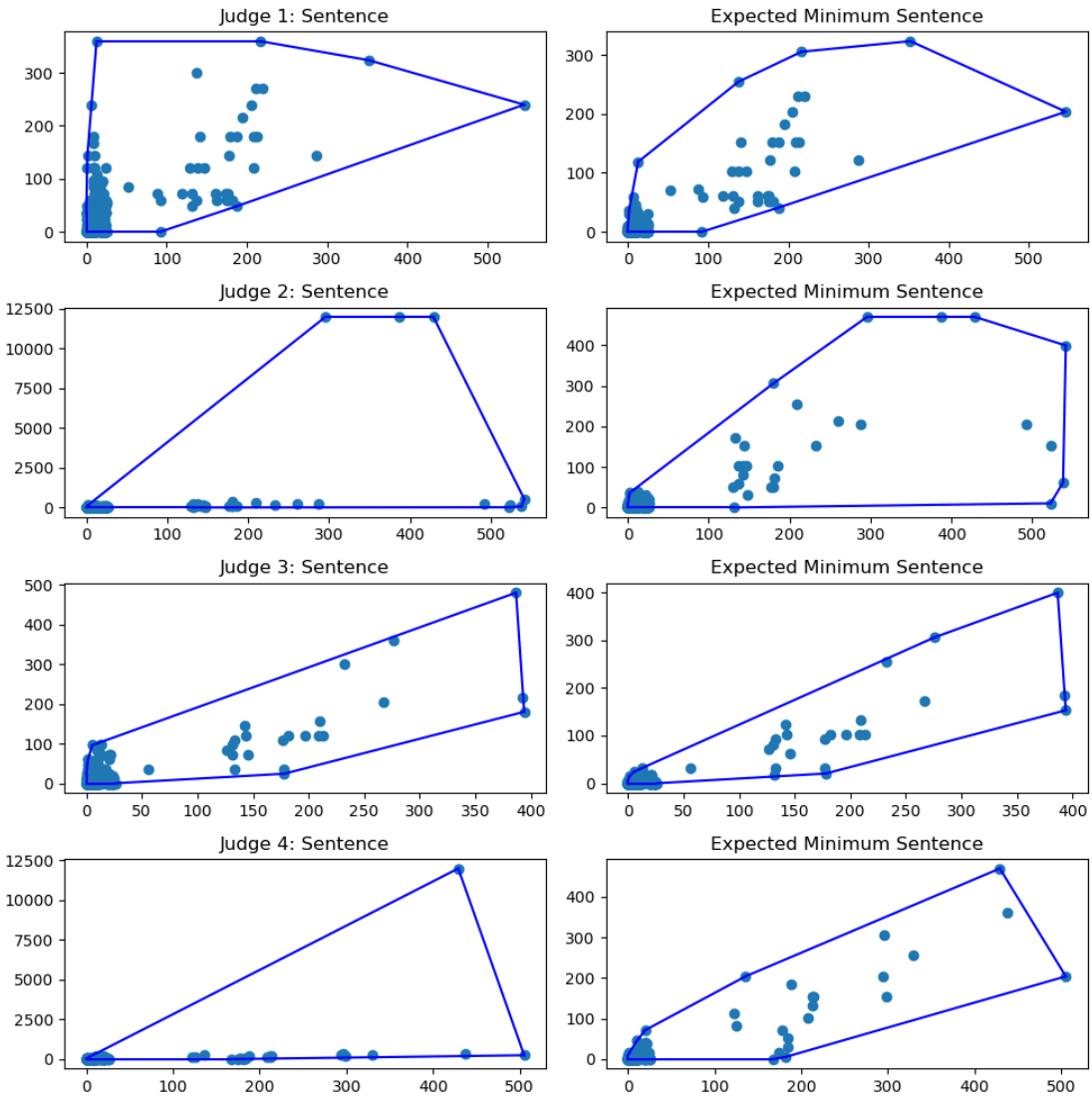
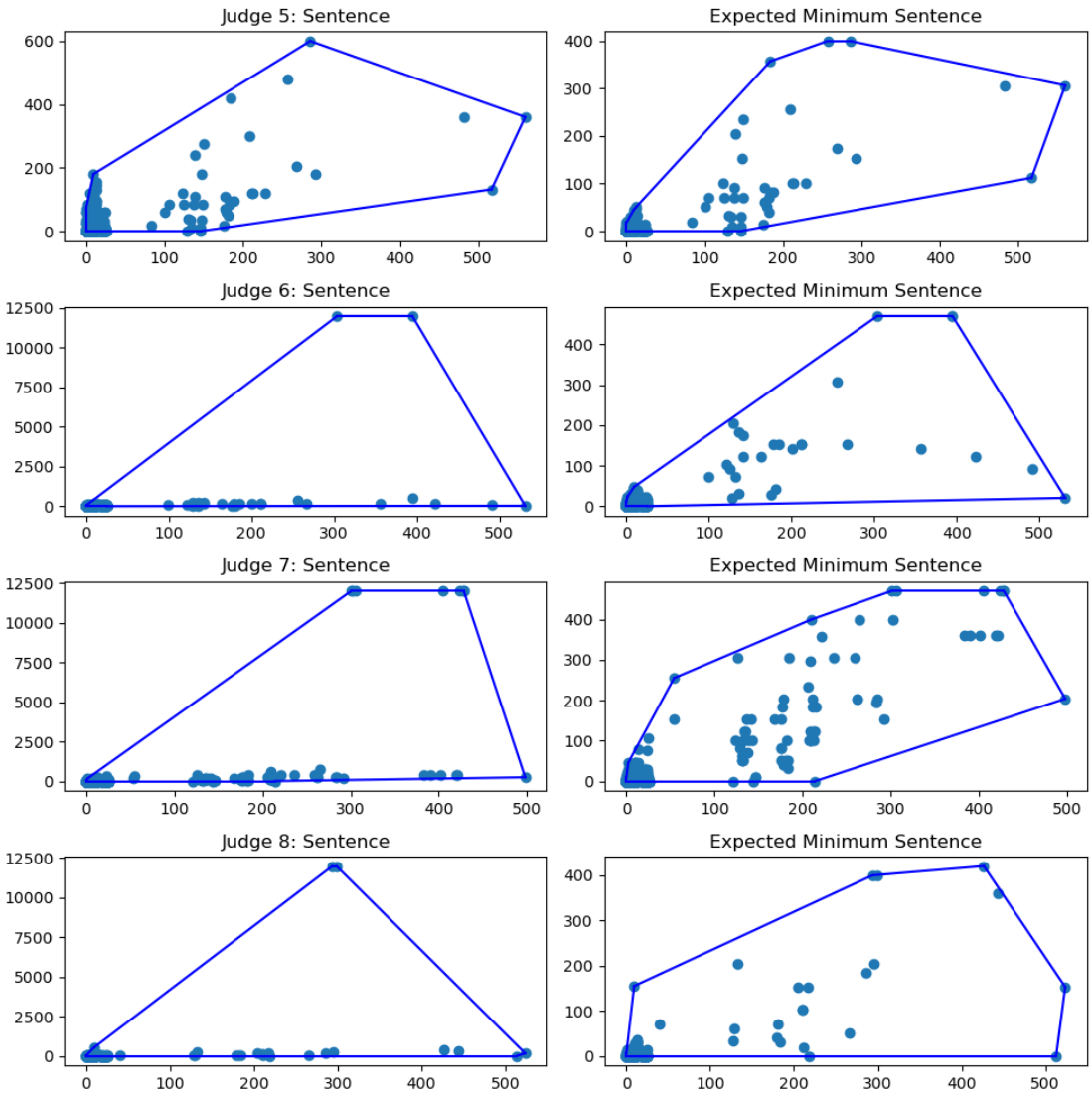
July 15, 2021 Meeting Agenda

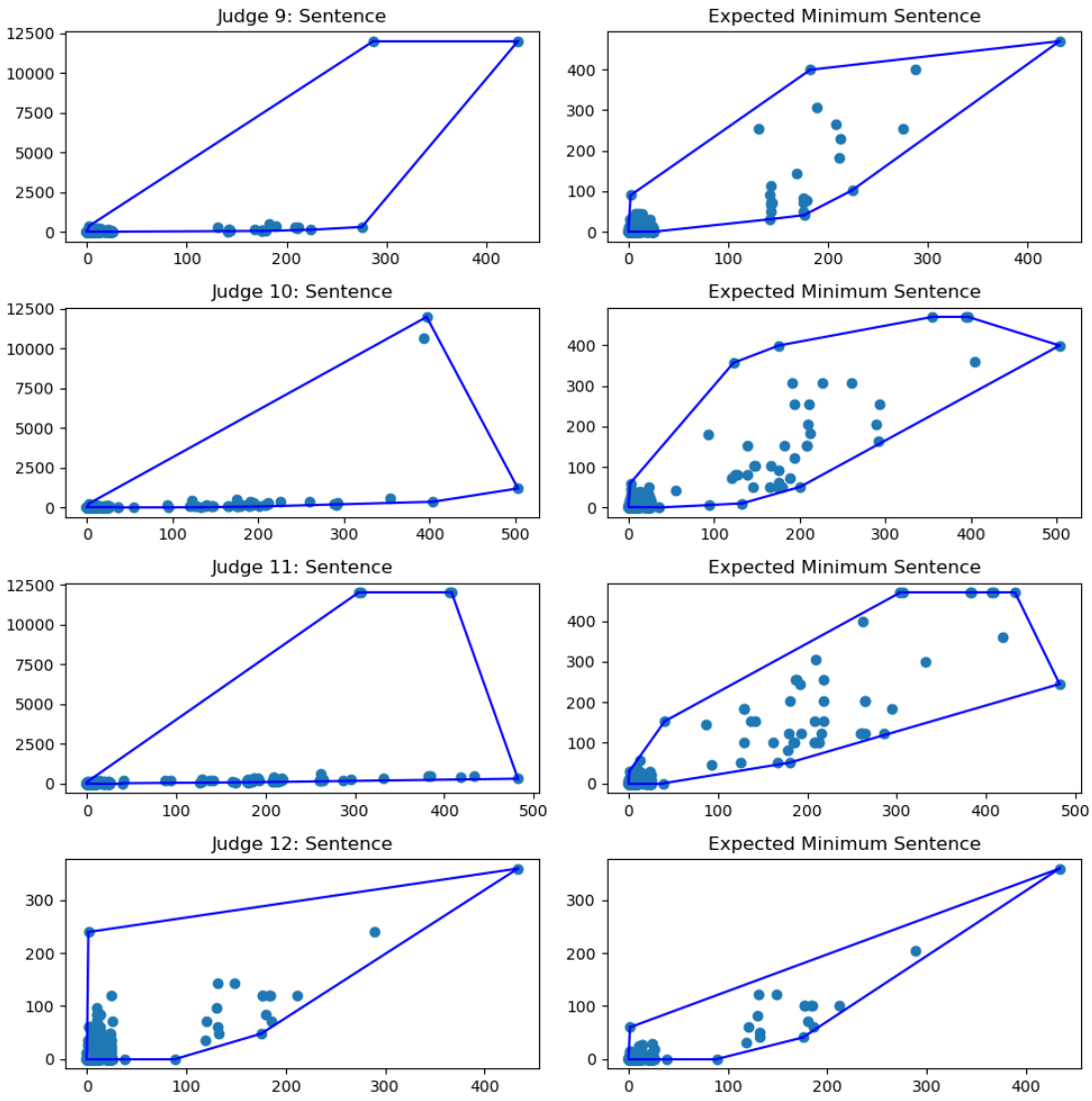
