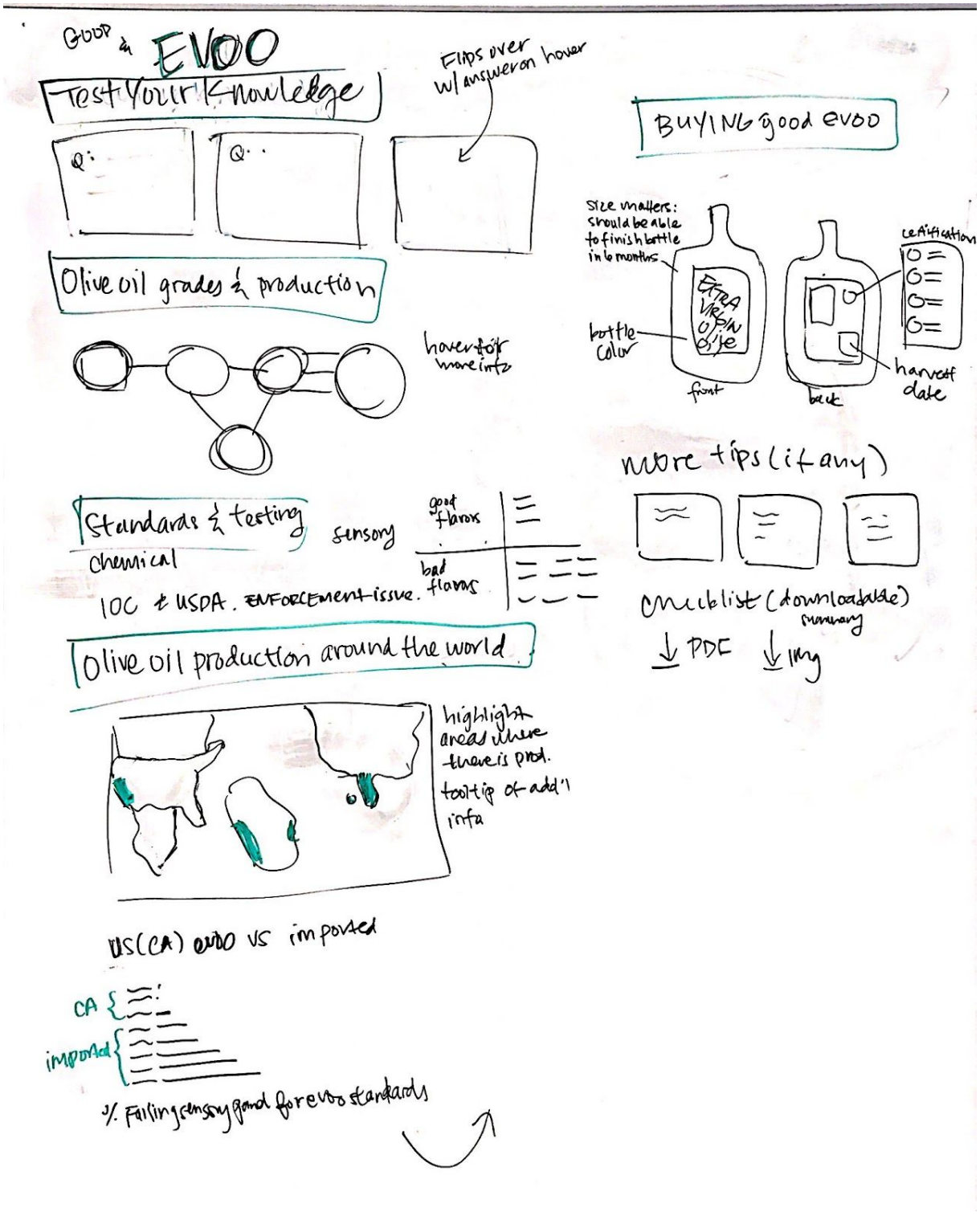
We iterated the design of our website through three rounds of feedback provided by users- whiteboard prototype, project showcase, usability testing. The expected result for the data visualization would be for the users to have a better understanding of some of the practices in the olive oil industry and to make them aware of a potentially better olive oil producing region. This will hopefully allow them to make more informed purchasing decisions.

