

Exploring The Essen and Densmore

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Import Data

First thing needed is to import all of the data.

```
library(data.table)

## Warning: package 'data.table' was built under R version 3.4.2

library(ggplot2)
densmore <- fread("../data/feature_data/densmoreFeatures.csv") # Native American Songs
essen <- fread("../data/feature_data/essenFeatures.csv") # Essen Collection
```

Explore Data

Check out all the variables listed.

```
names(essen)

## [1] "folksong"          "mean.entropy"      "mean.productivity"
## [4] "mean.Simpsons.D"   "mean.Yules.K"      "mean.Sichels.S"
## [7] "mean.Honores.H"    "p.range"           "p.entropy"
## [10] "p.std"             "i.abs.range"        "i.abs.mean"
## [13] "i.abs.std"         "i.mode"            "i.entropy"
## [16] "d.range"           "d.median"          "d.mode"
## [19] "d.entropy"         "d.eq.trans"        "d.half.trans"
## [22] "d.dotted.trans"    "len"               "glob.duration"
## [25] "note.dens"         "tonalness"         "tonal.clarity"
## [28] "tonal.spike"       "int.cont.grad.mean" "int.cont.grad.std"
## [31] "int.cont.dir.change" "step.cont.glob.var" "step.cont.glob.dir"
## [34] "step.cont.loc.var"  "mode"              "h.contour"
## [37] "int.cont.glob.dir"  "int.contour.class"  "Country"
## [40] "Country.ID"        "Region"
```

Special subset of this data has region of Germany associated with it.

```
unique(essen$Region)

## [1] NA          "fink"       "erk1"       "erk2"       "boehme"     "ballad"
## [7] "allerkbd"  "altdeu1"    "altdeu2"    "dva"        "zuccal"     "variant"
```

```
unique(densmore$Country)

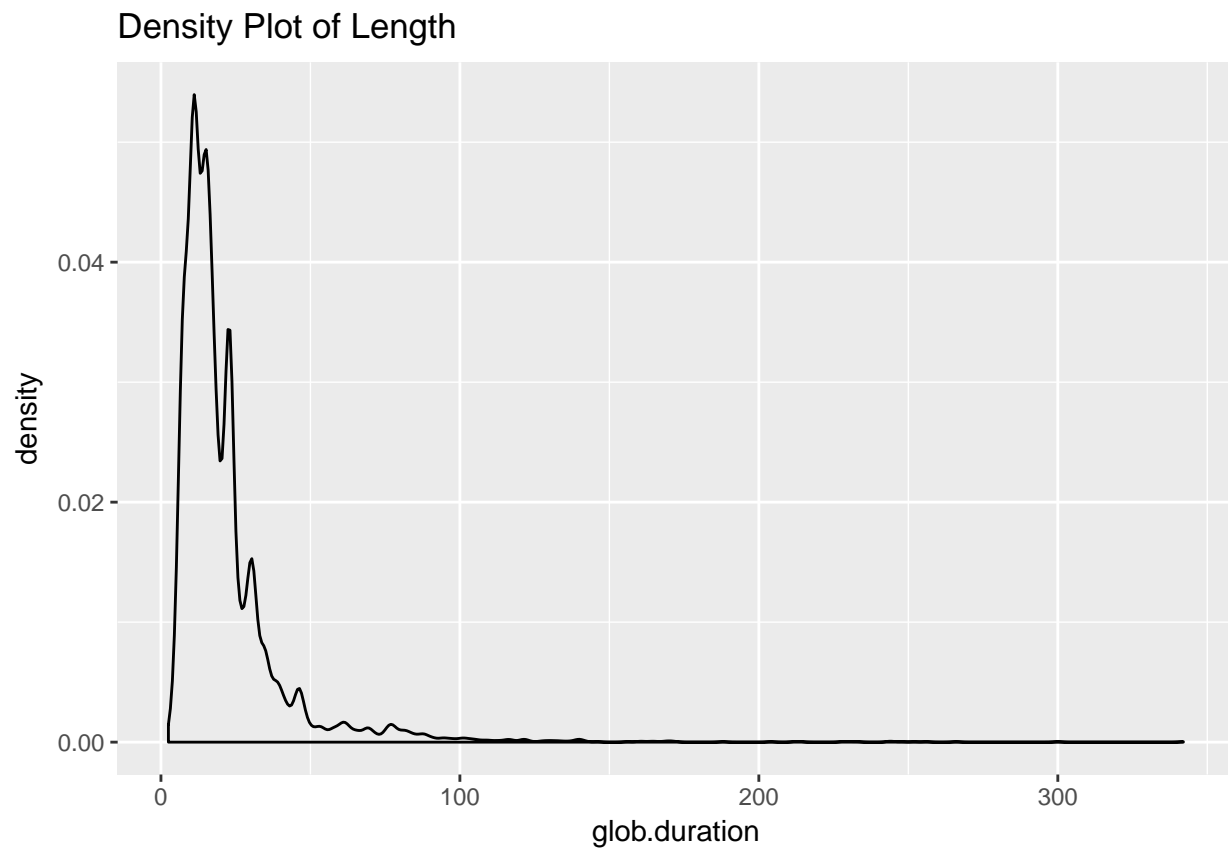
## [1] "ojibwa" "pawnee" "sioux"   "siouxa" "siouxb" "siouxc"
```

