Modeling Problem I

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Predicting Province

```r
knitr::opts_chunk$set(echo = TRUE, message = FALSE, warning = FALSE)

library(tidyverse)
library(formatR)
library(moderndive)
library(skimr)

wine_pinot <- readRDS(gzcon(url("https://github.com/karolo89/machine_learning_assignment/r
```

```r
#adding log price column
pinot <- wine_pinot %>%
  mutate(lprice = log(price))

pinot <- pinot %>%
  mutate(id = as.factor(id))%>%
  mutate(year = as.factor(year))%>%
  select(id, province, price, lprice, points, year,description)
  #added back price (just in case), description - I think alot of great features will comi

summary(pinot)
```

```
       id            province              price              lprice     
 1      :   1   Length:8380        Min.   :   7.00   Min.   :1.946  
 2      :   1   Class :character   1st Qu.:  31.00   1st Qu.:3.434  
 3      :   1   Mode  :character   Median :  45.00   Median :3.807  
 4      :   1                      Mean   :  52.52   Mean   :3.779  
 5      :   1                      3rd Qu.:  60.00   3rd Qu.:4.094  
 6      :   1                      Max.   :2500.00   Max.   :7.824  
 (Other):8374
     points            year      description
 Min.   :80.00   2014   :2046   Length:8380
 1st Qu.:88.00   2013   :1819   Class :character
 Median :90.00   2012   :1505   Mode  :character
 Mean   :89.98   2015   : 815
 3rd Qu.:92.00   2011   : 582
 Max.   :98.00   2010   : 502
                 (Other):1111
```

Preliminary EDA, Feature Engineering Brainstorm, Initial Thoughts

1/25/23, CWH

```
pinot %>% group_by(province) %>% summarize(prov_freq = n(), percent_of_ds = round(prov_fre
```

```
# A tibble: 6 x 3
  province         prov_freq percent_of_ds
  <chr>                <int>         <dbl>
1 Burgundy              1193          0.14
2 California            3959          0.47
3 Casablanca_Valley      131          0.02
4 Marlborough            229          0.03
5 New_York               131          0.02
6 Oregon                2737          0.33
```

```
#nearly half of wines are californian, good to know...

pinot %>% filter(str_detect(description, "[Oo]ak")) %>% nrow()
```

```
[1] 1301
```

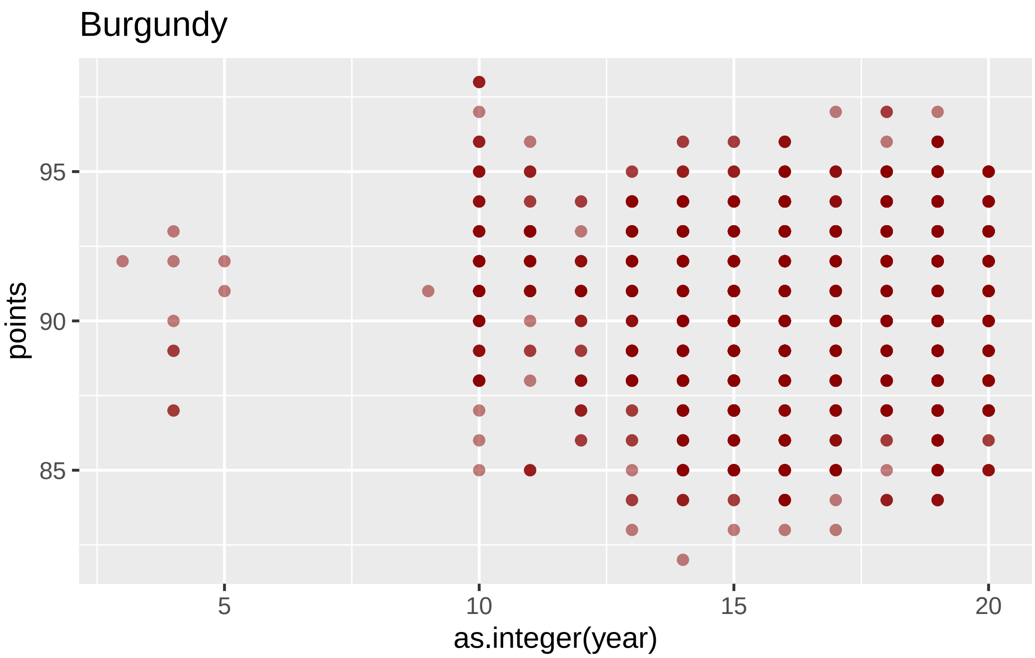
```
#1301/8380 have the work oak in description

pinot %>% filter(str_detect(description, "[Oo]ak")) %>%
  group_by(province) %>% summarize(prov_freq = n(), oak_perc = round(prov_freq/1301,2))
```

```
# A tibble: 6 x 3
  province         prov_freq oak_perc
  <chr>                <int>    <dbl>
1 Burgundy                 8     0.01
2 California             739     0.57
3 Casablanca_Valley       64     0.05
4 Marlborough             32     0.02
5 New_York                 9     0.01
6 Oregon                 449     0.35
```

