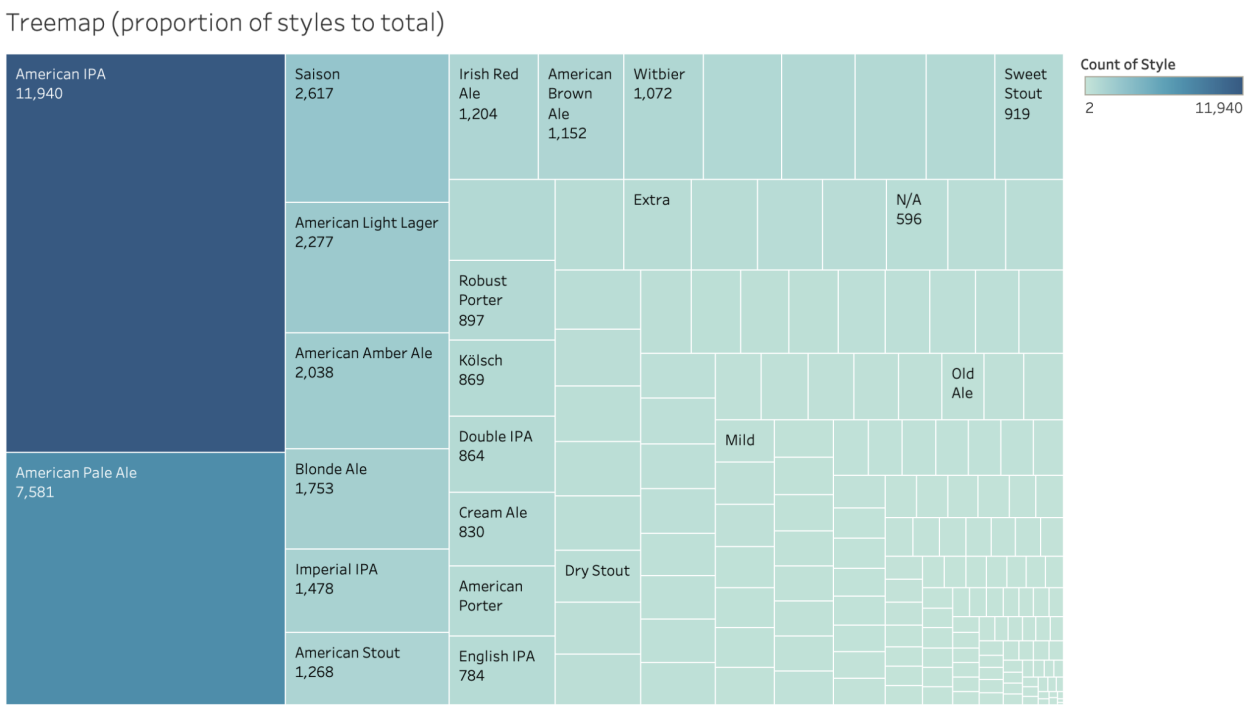
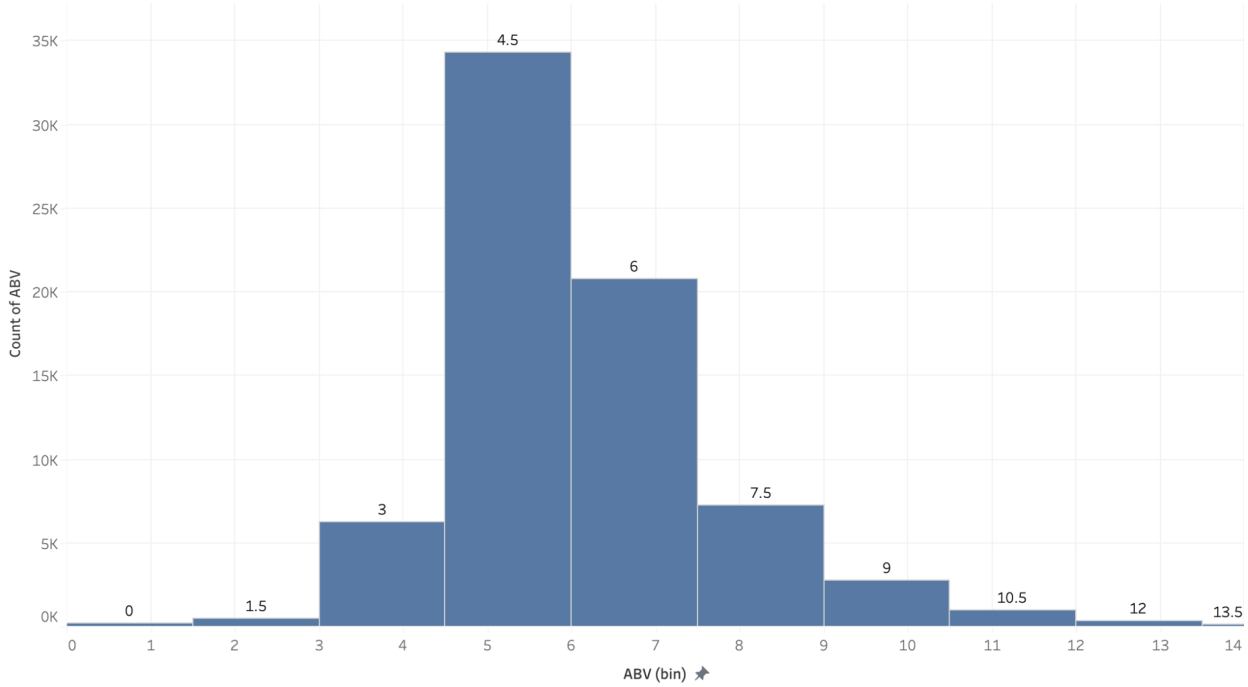
This is a Tableau and R analysis of recipes from brewer's friend using a dataset found on kaggle:
https://www.kaggle.com/jtrofe/beer-recipes