Link to what key of each one is can be found here <http://kern.humdrum.org/cgi-bin/browse?l=essen/euro>

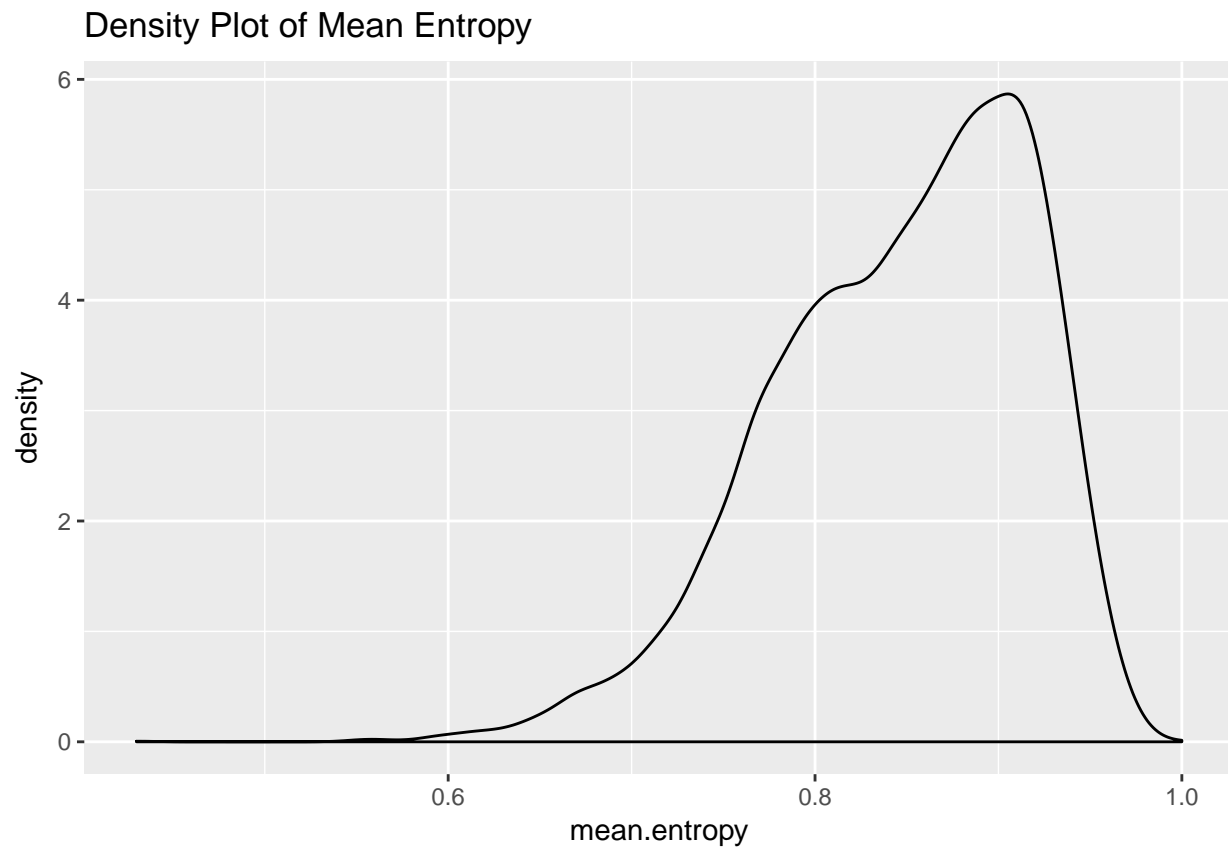
Explore Large Level Features of Corpus

Swap in other variables below!

```
ggplot(essen, aes(glob.duration)) + geom_density() + labs(title = "Density Plot of Length")
```