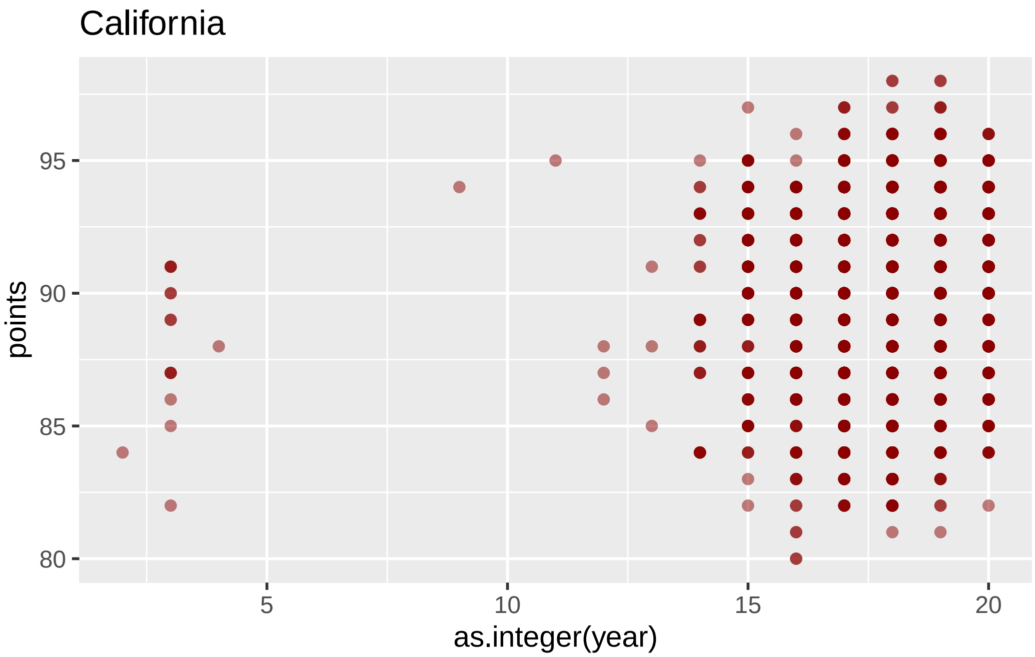
```r
#it is likely California or Oregon if there is oak in the description

#some french language patterns to think about developing a regex from:
# "_de_" / "d'"
# "name-name"
# accented letters: "é","ô",
# "St."

pinot %>% group_by(province) %>% summarize(avgPrice = mean(price), avgPoints = mean(points
```

```
# A tibble: 6 x 3
  province          avgPrice avgPoints
  <chr>                <dbl>     <dbl>
1 Burgundy              98.0      90.4
2 California            47.5      90.5
3 Casablanca_Valley     21.1      86.3
4 Marlborough           27.7      87.6
5 New_York              25.7      87.7
6 Oregon                44.9      89.5
```

