Chen and Ash

Final Version of Figures

Nov 2nd 2018

This markdown is for Chen and Ash figures.

Chen and Ash 1

K-means clustering with outlier detection

```
Beginning k-means-- clustering
.....................
Clustering complete in  21  iterations.

k = 13   l = 200   Cluster sizes: 155 50 116 170 165 233 275 155 177
(between cluster sum sqr / total sum sqr    = 94.71121 %)

Centroids:
               x           y
 [1,] -17.826622  -7.3357474
 [2,] -32.792072  23.3284407
 [3,]  21.337560 -18.3795136
 [4,] -12.611915  18.1552961
 [5,]  20.408009  -0.8711459
 [6,]  -5.861269 -22.3783499
 [7,]   4.438833  27.1230461
 [8,]   1.279263  -0.7902732
 [9,] -25.972894   0.9390440
[10,] -29.824878  38.0963505
[11,]  10.851472  10.6678871
[12,]  13.448241 -27.3598239
[13,]   9.617366 -12.9003979

Outliers:
# A tibble: 200 x 2
      x     y
   <dbl> <dbl>
 1 -23.4 -24.0
 2  21.1  28.3
 3  24.2  20.5
 4  21.5  23.2
 5 -21.2 -27.3
 6  24.8  17.4
 7 -27.5 -18.9
 8 -27.6 -18.6
 9  19.0  30.1
10 -27.7 -18.3
```
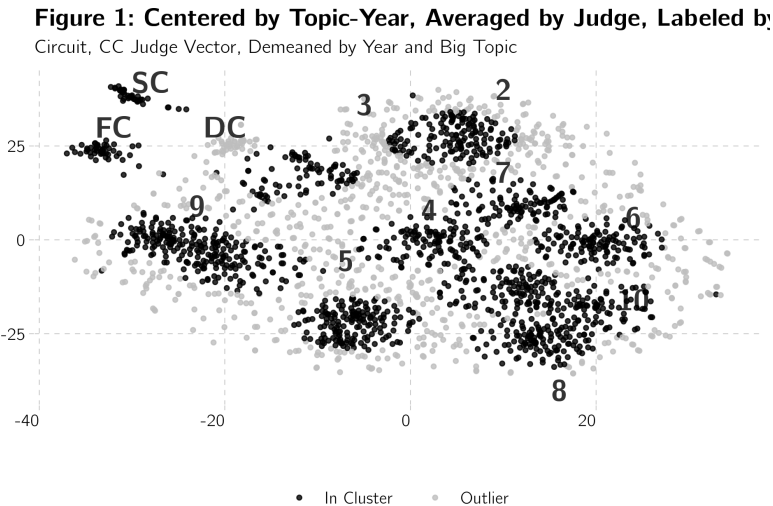
```
# ... with 190 more rows

Available components:
 [1] "k"                "l"                "C"
 [4] "C_sizes"          "C_ss"             "L"
 [7] "L_dist_sqr"       "L_index"          "XC_dist_sqr_assign"
[10] "within_ss"        "between_ss"       "tot_ss"
[13] "iterations"
```
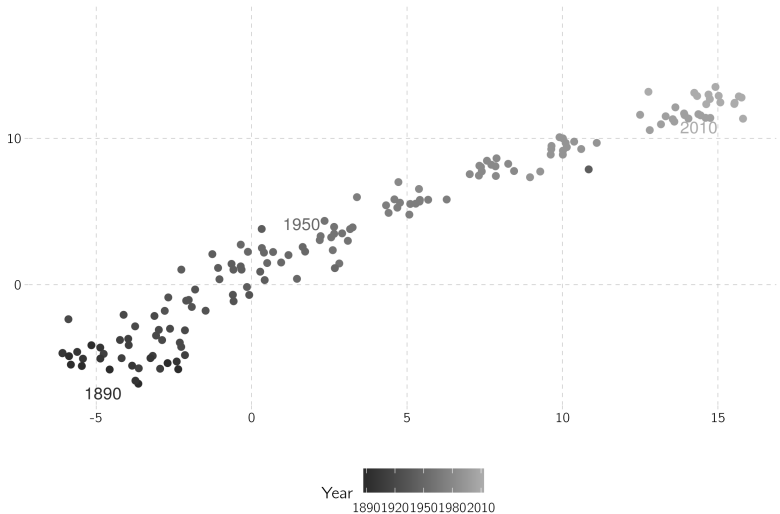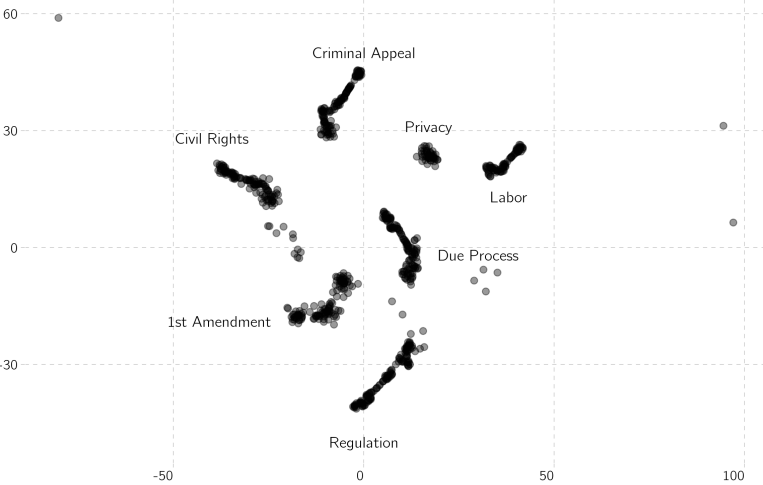
finished computing clusters (ignore R output)

Figure 1: Centered by Topic-Year, Averaged by Judge, Labeled by
Circuit, CC Judge Vector, Demeaned by Year and Big Topic

- In Cluster   - Outlier

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Figure 2.
Centered by Court Topic, Averaged by Court-Year, Labeled by Decade

Year
1890 1920 1950 1980 2010

Court Decade, SC & CC Court Decade Vector, Demeaned by Circuit and Big Topic

Figure 3.

Centered by Judge-Year, Averaged by Topic-Year, Labeled by Topic

Big Topics and Year, SC and CC Topic Year Vector, Demeaned by Judge & Year
*Ellipses represent a confidence measurement for the clusters

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Figure 4.

Centered by Court-Topic-Year, Averaged by Judge, Labeled by Political Party

Party affiliation   ▲ D = Democrat (black)   ■ R = Republican (grey)

Party affiliation, SC & CC Judge Vector, Demeaned by Circuit, Big Topics, and year