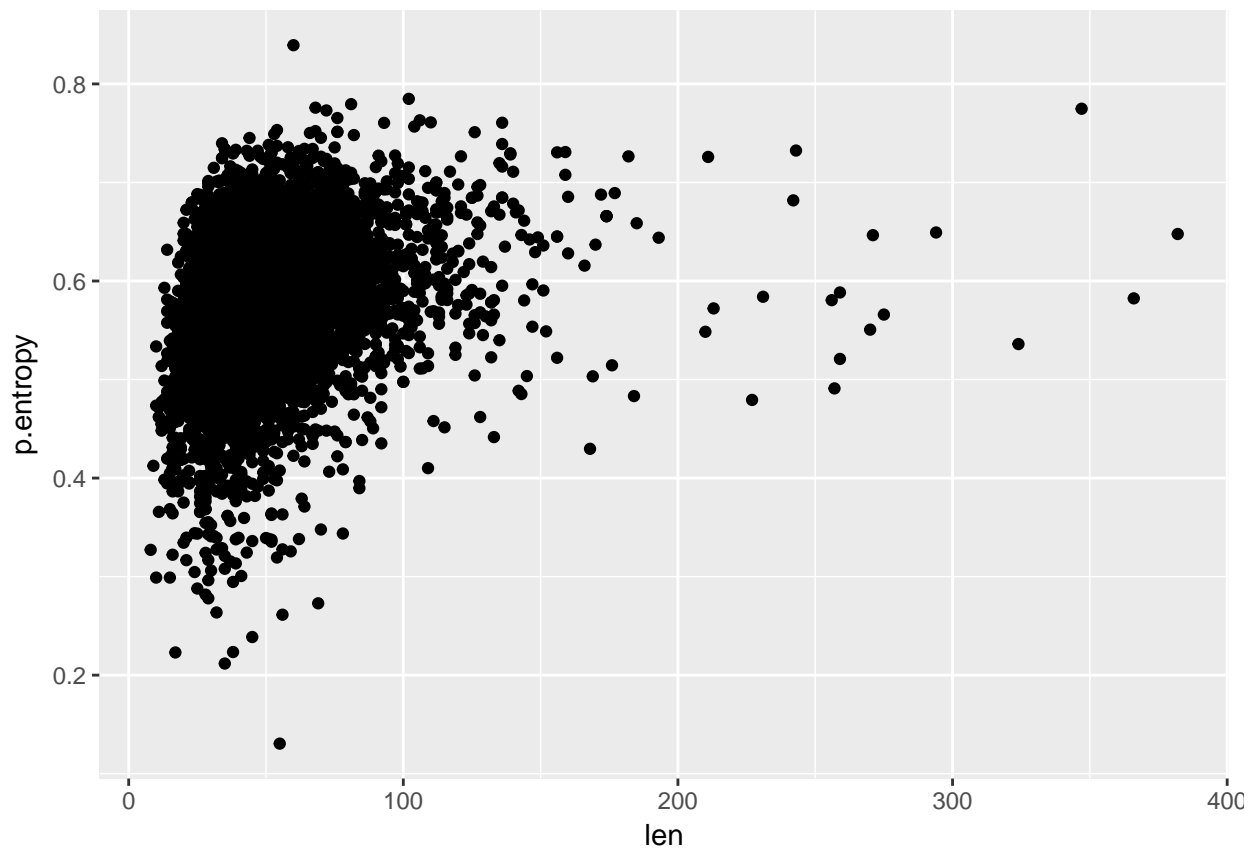
```
ggplot(essen, aes(mean.entropy)) + geom_density() + labs(title = "Density Plot of Mean Entropy")
```



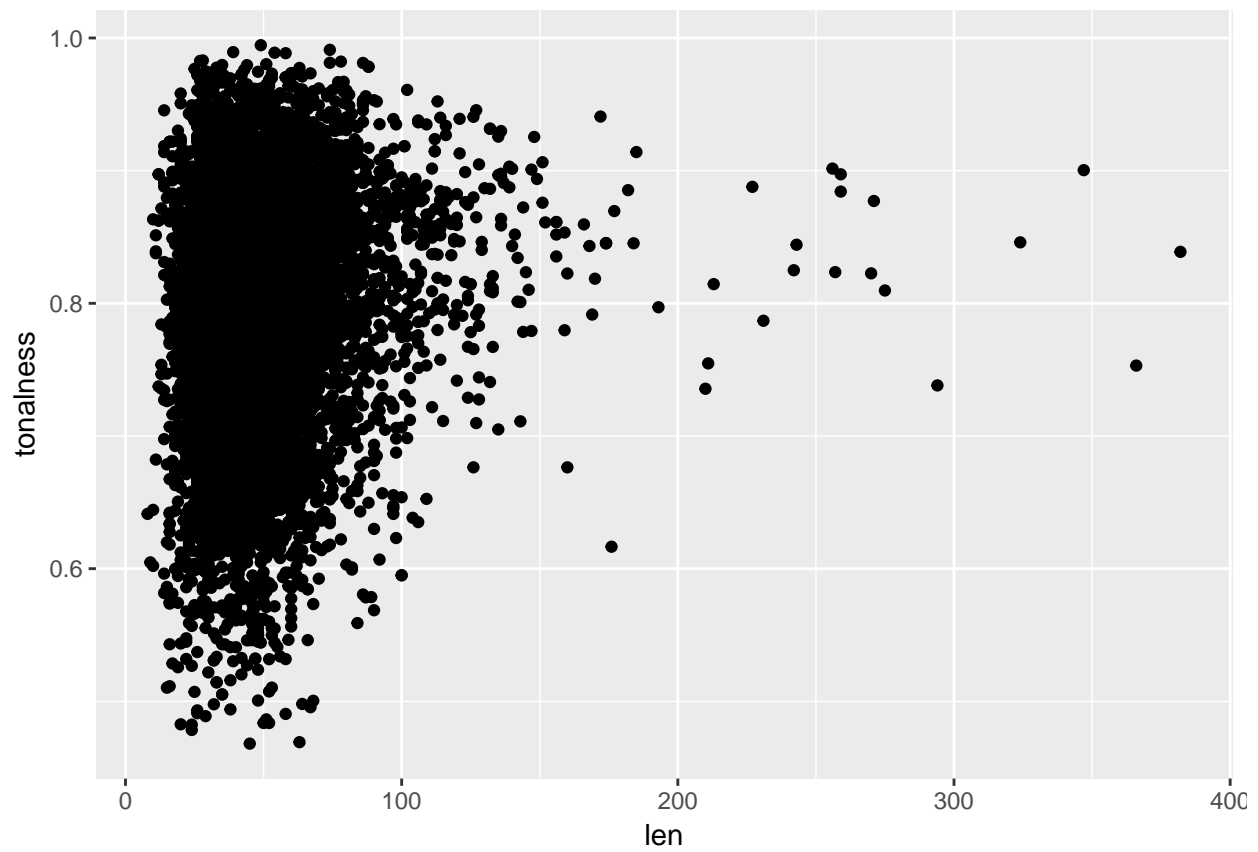
Relationship Between Variables

You can use `ggplot2` to explore the relationship between different variables. Try to swap out the x and y variables with others on a continuous scale. You can also group by categorical variables.