Tableau



ABV histogram

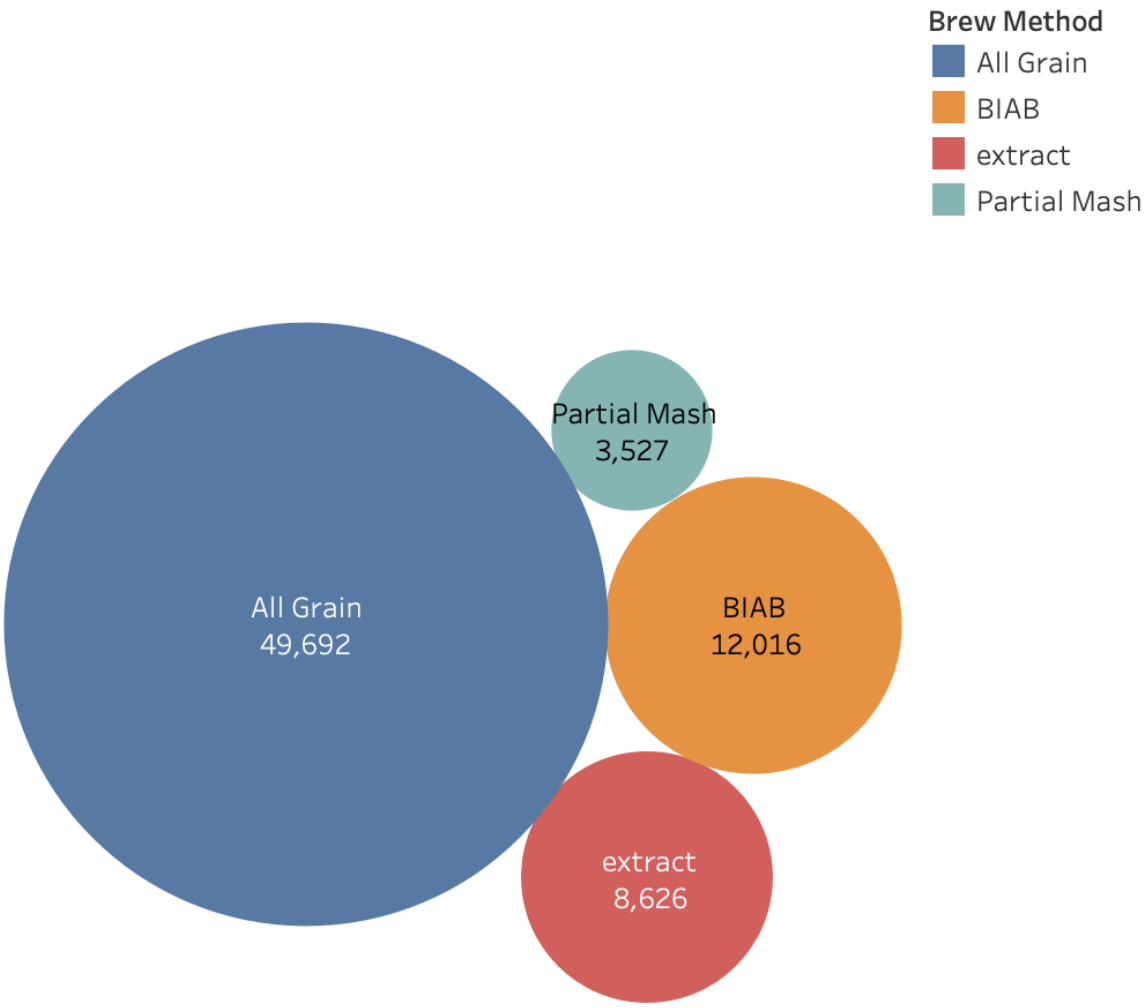


The trend of count of ABV for ABV (bin). The marks are labeled by ABV (bin).

Color vs IBU by Style

Average of IBU vs. average of Color. Color shows details about Style.

