Chen and Ash

Final Version of Figures

Nov 7th 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  23  iterations.

k = 13   l = 200    Cluster sizes: 154 145 161 167 50 173 172 166 134
(between cluster sum sqr / total sum sqr    = 94.73344 %)

Centroids:
                x           y
 [1,] -18.673686  -6.7360240
 [2,]  11.193009  10.5623874
 [3,]   1.690421  -0.9499063
 [4,] -26.245908   1.1297284
 [5,] -32.792072  23.3284407
 [6,] -12.752982  18.2212500
 [7,]  14.926442 -26.6735079
 [8,]  20.305022  -1.1591050
 [9,]  -5.628214 -26.9177071
[10,]  14.121215 -14.4881259
[11,] -29.824878  38.0963505
[12,]   4.482721  26.9676868
[13,]  -4.789498 -16.5410943

Outliers:
# A tibble: 200 x 2
      x     y
   <dbl> <dbl>
 1  33.4 -14.7
 2  32.9 -14.5
 3  32.3 -14.6
 4 -23.4 -24.0
 5  32.2 -14.5
 6  32.0 -14.1
 7  31.3 -15.0
 8  33.0 -12.5
 9  32.9 -12.5
10  21.1  28.3
```
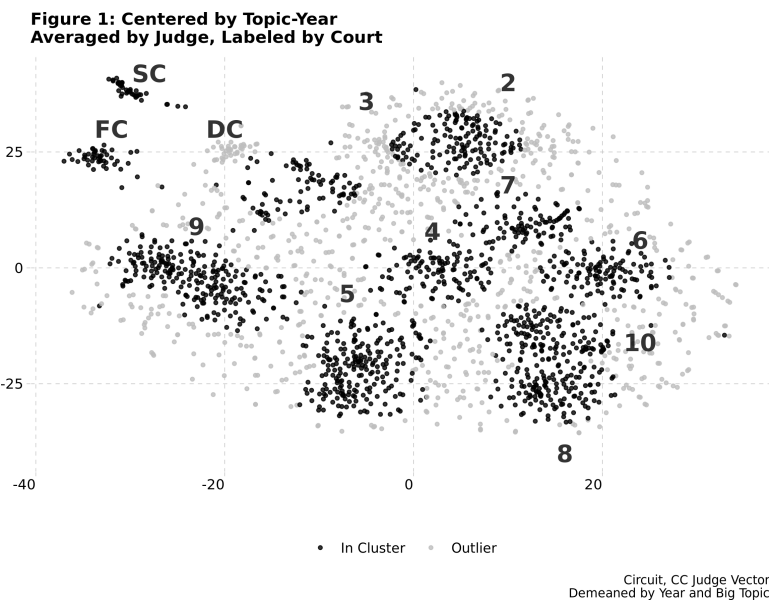
```
# ... with 190 more rows

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 Court**

SC

FC   DC   3   2

9   7

4   6

5   10

8

- In Cluster   · Outlier

Circuit, CC Judge Vector
Demeaned by Year and Big Topic

Figure 2.

Centered by Court Topic, Averaged by Court-Year, Labeled by Decade

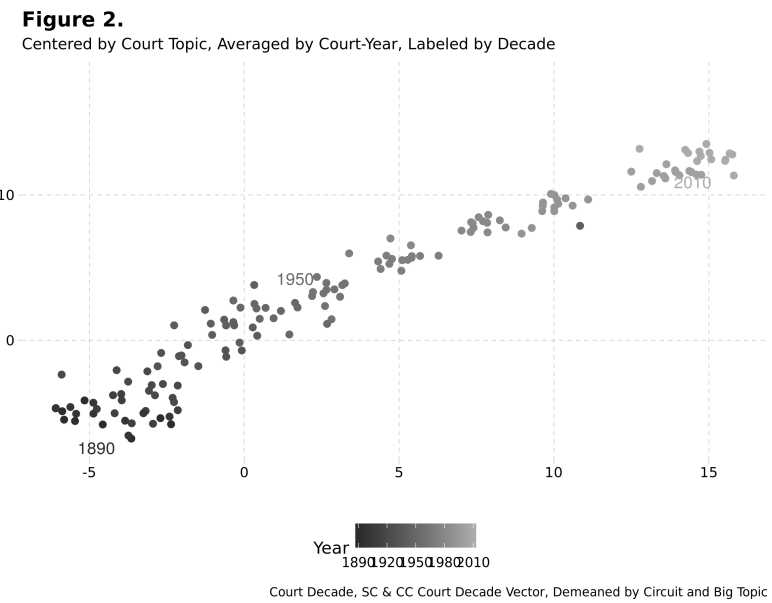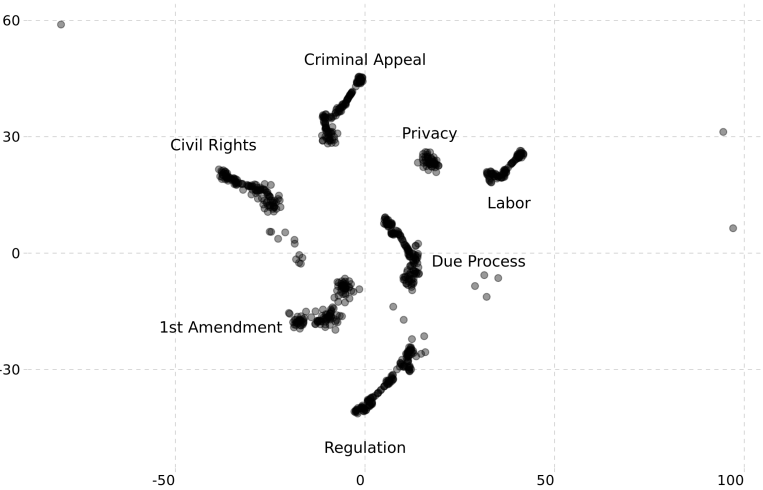Court Decade, SC & CC Court Decade Vector, Demeaned by Circuit and Big Topic

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

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