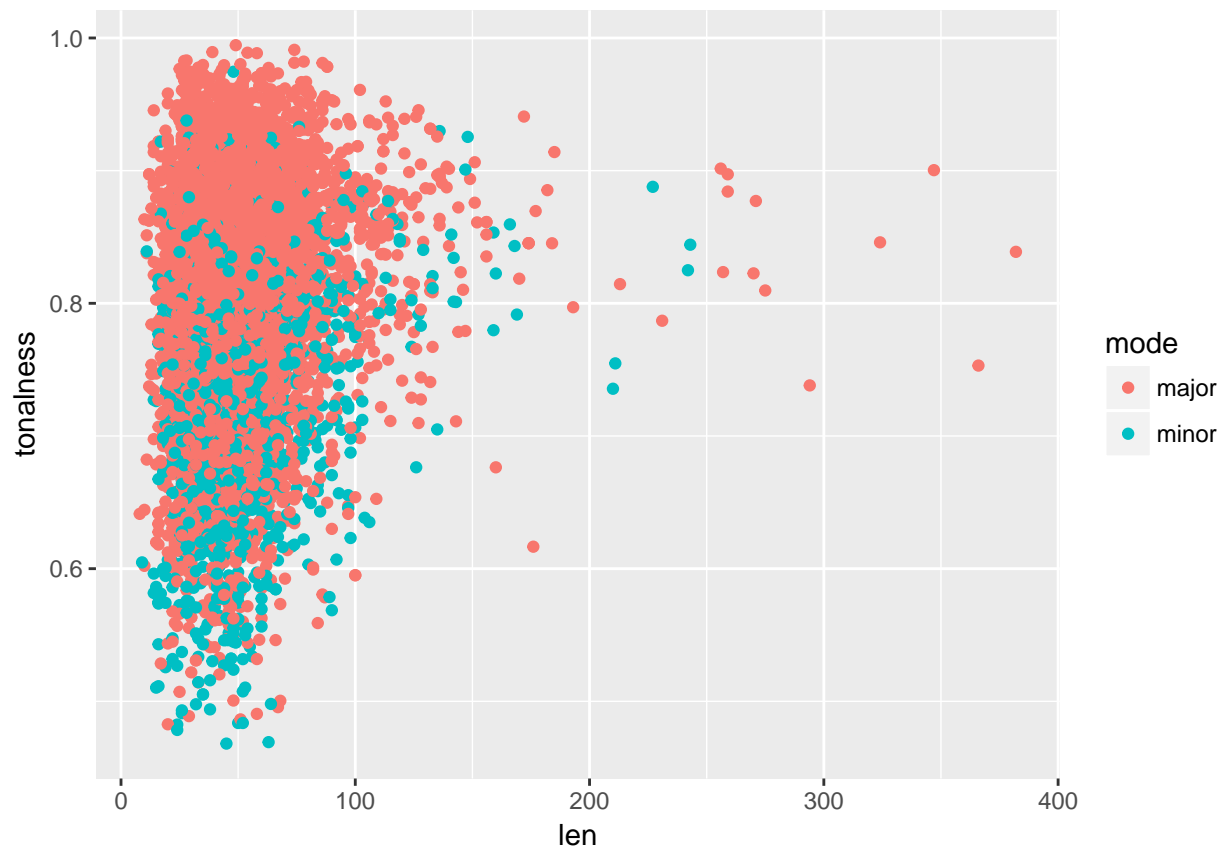
```
ggplot(essen,  
  aes(x = len, y = p.entropy))+ geom_point() + labs(main = "Length of Melody vs Pitch Entropy")
```