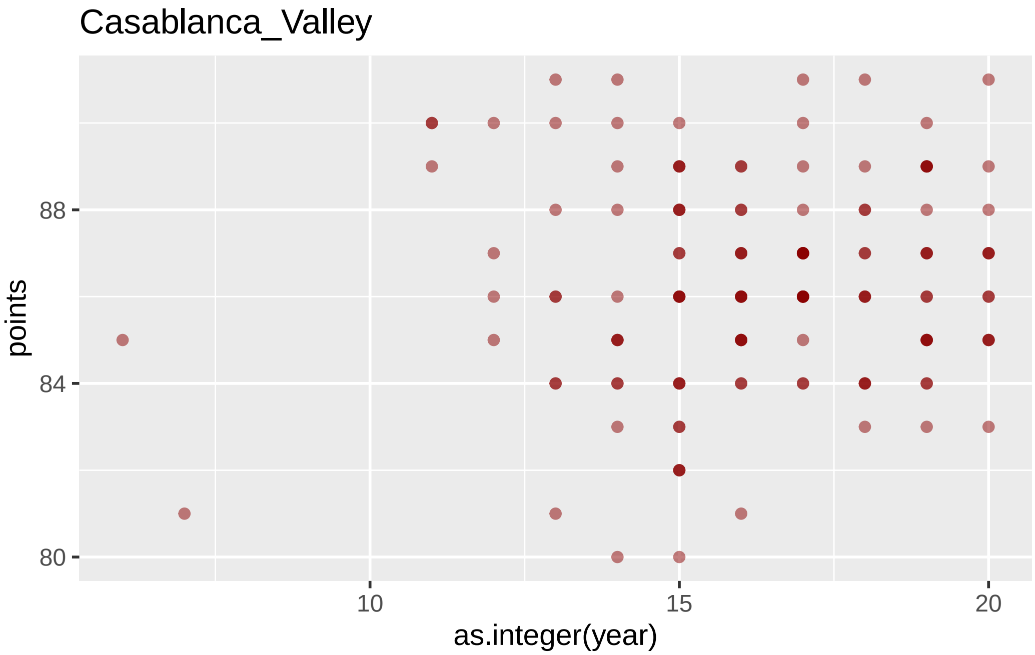
```r
#Burgundy wines are on average significantly more expensive...and casablanca valley wines

#which wines do people recommend waiting before drinking? i.e "drink from XXXX"

#some words to check out: "edge","tannins","dense","firm", oregon pinot is fruity.

province_vec = c("Burgundy", "California", "Casablanca_Valley","Marlborough", "New_York",

for(i in province_vec){
  plot = ggplot(pinot %>% filter(province == i), aes(x = as.integer(year), y = points)) +
    geom_point(alpha =.5, color = "red4") +
    ggtitle(i)
  print(plot)
}
```