Brew Method

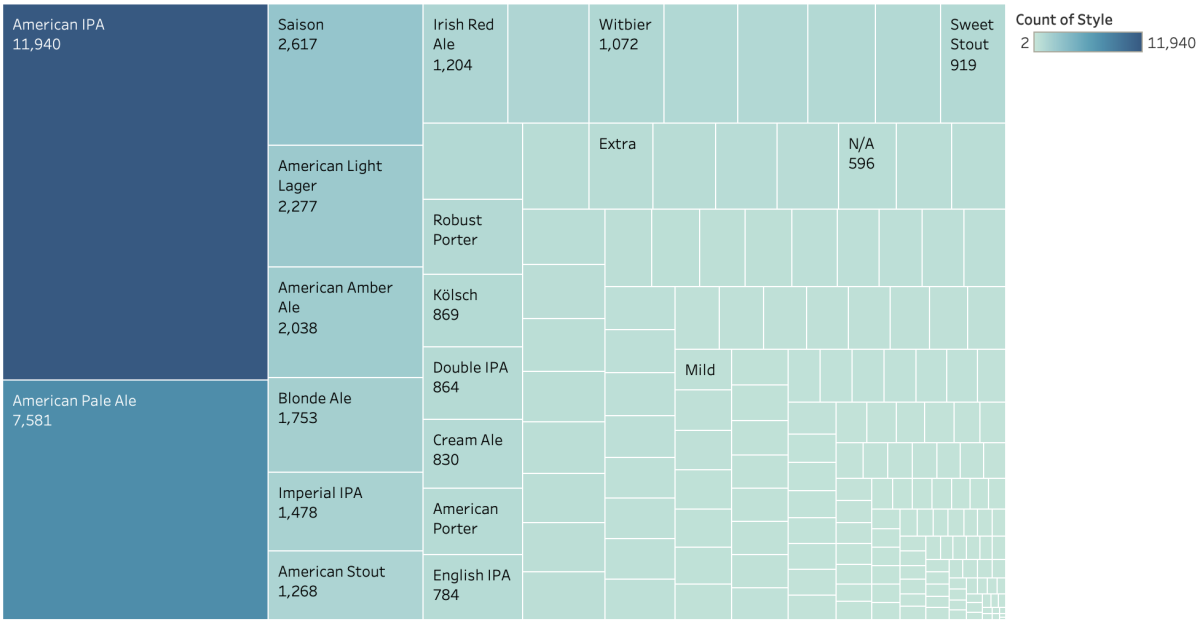


Brew Method and count of Brew Method. Color shows details about Brew Method. Size shows count of Brew Method. The marks are labeled by Brew Method and count of Brew Method.

Story

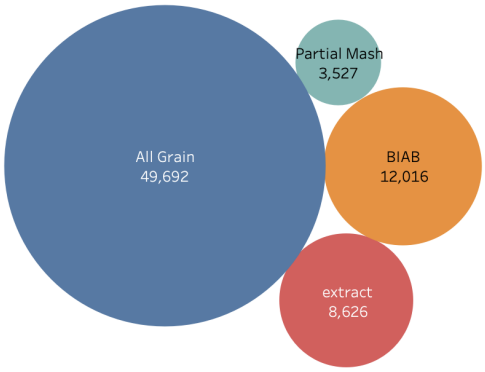
What is a typical beer in the Brewer's Friend data set?

Most common/popular styles | Most common brewing method | Typical color and bitterness by style | ABV across all styles | Conclusion



American IPAs and American Pale Ales account for nearly 20,000 of the 73,861 recipes in the dataset.

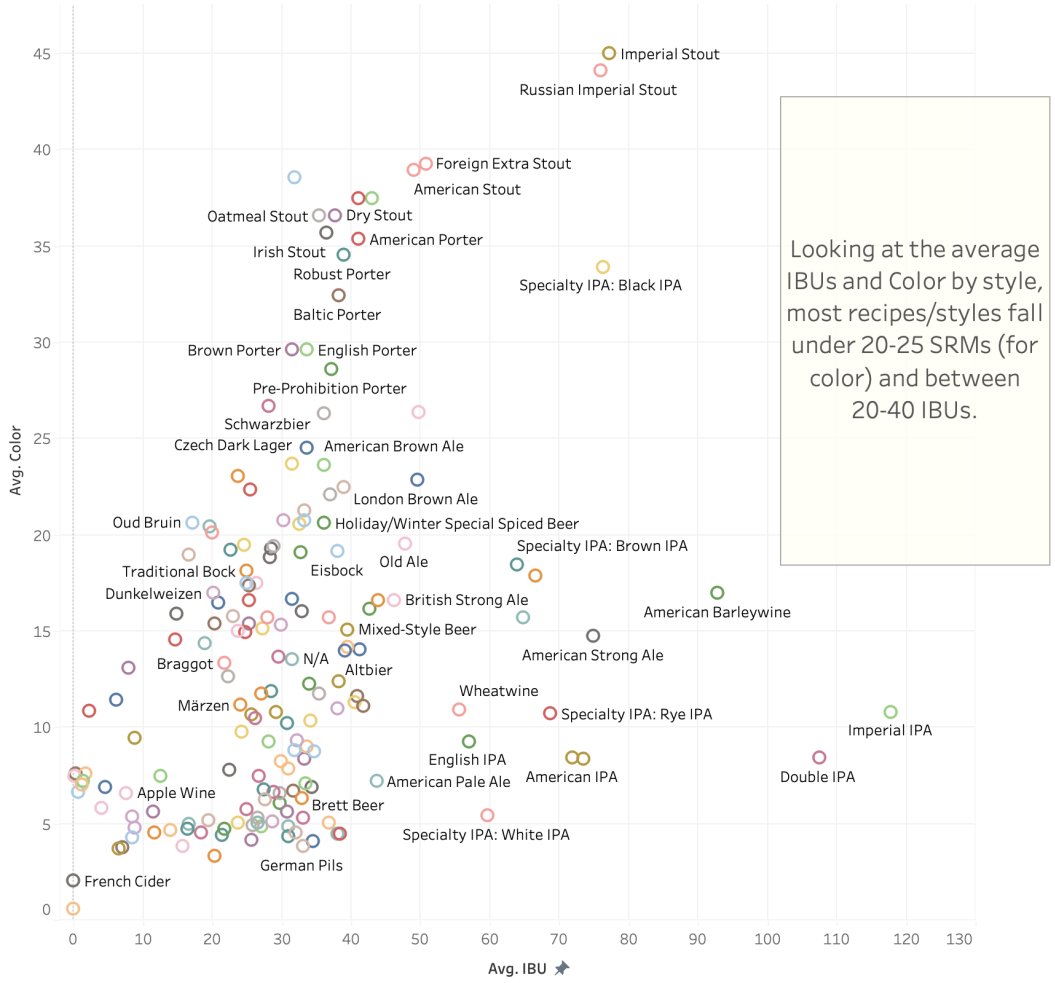
What is a typical beer in the Brewer's Friend data set?