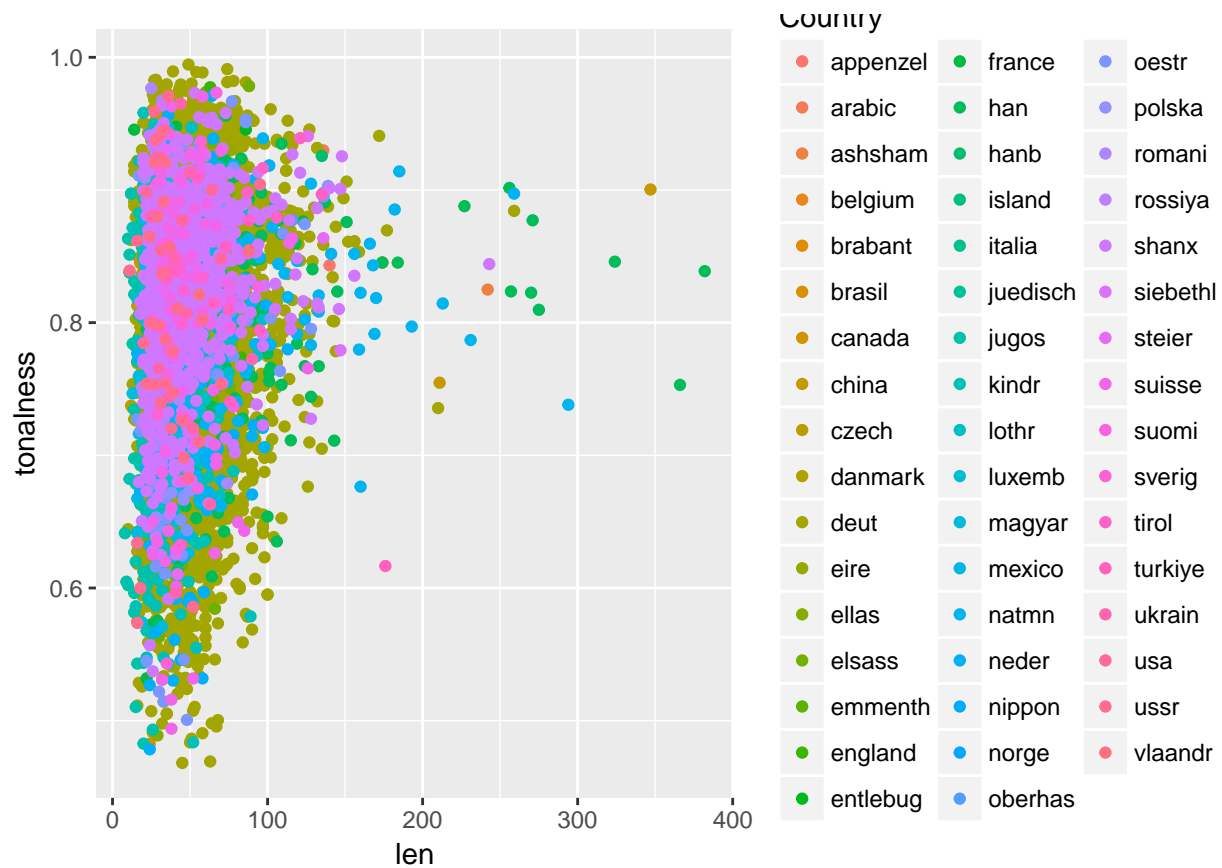
```
ggplot(essen,  
  aes(x = len, y = tonalness))+ geom_point() + labs(main = "Length of Melody vs Tonalness")
```



```
ggplot(essen,  
  aes(x = len, y = tonalness, color = mode))+ geom_point() + labs(main = "Length of Melody vs Tonalness")
```



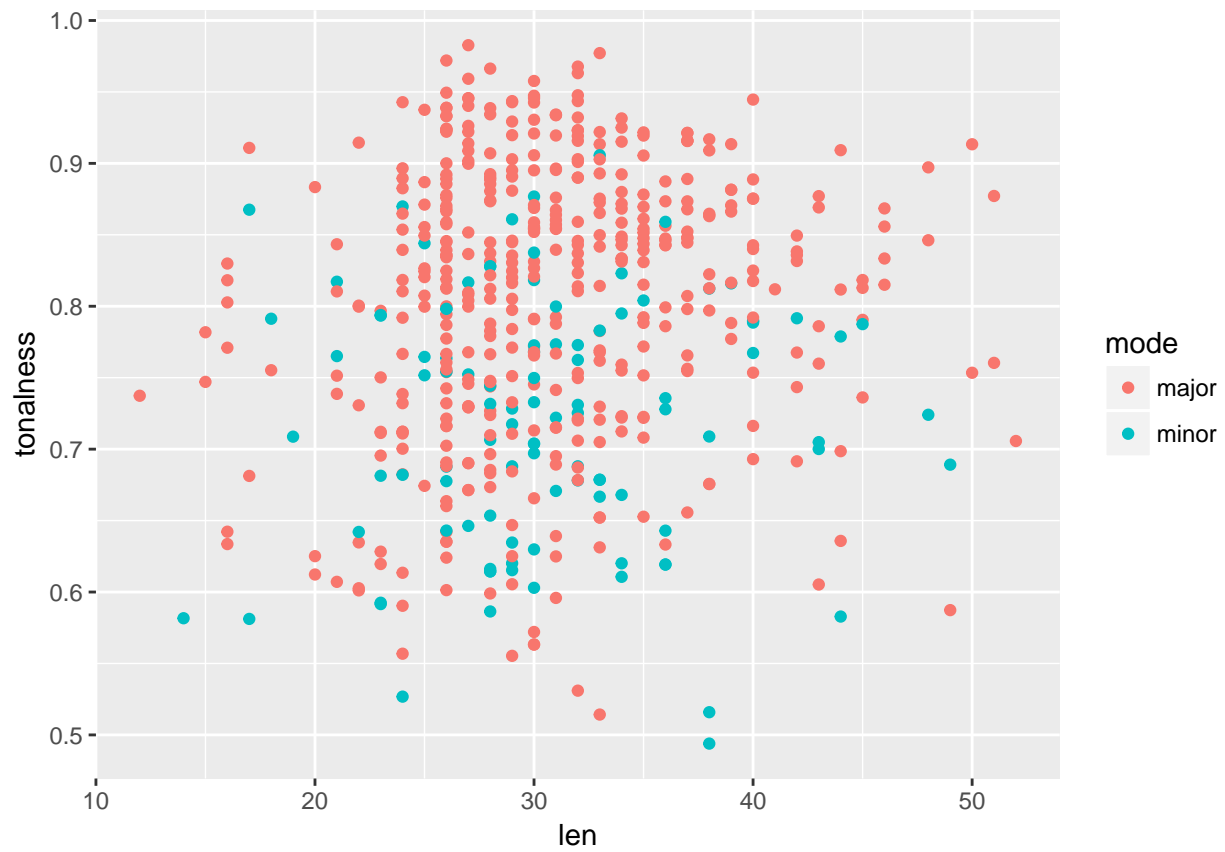
```
ggplot(essen,
  aes(x = len, y = tonalness, color = Country))+ geom_point() + labs(main = "Length of Melody vs T
```