Whiteboard Prototype

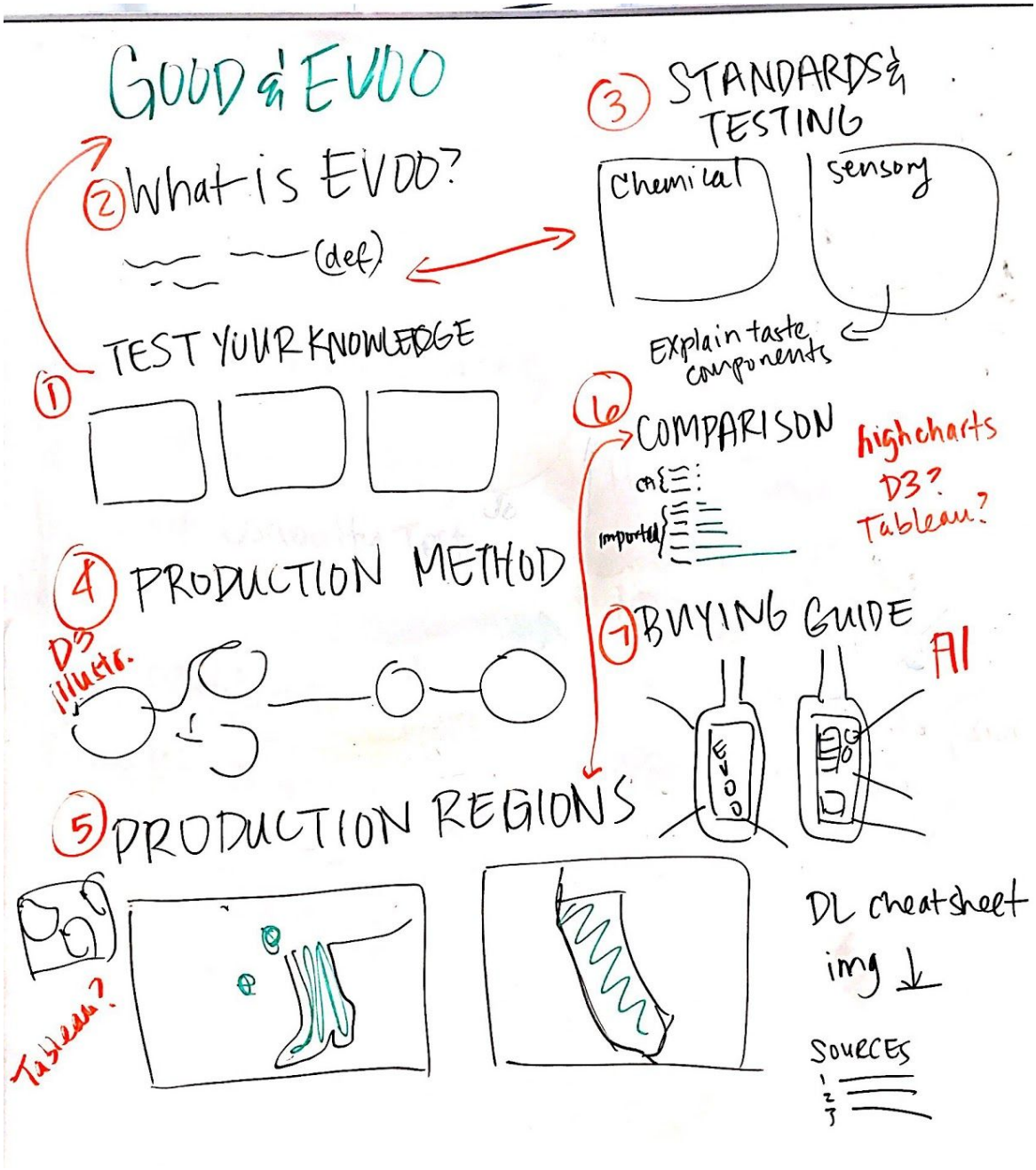
We received feedback from Professor Marti Hearst on our whiteboard prototype prior to development to evaluate the overall structure and flow of the website.