The overwhelming majority of recipes in the dataset are all grain, followed by BIAB (brew in a bag) and extract recipes. Partial mash recipes account for relatively few recipes in the dataset.

What is a typical beer in the Brewer's Friend data set?

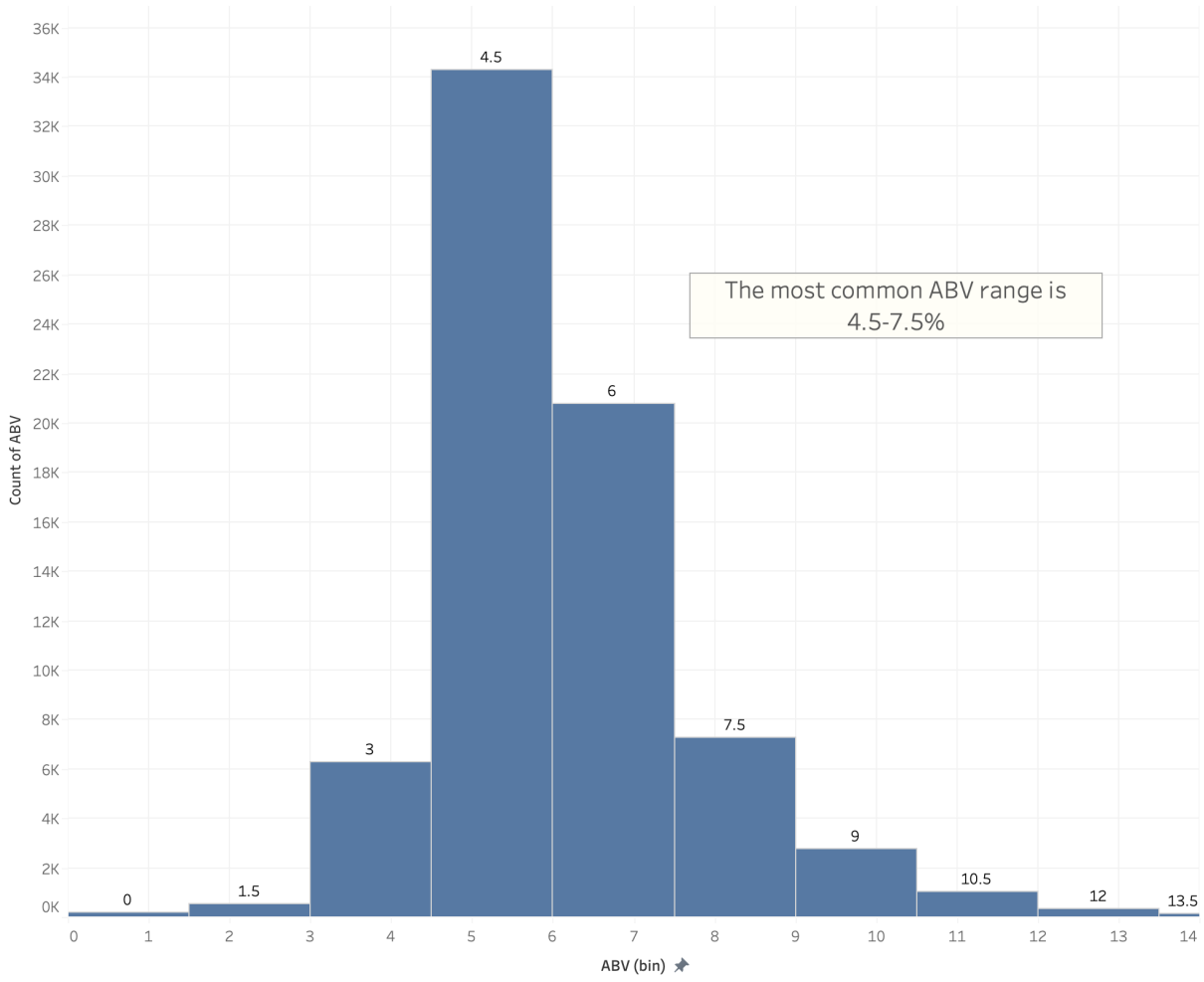
Most common/popular styles | Most common brewing method | **Typical color and bitterness by style** | ABV across all styles | Conclusion



Looking at the average IBUs and Color by style, most recipes/styles fall under 20-25 SRMs (for color) and between 20-40 IBUs.