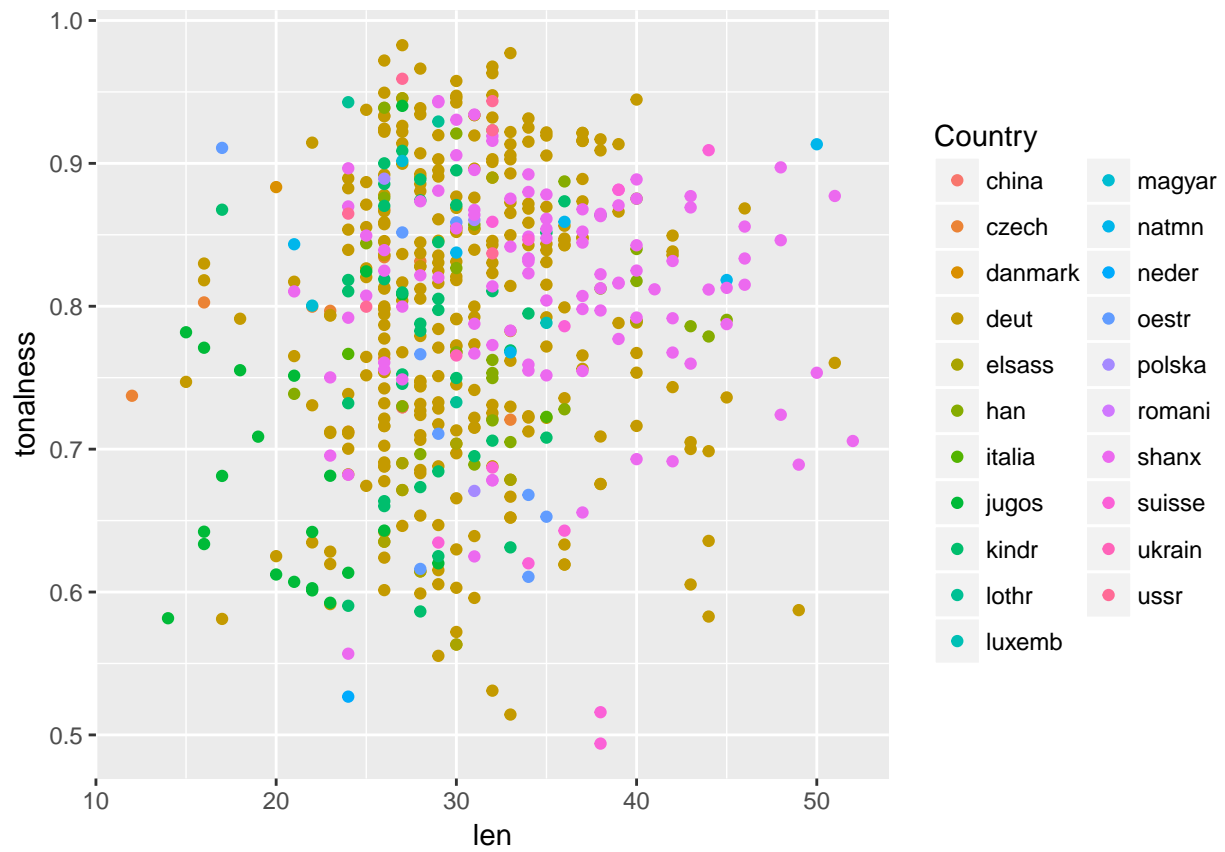
Subsetting

You can “zoom” in on some variables using R’s indexing functions.

