Bond Factors for CT Pretrial Detainees

Overview

Full code is in https://github.com/SlothDream/SBCap1_CT/blob/master/CT_Inferential.ipynb.

("Days" is a mathematical calculation of days detained from the latest admission date, although CT acknowledges that those dates could be original entry into the CT system.)

Exploration

As I continue to examine whether "An Act Concerning Pretrial Justice Reform" impacted misdemeanor pretrial detainees in Connecticut, three factors have now been compared statistically for impact on bond amounts and days detained -- gender, race, and offense class. All tests were conducted with significance/alpha = 0.05.

Gender -- For the first set of tests, a chi-squared test determined that gender is a contributing factor to both bond amounts and the number of days detained over the entire two-year sampling period. (Female median bond amount: $5,000. Female median days detained: 17. Male median bond amount: $10,000. Male median days detained: 24.)

The second set of tests checked on the proportion of inmates by gender before and after the enactment. With a p-value of 0.83, we fail to reject our H0, that pre-enactment == post-enactment.

Race -- Tests of the minority percentage of the CT system demonstrate that H0 (no difference between pre-enactment minority and post-enactment minority) came back with a p-value of about 0.7, high enough that we fail to reject H0.

While five races are used in the CT data, only three were used for this analysis. American Indian and Asian were dropped from the dataframe before the next two pieces of analysis since the number of detainees was too small to come to any conclusion.

Testing both the mean and median bond amounts for the remaining races (white, black, and hispanic) from the pre-enactment period to the post-enactment period offered high chi-squared values and p-values below the 0.05 significance value set prior to the test. H0 (white == black == hispanic) should be rejected in favor of differences existing for both mean and median bond amounts.

Bond Amounts	mean before	mean after	median before	median after
white	18,373	22,007	7,500	7,500
black	22,818	23,169	7,500	9,000
hispanic	25,372	24,668	8,500	10,000

Testing the mean of the days detained (H0: white == black == hispanic) for the three races offered a p-value of 0.62. We do not reject that the *mean* of the days detained could be statistically equivalent before and after enactment. Testing the median, however, offers a p-value of 0.02, so we do reject that the *median* of the days detained could be statistically equivalent.

Days detained	mean before	mean after	median before	median after
white	51	49	23	15
black	70	76	22	15
hispanic	58	62	21	14

Offense class -- Testing for offense class only offers suspicion that the distribution of offense classes for detainees remained relatively stable over the two years for offenses without a letter

classification ("M" offenses) provided by the state. For A, B, and C misdemeanors, we reject H0 (that the classification distribution remained stable) for the post-enactment period.

Conclusions

I've statistically examined the gender, race, and offense class to determine whether any of the variables show any interesting characteristics. Part of this work is discouraging. Bias appears to exist on gender grounds, at the very least. Mean bond amounts for detainees have also gone up $1,500.

One neutral conclusion we can reach is that the minority population remained stable between the two years, so the situation neither improved or worsened.

By far, the most encouraging analysis I've performed found that most detainees appear to be staying behind bars at least seven fewer days per arrest in the year after "An act concerning pretrial justice reform" was enacted.