What is a typical beer in the Brewer's Friend data set?

Most common/popular styles | Most common brewing method | Typical color and bitterness by style | **ABV across all styles** | Conclusion

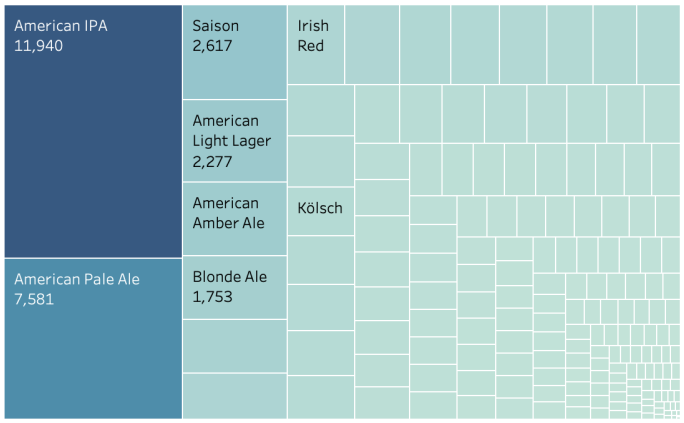


What is a typical beer in the Brewer's Friend data set?

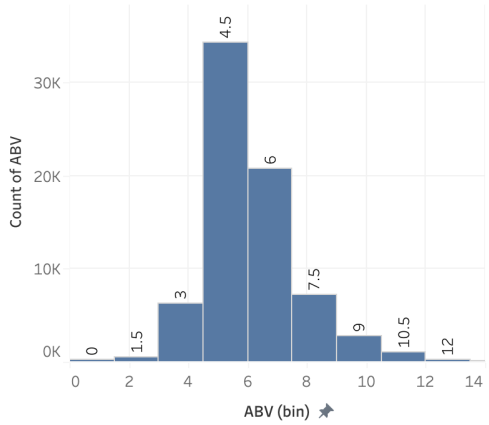
From the visualizations, it can be concluded that the most popular styles are American IPA and American Pale Ale. A typical recipe is all grain and is created to achieve an ABV of 4.5-7.5% and IBUs of about 30-40 with a color of 20 SRMs and below.

Dashboard

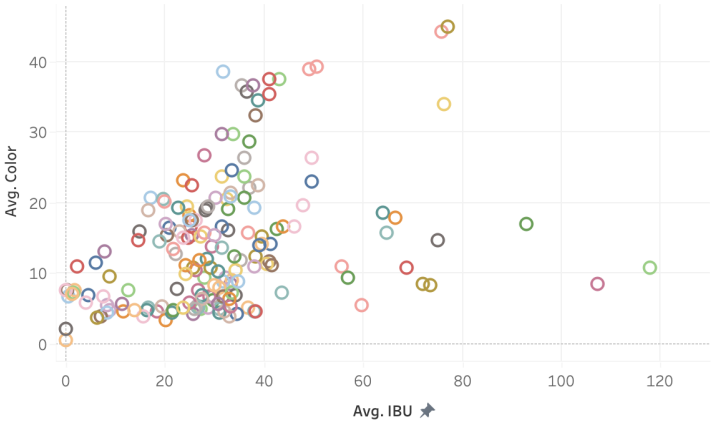
Treemap (proportion of styles to total)