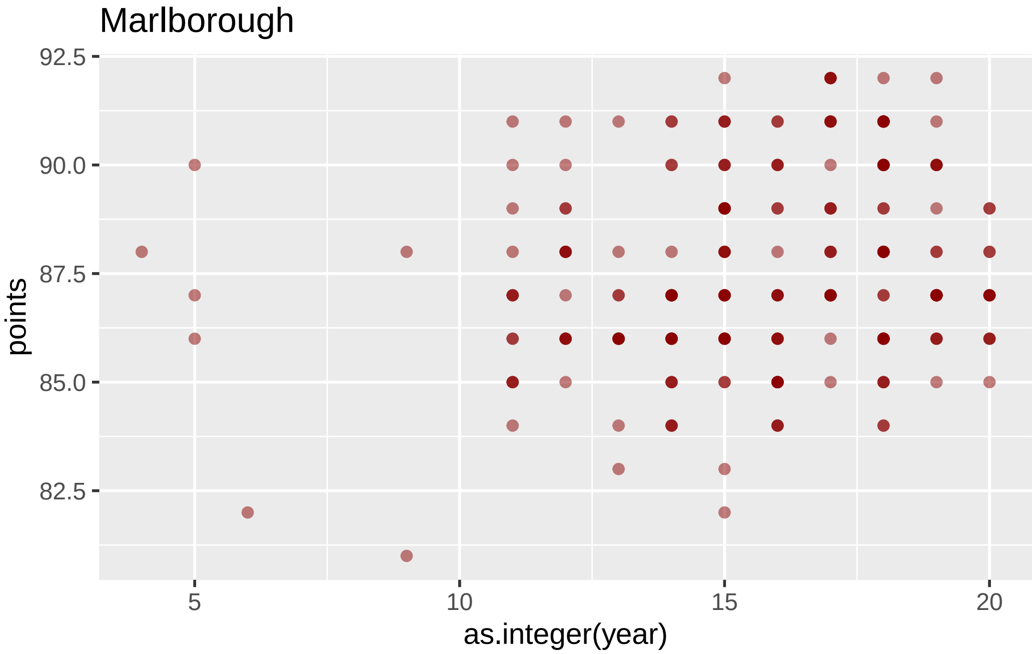


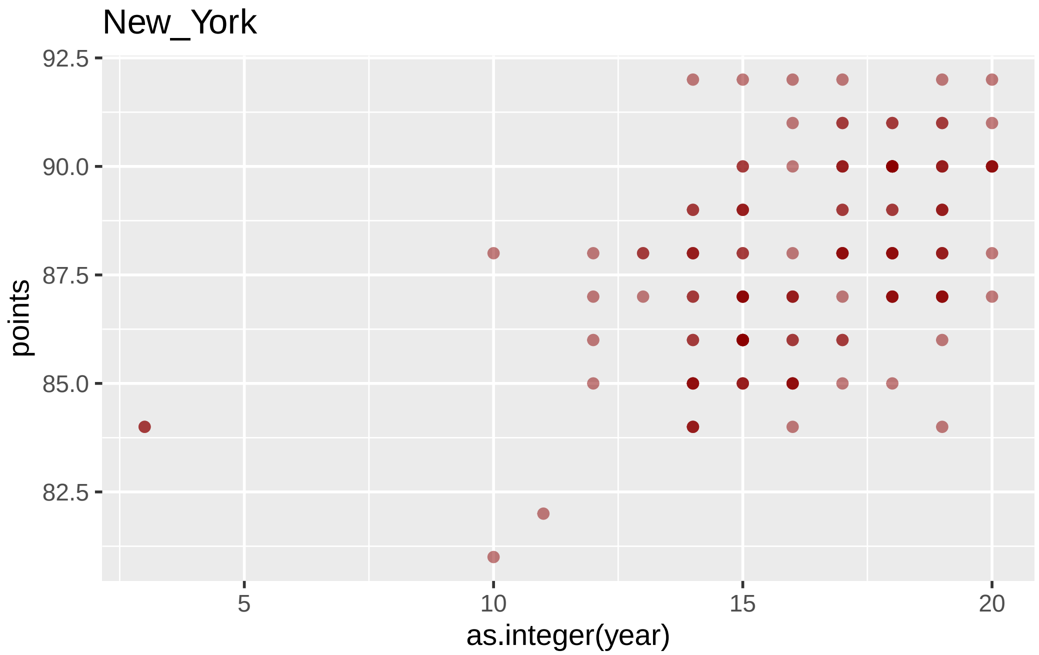
Burgundy
points
95
90
85
5
10
15
20
as.integer(year)

