

Craft Beer Breweries in US market

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Craft Partners

Our Brewers Collective craft partners share an unwavering devotion to the authentic origins of each brewery, the beer, and the communities they serve.



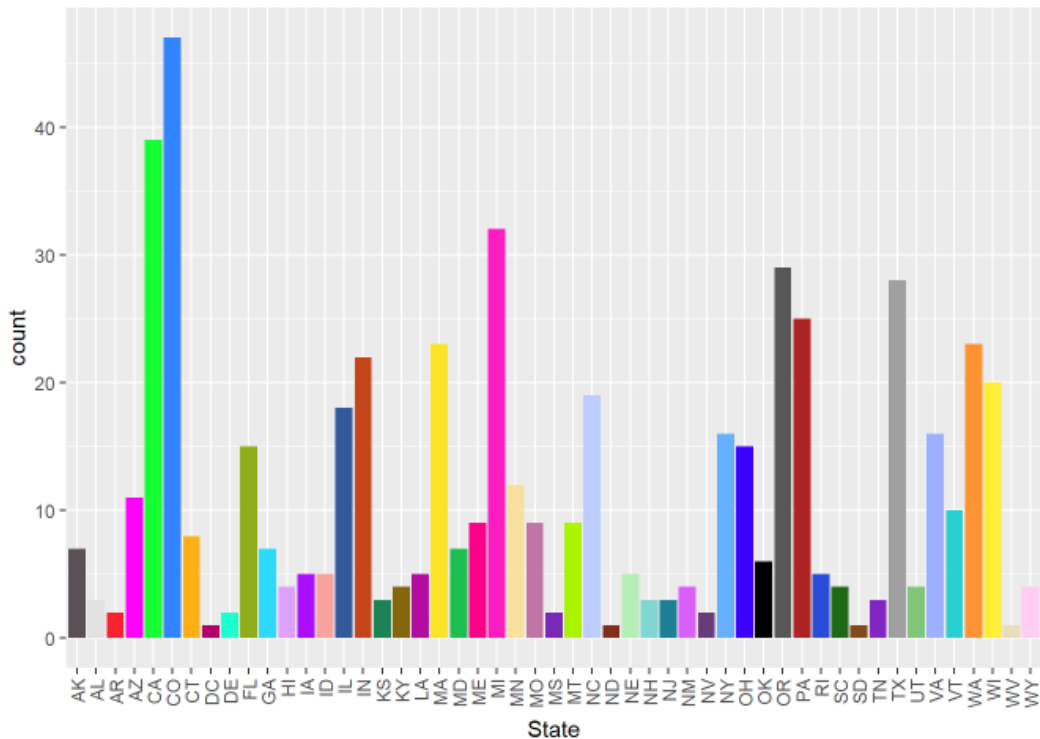
The Beers dataset contains a list of 2410 US craft beers and Breweries dataset contains 558 US breweries.

Agenda

1. Beer distribution by state
2. ABV and IBU distribution by state
3. Distribution of the ABV variable
4. Relationship between ABV and IBU variable
5. KNN model for Ale and IPA
6. Business suggestion for Budweiser