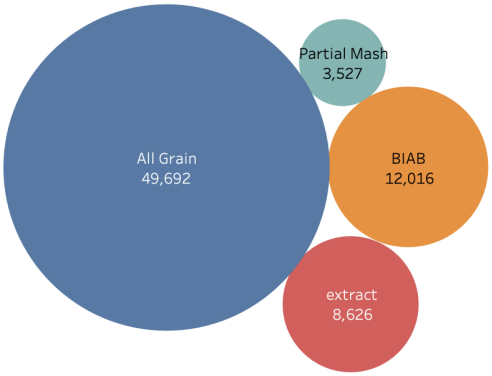
ABV histogram



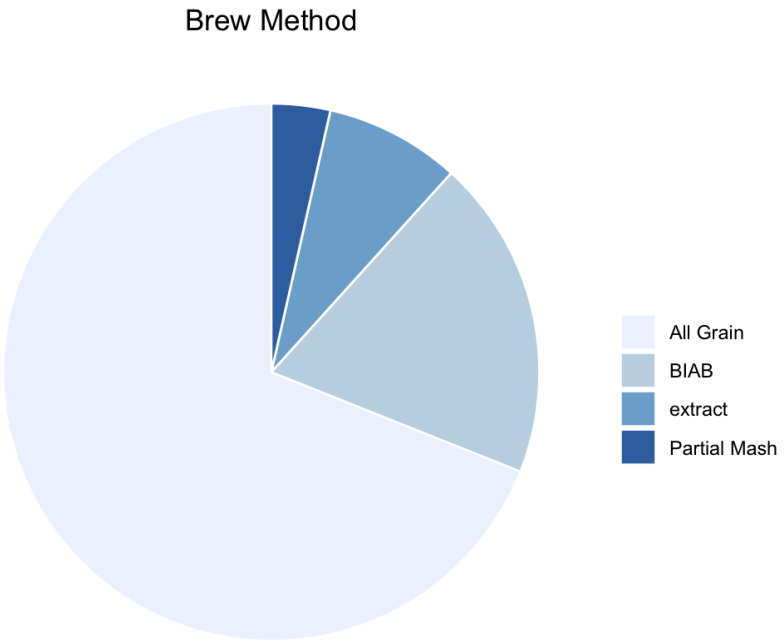
Color vs IBU by Style

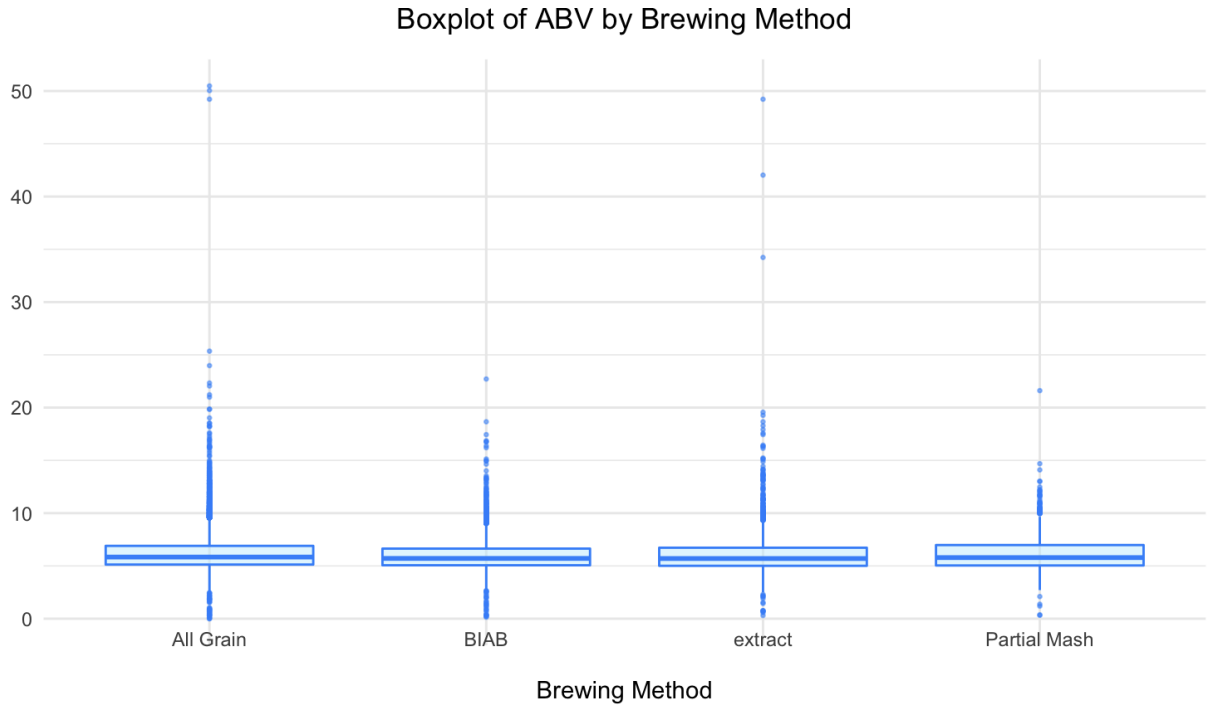


Brew Method



R Visualizations

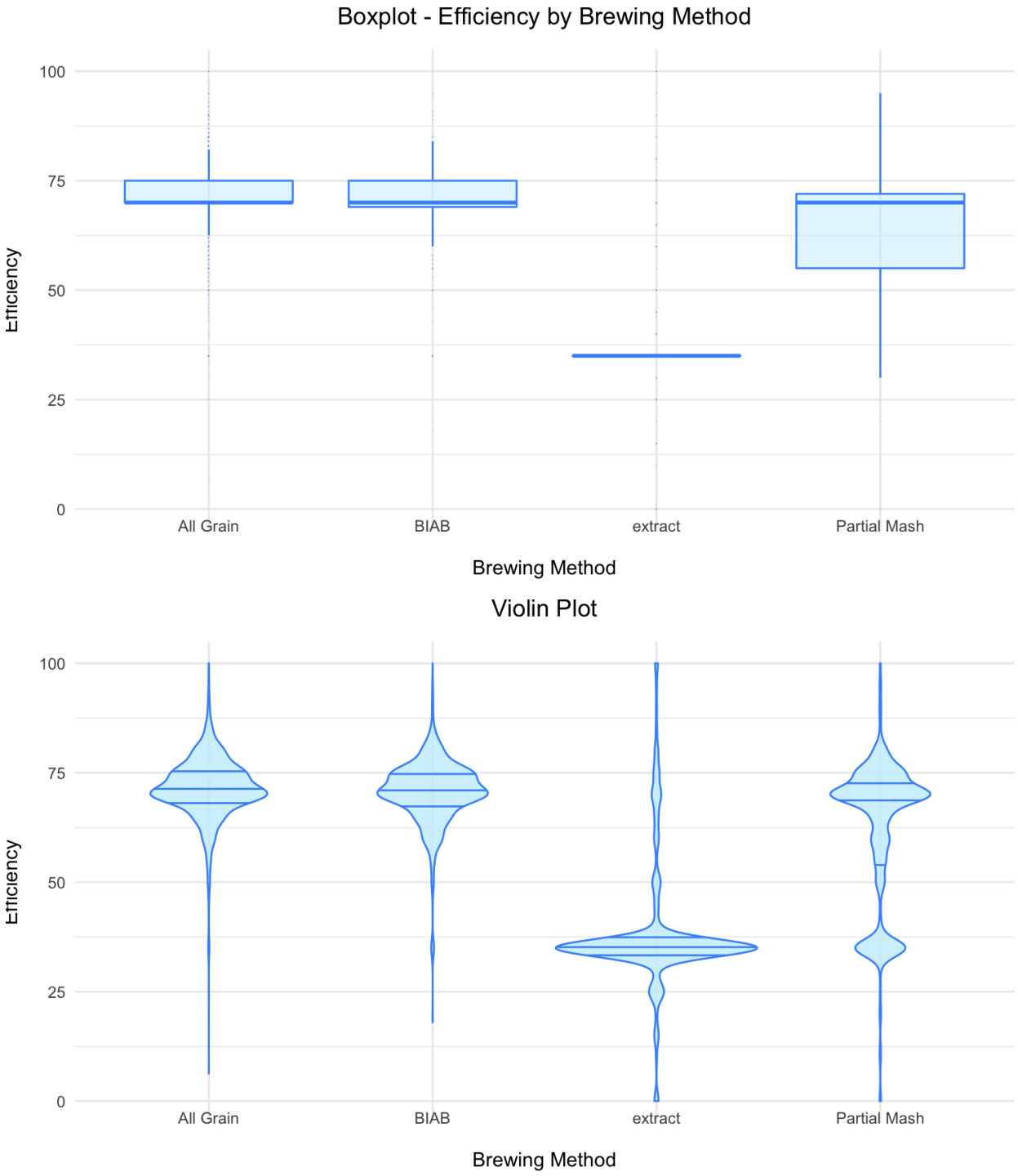




The pie chart of brewing methods is an alternative to the packed bubble chart created in Tableau. The pie chart better shows the proportion of recipes for each method - for instance, here it is seen that all grain comprises close to ⅔ of all recipes, with the remaining third being comprised of brew in a bag, extract, and lastly, partial mash. Brew methods are then used to analyze ABV using a boxplot to see if the brewing method has any impact on ABV. There does

not appear to be a very large difference among the styles, however, all grain, extract, and partial mash do seem to achieve higher ABVs, which is an expected outcome due to the presence of more fermentable sugars per volume of grain using these methods.