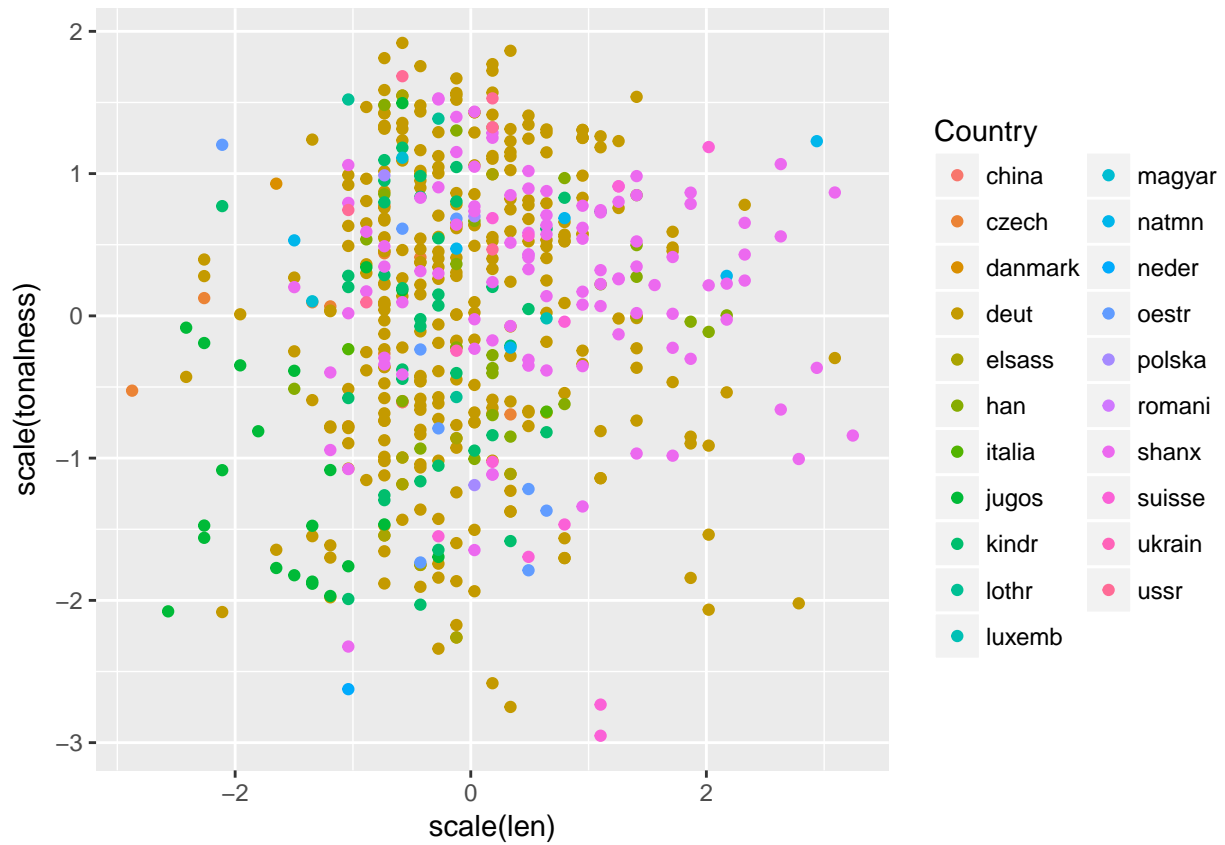
```
# Index within the plot
ggplot(essen[glob.duration > 7 & glob.duration < 9],
  aes(x = len, y = tonalness, color = mode))+ geom_point() + labs(main = "Length of Melody vs Tonalness")
```



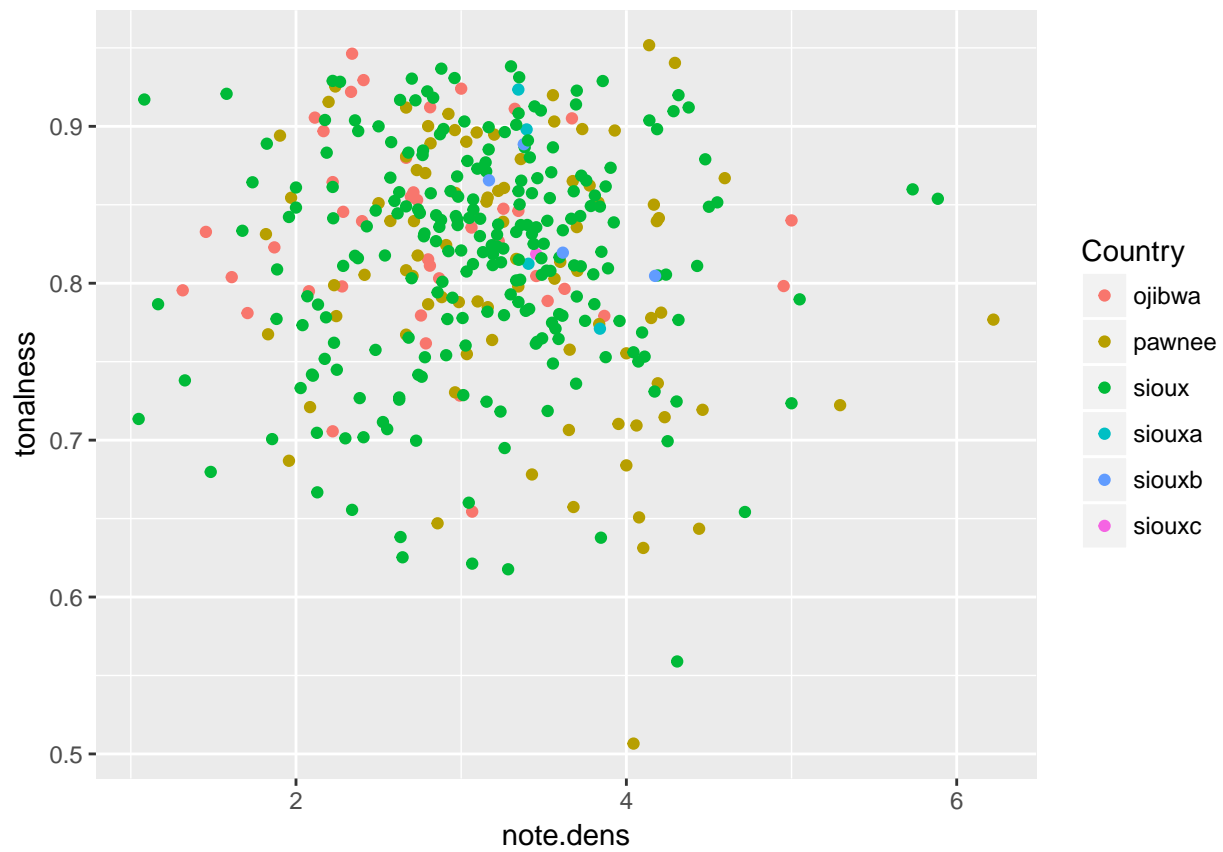
```
# Try different group by
ggplot(essen[glob.duration > 7 & glob.duration < 9],
  aes(x = len, y = tonalness, color = Country))+ geom_point() + labs(main = "Length of Melody vs T
```

```
# Convert to Z Scale
ggplot(essen[glob.duration > 7 & glob.duration < 9],
  aes(x = scale(len), y = scale(tonalness), color = Country))+ geom_point() + labs(main = "Length of
```