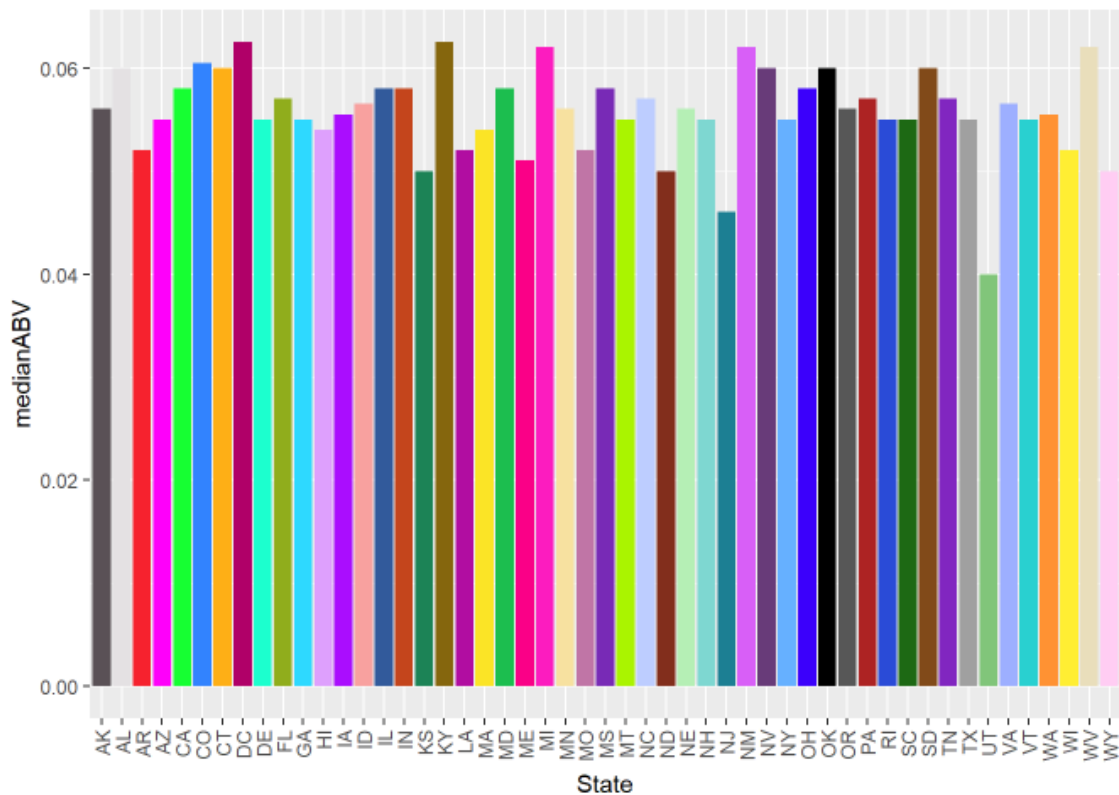
Breweries by States

Colorado has highest number of Breweries and North Dakota is lowest among 50 states and Washington DC.