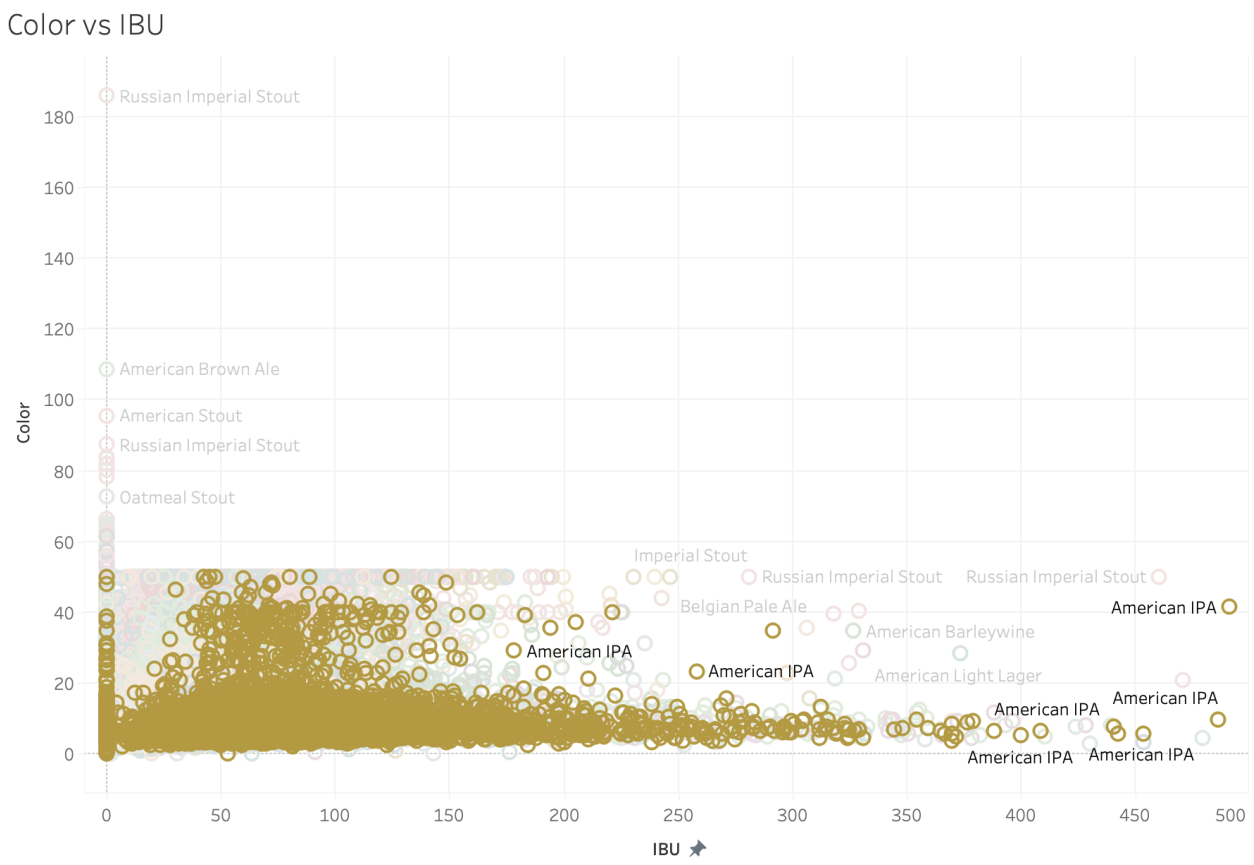
Distorted and non-distorted image



Both of these visuals show the efficiency (the measure of conversion of fermentable sugars) of the different brewing methods. However, this traditional boxplot provides limited information - there are no error bars and no points indicating the distribution of data points. All grain and BIAB look identical, and extract appears to have only one value or an exceedingly tight range of values. A violin plot was used to correct these issues and provide the audience with an

indication as to the density at each point. Thus, it is seen that all grain has a larger range of outliers than BIAB (which could indicate to the audience the existence of inconsistency or variation within the category - accurately), the presence of data points ranging from 0-100 for extract, and a relative peak in density at ~30% for partial mash brews.

Gestalt Principle



IBU vs. Color. Color shows details about Style. The marks are labeled by Style.

This visual uses the Gestalt Principle of Figure and Ground. A scatter plot of Color vs IBU was created using all recipes and color-coded by style. In this case, the most popular style, American Ipa, was selected to be in the foreground of the plot for better analysis. The visual shows that, despite the existence of prescribed guidelines for each style, user-created recipes show a large variance in taste that fall outside these guidelines (for instance, darker color or lower bitterness than the style calls for). This variance is only easily seen by bringing this style to the foreground.

R Code

```
library(tidyverse)
library(readr)

options(max.print=2000)
beer=read_csv("recipeData.csv")
as_tibble(beer)
head(beer)

beer2<-na.omit(beer)

#Pie chart
brewmethodpie = ggplot(beer2, aes(x = factor(1), fill = BrewMethod)) +
  geom_bar(color = "white")

brewmethodpie + coord_polar(theta = "y") +
  labs(title = "Brew Method") +
  scale_fill_brewer(palette = 10,"YIGnBu") +
  scale_fill_brewer("") +
  theme_void() +
  theme(plot.title = element_text(hjust = 0.5))

#ABV boxplot
ggplot(beer2, aes(x = BrewMethod, y = ABV)) +
  geom_boxplot(alpha = .5, outlier.size = .5, fill="lightblue1", color="dodgerblue") +
  labs(title = "Boxplot of ABV by Brewing Method", x = "Brewing Method", y = "ABV") +
  theme_minimal() +
  theme(plot.title = element_text(hjust = 0.5, vjust = 3), axis.text.x = element_text(vjust = 7),
        axis.title.y = element_text(vjust=7))

#bad box plot
ggplot(beer2, aes(x = BrewMethod, y = Efficiency)) +
  geom_boxplot(alpha = .5, outlier.size = 0, fill="lightblue1",
color="dodgerblue",outlier.shape=100) +
  labs(title = "Boxplot - Efficiency by Brewing Method", x = "Brewing Method", y = "Efficiency") +
  theme_minimal() +
  theme(plot.title = element_text(hjust = 0.5, vjust = 3), axis.text.x = element_text(vjust = 7),
        axis.title.y = element_text(vjust=4))

#better violin
ggplot(beer2, aes(x = BrewMethod, y = Efficiency)) +
  geom_violin(alpha = .80, fill="lightblue1", color="dodgerblue", bw = 2, draw_quantiles = c(0.25,
0.5, 0.75)) +
```

```
labs(title = "Violin Plot", x = "Brewing Method", y = "Efficiency") +
theme_minimal() +
theme(plot.title = element_text(hjust = 0.5, vjust = 3), axis.text.x = element_text(vjust = 7),
      axis.title.y = element_text(vjust=4))
```