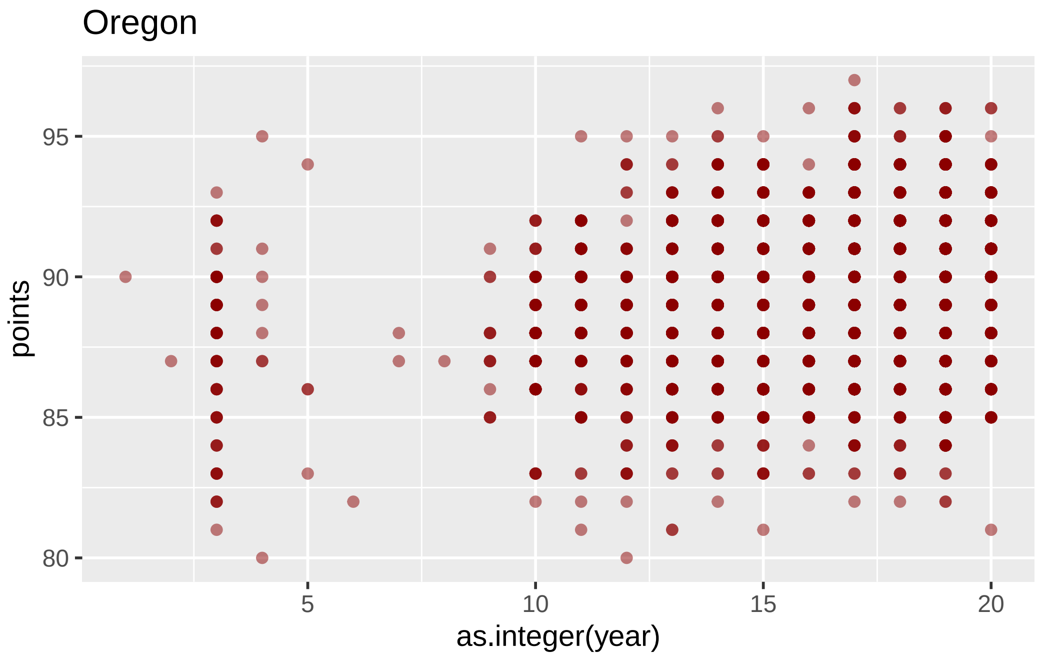


California
points
95
90
85
80
5
10
15
20
as.integer(year)

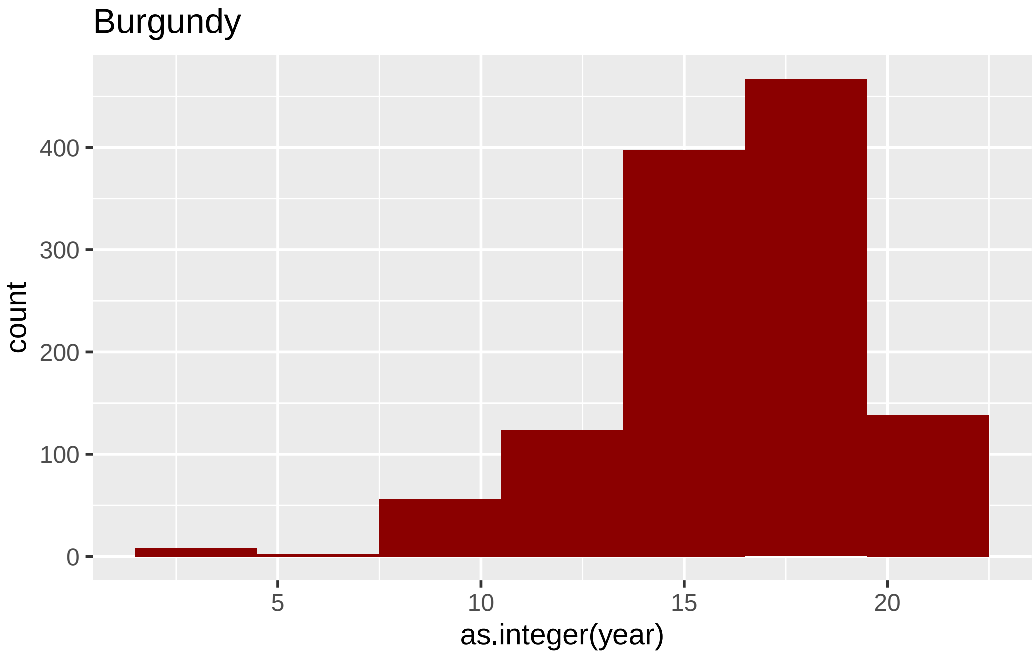

Casablanca_Valley
points
88
84
80
10
15
20
as.integer(year)