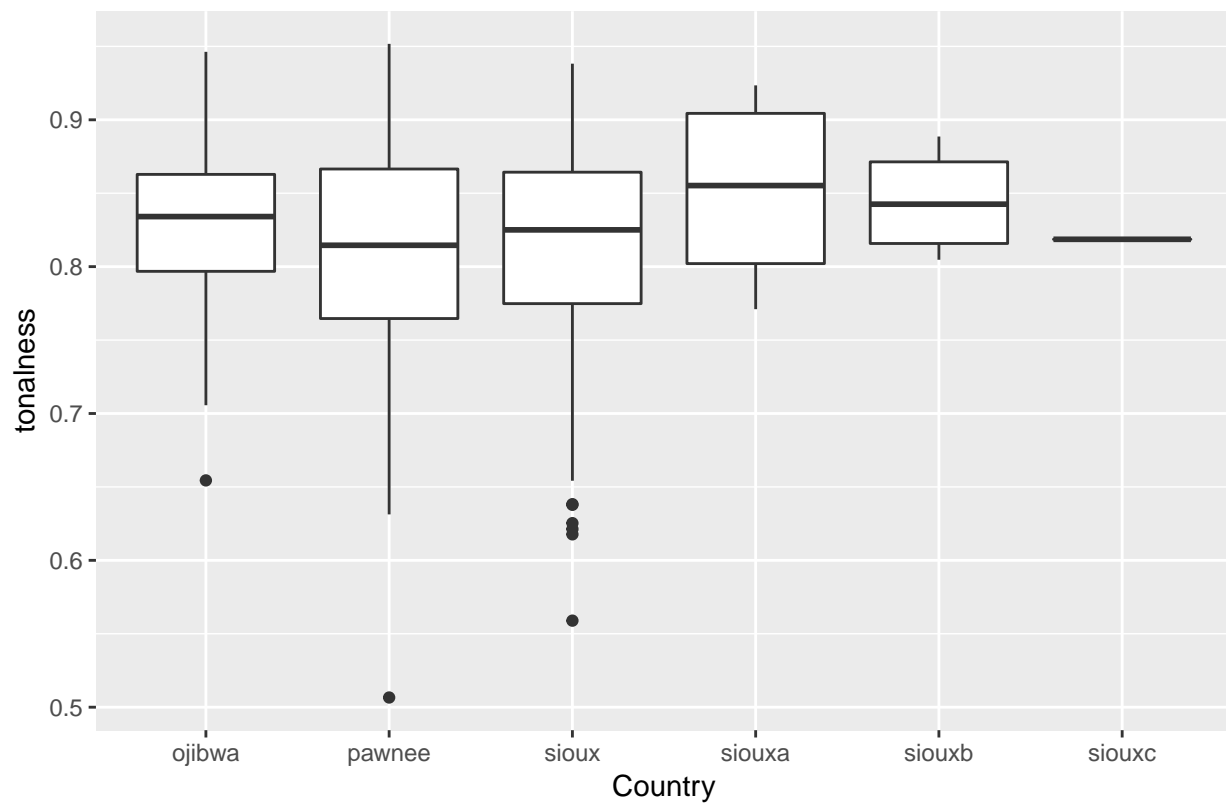


```
# Convert to Z Scale
ggplot(densmore,
  aes(x = note.dens, y = tonalness, color = Country))+ geom_point() + labs(main = "Densmore Density")
```



```
# Look at Group Differences
ggplot(densmore,
  aes(y = tonalness, x = Country)) + geom_boxplot() + labs(title = "Differences in Tonalness between")
```

Differences in Tonalness between Native American Tribes



```
ggplot(essen,
  aes(y = tonalness, x = mode)) + geom_boxplot() + labs("Differences in Tonalness in Essen Collect.
```