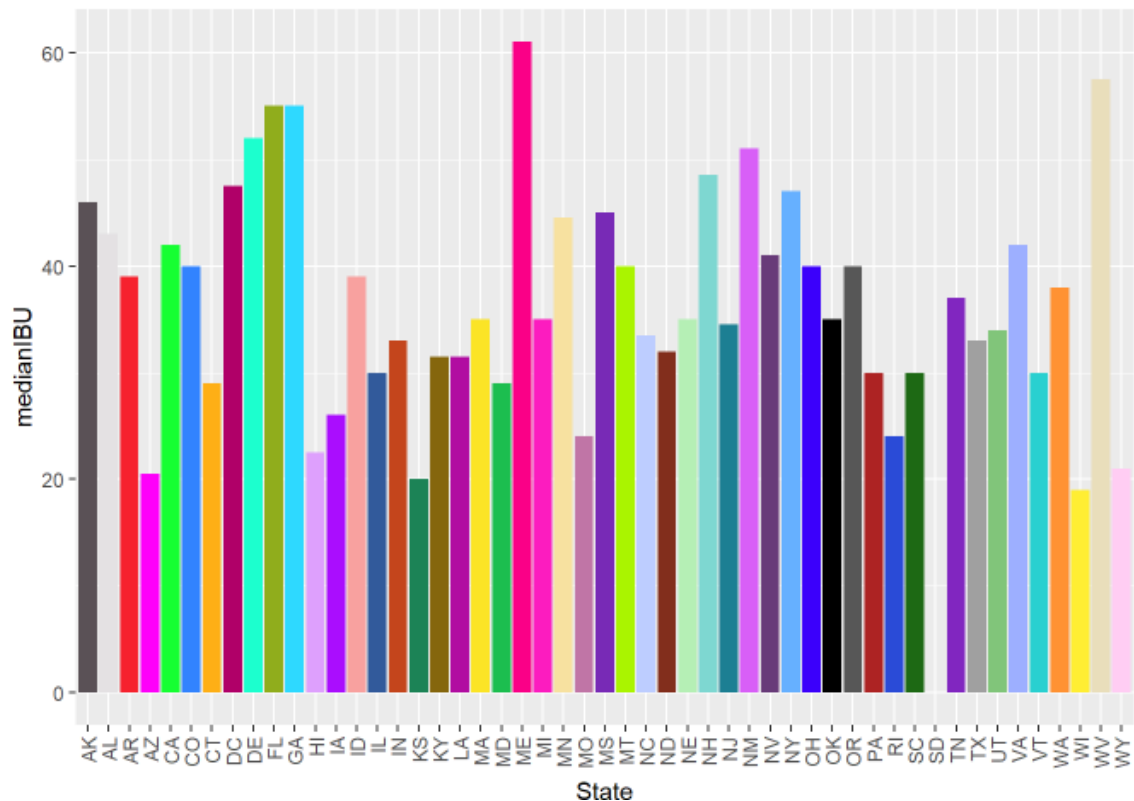
Median ABV by States

The median ABV values are from 0.04 to 0.06 over the states.



Median IBU by States

The median IBU is from 20 to 60 over the states. There is more variance for IBU.



Maximum ABV and IBU

Colorado has the maximum ABV (0.128).

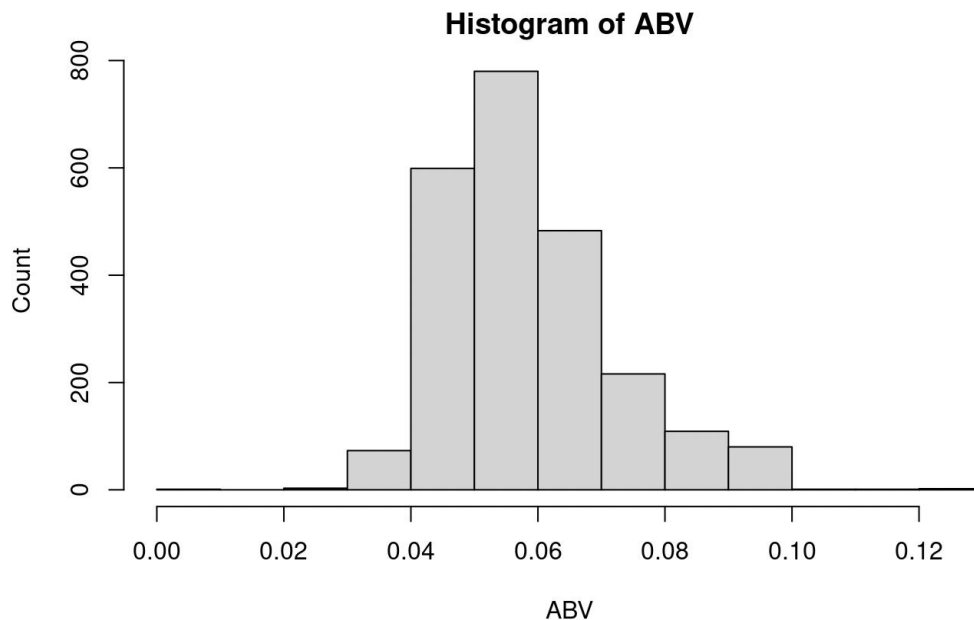
Oregon has the maximum IBU (138).

```
# A tibble: 6 × 2
  State max_alc
  <chr>   <dbl>
1 " CO"    0.128
2 " KY"    0.125
3 " IN"    0.12
4 " NY"    0.1
5 " CA"    0.099
6 " ID"    0.099
```

```
# A tibble: 6 × 2
  State max_ibu
  <chr>   <dbl>
1 " OR"   138
2 " VA"   135
3 " MA"   130
4 " OH"   126
5 " MN"   120
6 " VT"   120
```