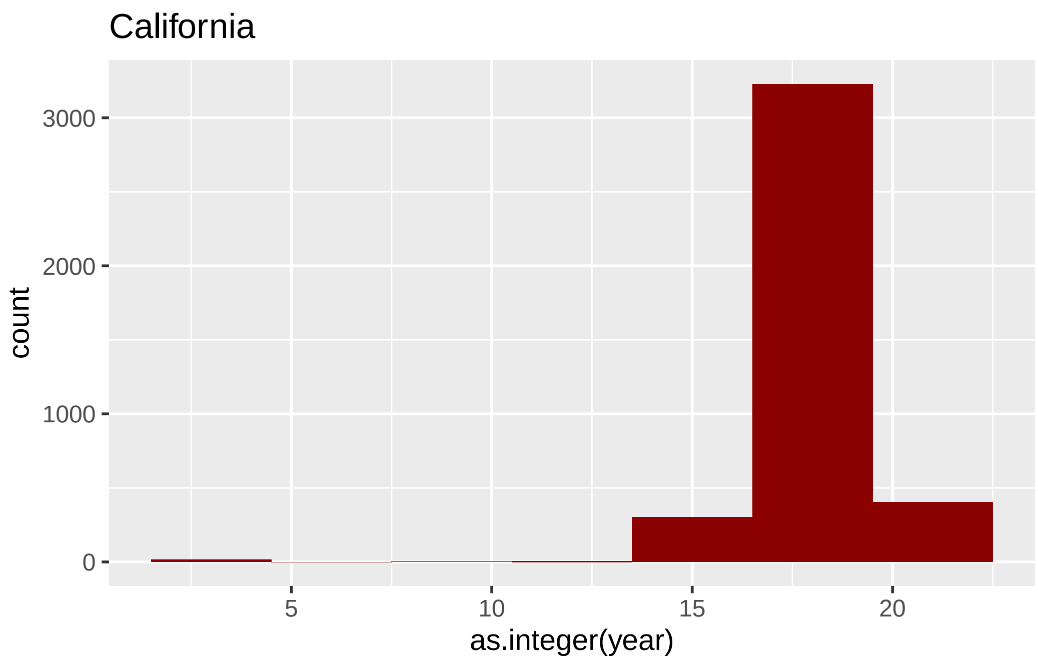

Marlborough
points
92.5
90.0
87.5
85.0
82.5
5
10
15
20
as.integer(year)

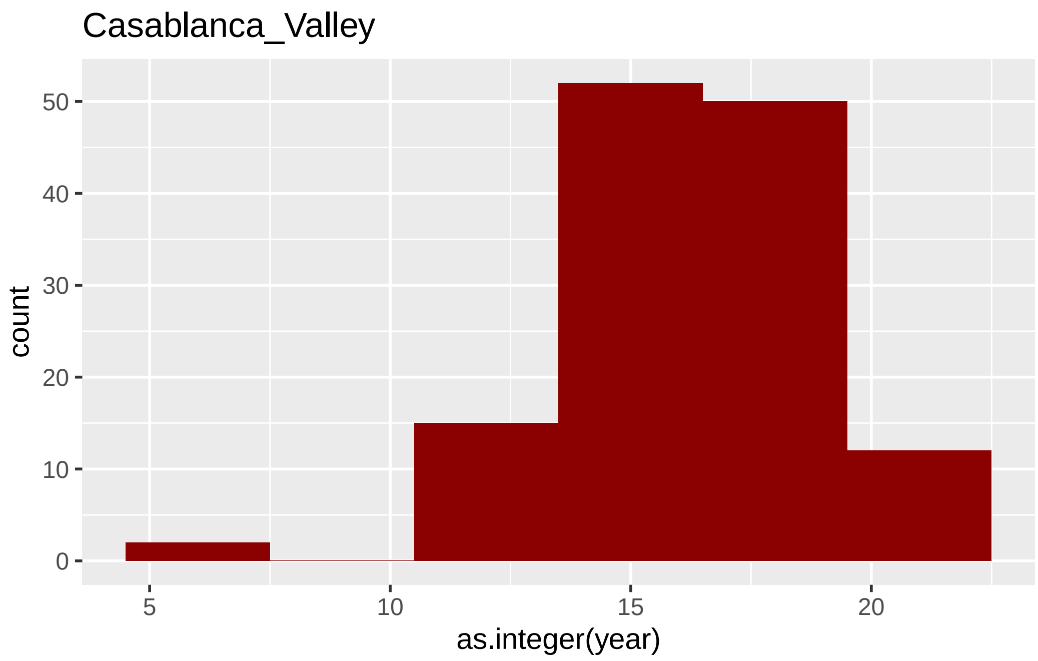

New_York
92.5
90.0
87.5
85.0
82.5
points
5
10
15
20
as.integer(year)