Feedback Received	**Changes Made**
It is not clear to the user what is the exact definition of EVOO	Included a clear definition of EVOO early on in the website
Sections for Testing/Standards and Production/Process seem to jump back and forth; this is confusing to the user	Grouped similar sections together
It would be nice to link different parts of the visualization together	Linked global production data with chemical testing process to more clearly show the data relationship
Make the EVOO production process more interactive and enticing to the user	Used icons and hover buttons to illustrate the production process

Original Website Structure



Iteration of Website Structure after Feedback



Feedback from Project Showcase

During the project showcase, we either walked the user through the website or allowed them to navigate through the website on their own. Overall, users mentioned that they liked the flow of the website, the colors used, the iconography, and the level of information provided about EVOO. The quiz flip cards in the beginning helped trigger the user's attention on the subject.

Feedback Received	Changes Made
The visual hierarchy for the flip card answers is not obvious	Switched the bold and regular text on the back of the flip cards
It would be easier to differentiate between the positive/negative attribute groups if they were different colors	Changed the icon color for positive attributes to be green and negative attributes to be yellow
The arrows on the production process flow is confusing; it is hard to tell that the oil goes through two different processes	Used different colored arrows to show the distinctions between the two processes
Missing legend on the D3 graph	Added a legend
On Tableau bar chart, showing the chemistry testing fail rate was counterintuitive for some users (longer lines = bad)	Inverted data to show chemistry testing pass rate instead

Feedback from Usability Testing

After the project showcase, we conducted usability testing with 3 users who purchase olive oil on a regular basis. The users were asked to explore the website and provide feedback on what they thought of the website.

Area	Feedback Received
Colors	Good use of colors; reminds them of olives and olive oil
Website Structure	Flow of website is clear
Test Cards	Fun interaction for user; could probably utilize flip on hover rather than click to show the answers
Definition	Clear and informative What is IOC? Make sure to define acronyms
Standards and Testing	Could possibly have less text; good use of icons to describe the attributes
Production Process	Good details about the production process; the different colors are slightly confusing
Comparison of Brands - Tableau	The olives look draggable, clickable

Comparison of Brands - D3	The graph could be larger and more aligned
Buyer's Guide	Very informative; good animations

Overall, the users acknowledged that they were much more informed about EVOO standards/quality and regions of production after exploring our visualizations. They appreciated the short quiz in the beginning of the website and believed that it helped trigger their interest in the topic.

Links

https://3innielee.github.io/evoo/

Team Member Contribution

Task	**Name**	**Proportions**
Gathering data and content	Amy	33%
Gathering data and content	Winnie	33%
Gathering data and content	Jing	33%
Setting up Bootstrap website template and Github repo	Winnie	100%
Defining fonts and color palette	Jing	100%
Section: Test Your Knowledge	Amy	100%
Section: Definition	Jing	100%
Section: Standards and Testing	Jing	100%
Section: Attributes	Amy	100%
Section: Production Process	Jing	100%
Section: Comparison Tableau	Winnie	100%
Section: Comparison D3	Winnie	100%

Section: Recommendations	Jing	100%
Section: Buyer’s Guide	Amy	100%
Section: Cheat Sheet	Amy	100%
Sources page	Amy	90%
Sources page	Jing	10%
Animations	Jing	50%
Animations	Amy	50%
User testing	Amy	66%
User testing	Jing	33%