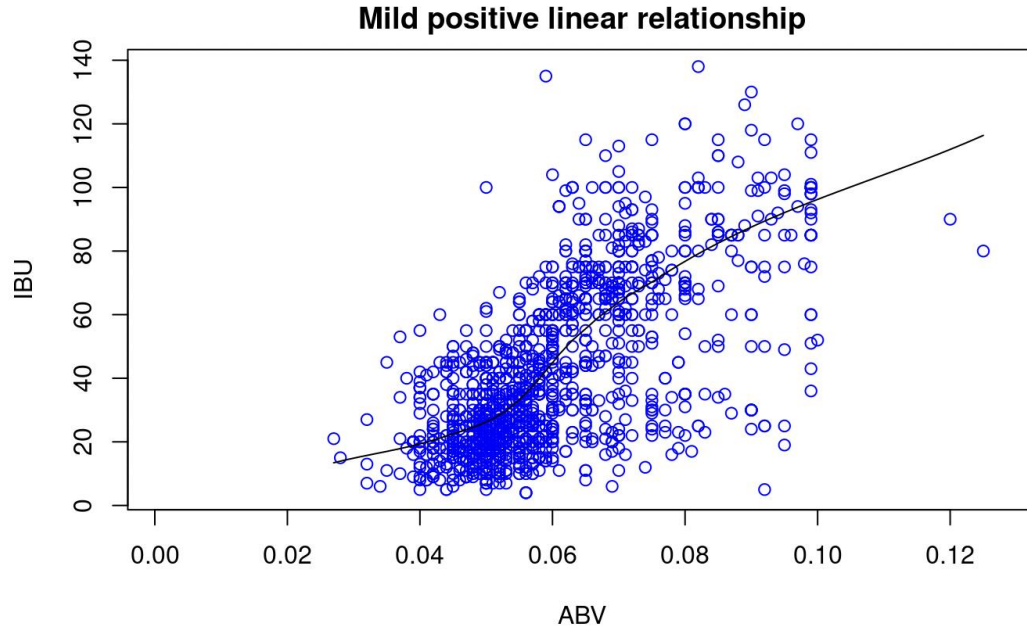
Summary Statistics

The ABV variable has a mode around .5, is right skewed, and has a range of about .11.



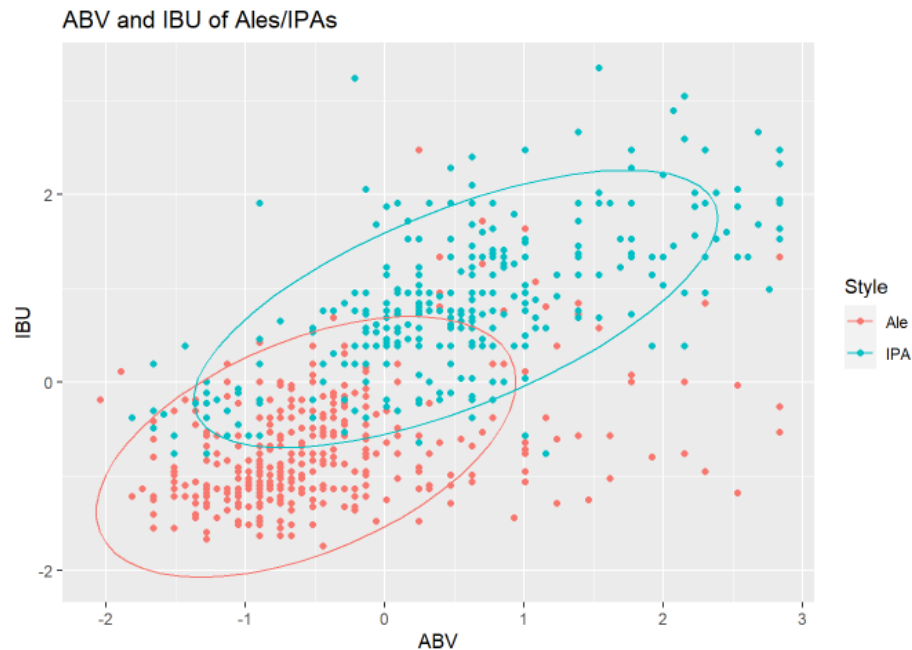
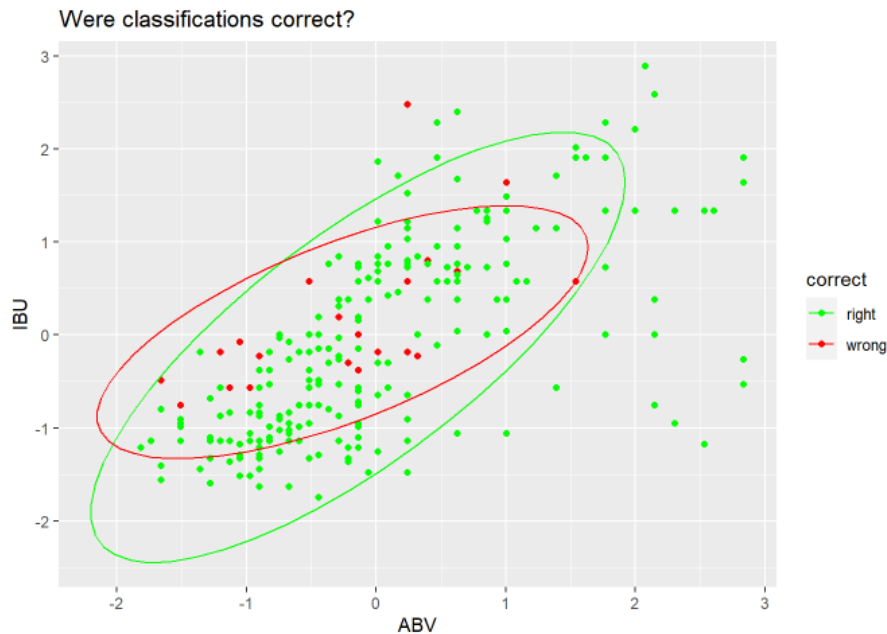
Relationship between ABV and IBU