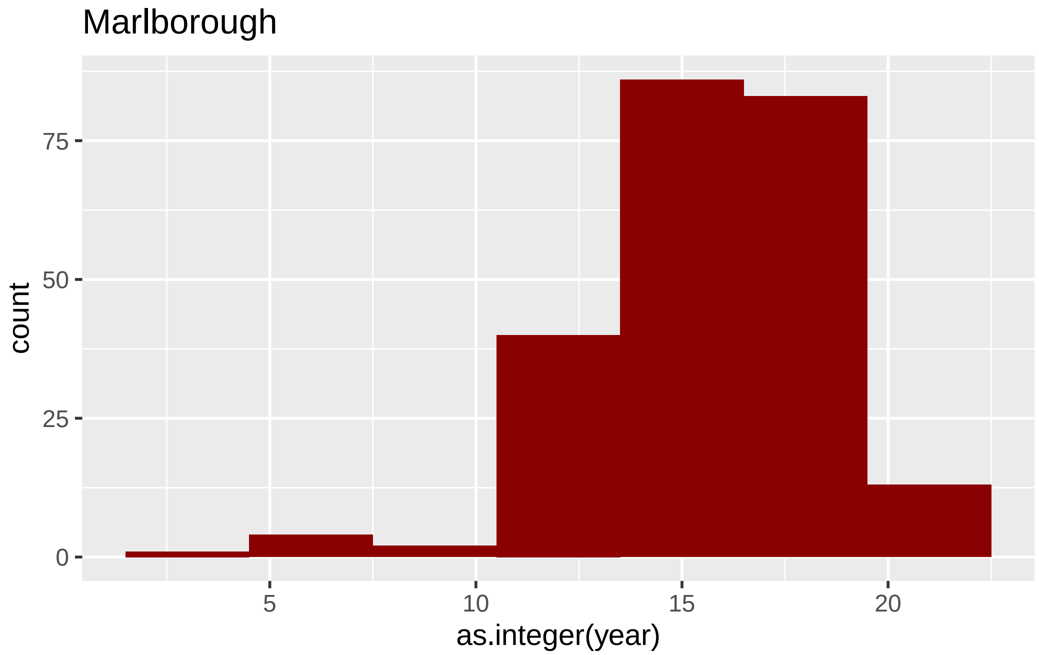

Oregon
95
90
85
80
points
5
10
15
20
as.integer(year)

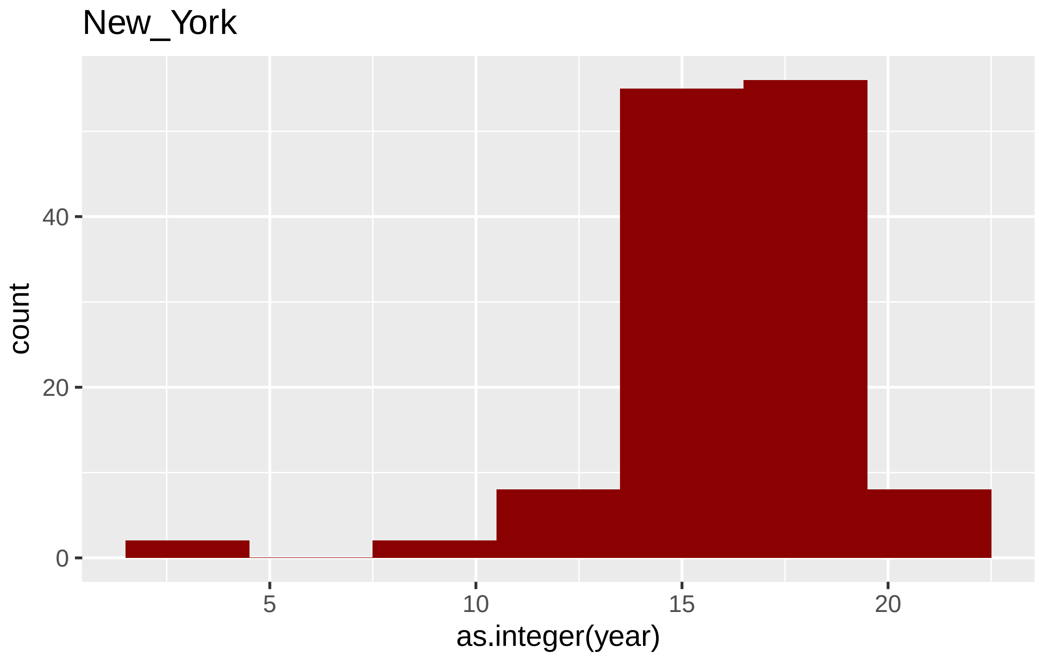
```
for(i in province_vec){
  plot2 = ggplot(pinot %>% filter(province == i), aes(x = as.integer(year))) +
    geom_histogram(binwidth =3, fill = "red4") +
    ggtitle(i)
  print(plot2)
}
```

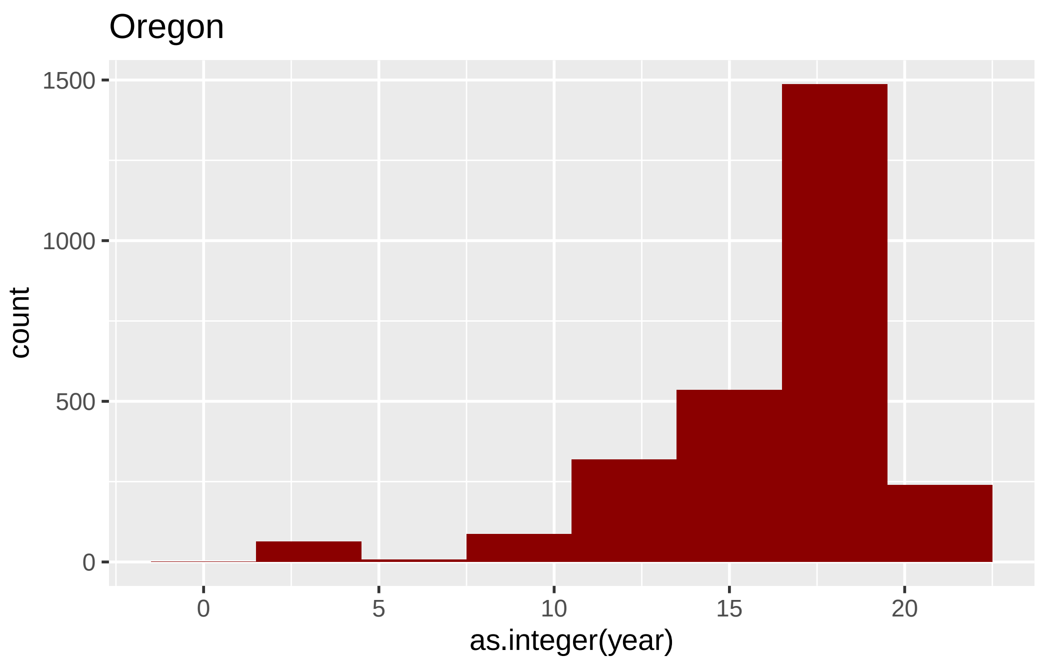



California
count
3000
2000
1000
0
5
10
15
20
as.integer(year)


Casablanca_Valley
count
50
40
30
20
10
0
5
10
15
20
as.integer(year)


Marlborough
count
75
50
25
0
5
10
15
20
as.integer(year)


New_York
count
40
20
0
5
10
15
20
as.integer(year)



```
#Some findings from viz:
#california pinot noir production did not begin until ~2008, then exploded!
#before year 2000, likely to be oregon
#burgundy pinots score high around 2005, after almost no burgundy pinots between 2000 and
#California pinot game WAY STRONG between 2010 and 2015
#New York pinot score high between 2008 and 2015
#What happened around 2014?? Counts drop across provinces....
```