This data shows mild positive linear relationship(3rd degree polynomial) between ABV and IBU, even though most of beer bitterness comes from hops.



Classification Model for Beer Types

1. KNN Classifier for 2 types of beers IPA and Ale. A 70/30 training/testing is applied and optimal K is 17.



What beer styles should Budweiser brew in Texas?

n = number of beers

n	Name	City	State
<int>	<chr>	<chr>	<chr>
62	Brewery Vivant	Grand Rapids	MI
38	Sun King Brewing Company	Indianapolis	IN
33	Oskar Blues Brewery	Longmont	CO

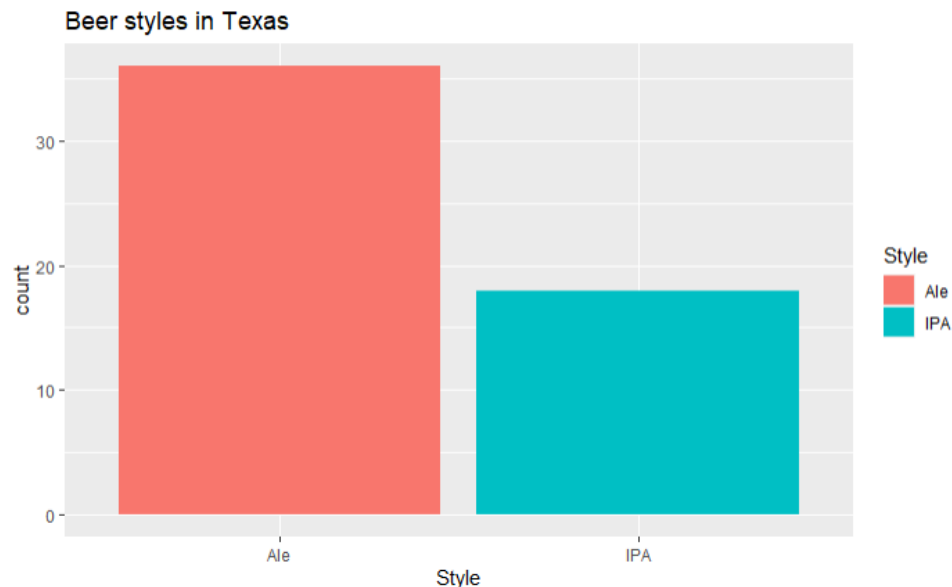
medianIBU = 54.65313

medianABV = 07107

Popularity of Beer styles in Texas

- Looking at only IPAs and Ales, it seems that Texas has more Ale breweries than IPA breweries

```
[1] Ale  
attr(,"prob")  
[1] 0.7083333  
Levels: Ale IPA
```



Summary

We have analyzed the alcohol contents(ABV) and bitterness(IBU) of craft beers in the breweries of United States.

Moreover, we introduced the classification model of beer types using ABV and IBU values and verified with beer samples in the market including Budweiser.

Additionally, we suggested a type of beer based the median ABV/IBU values of the top 3 breweries, the most popular beer types in Texas, and the fact the classification our model gives for the median values.