July 14, 2021

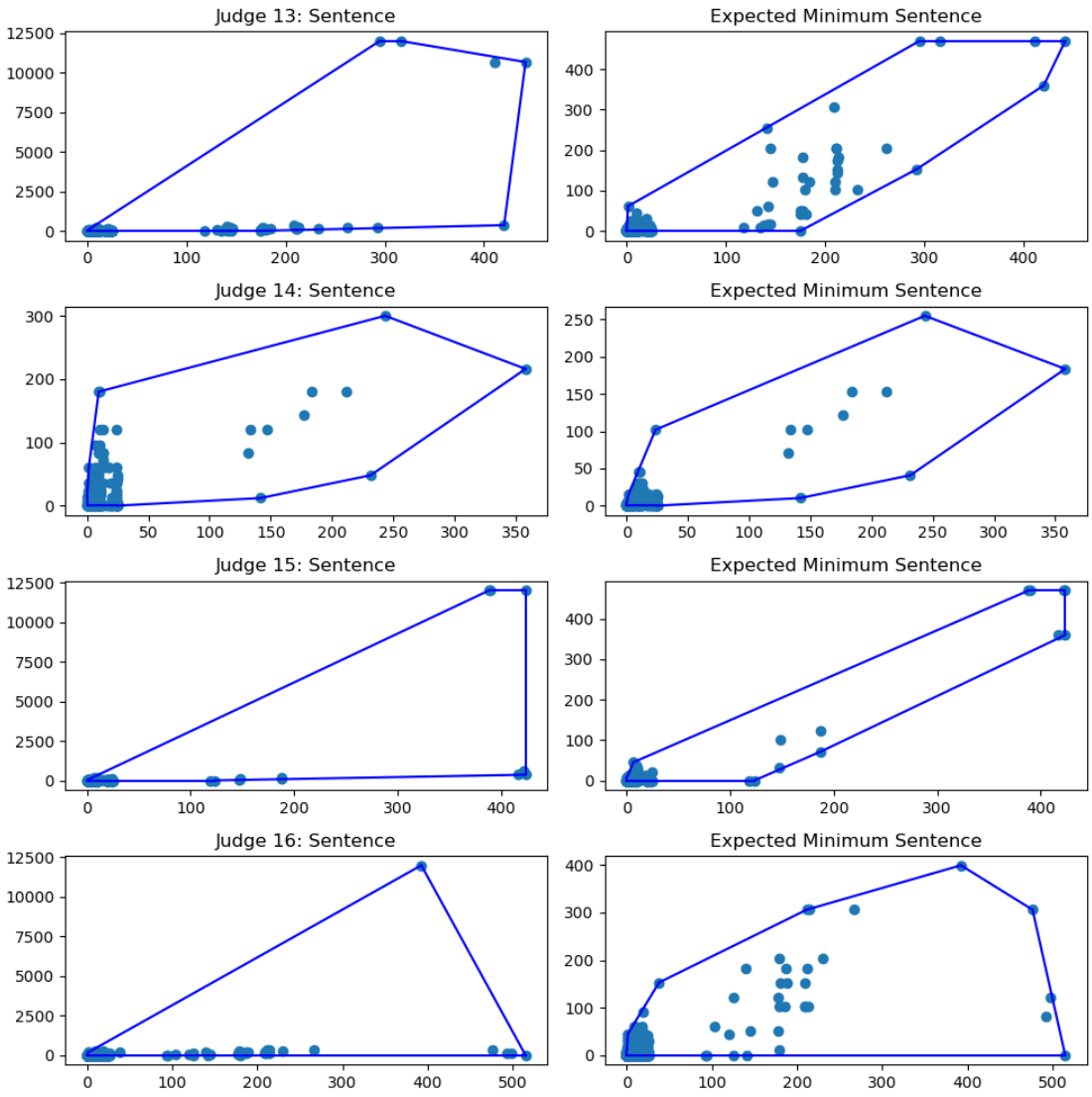
1 Judge Convex Hulls

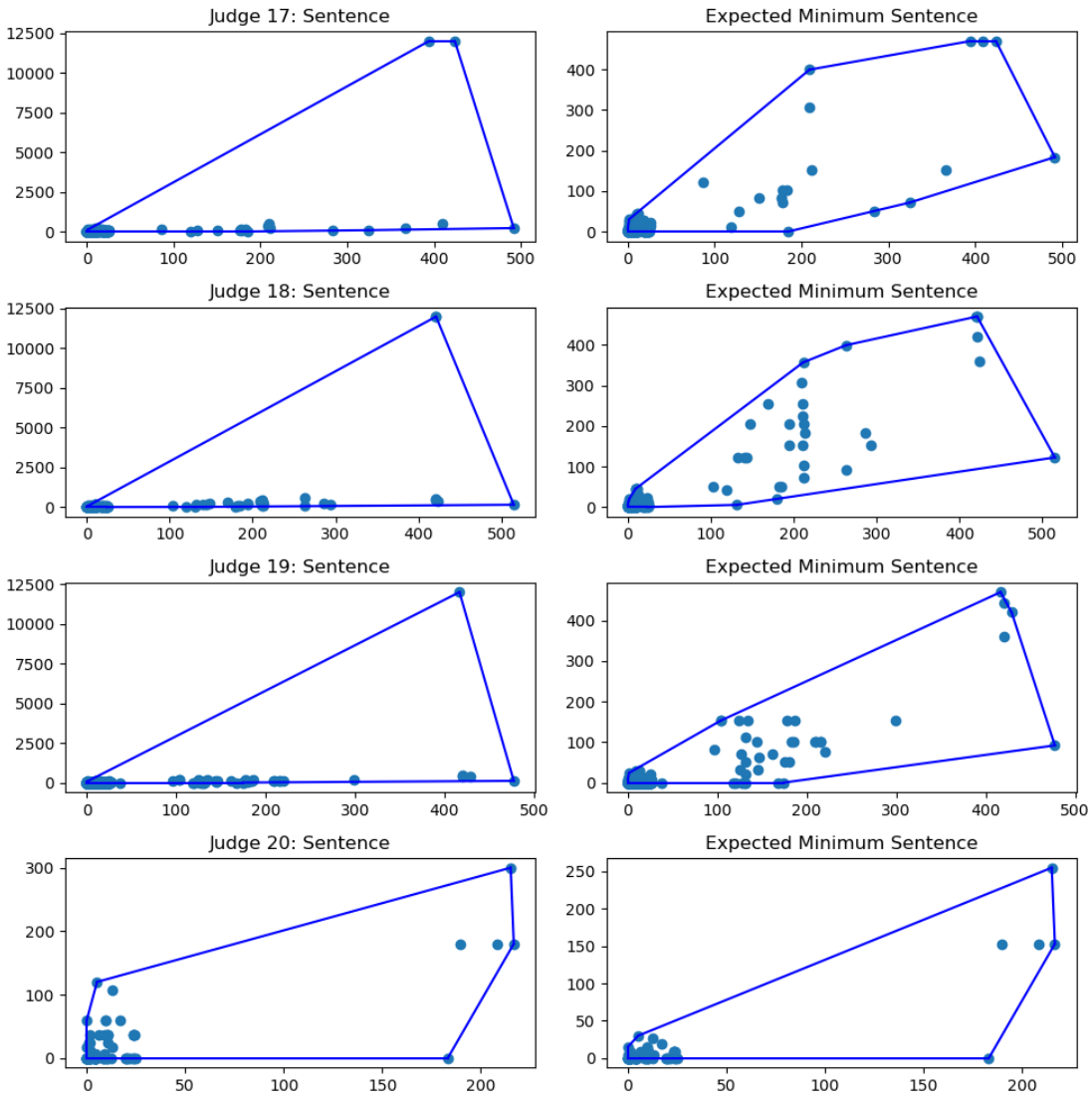
I created the convex hulls using the actual sentence and the expected minimum sentence as calculated by Rhys Hester. The ones with the actual sentence are on the left column, and the ones with the expected minimum sentence are on the right column. I think the ones with the expected minimum sentence generally look better, some of the ones with the actual sentence have triangle shapes with most of the points on the bottom boundary and a single high point.

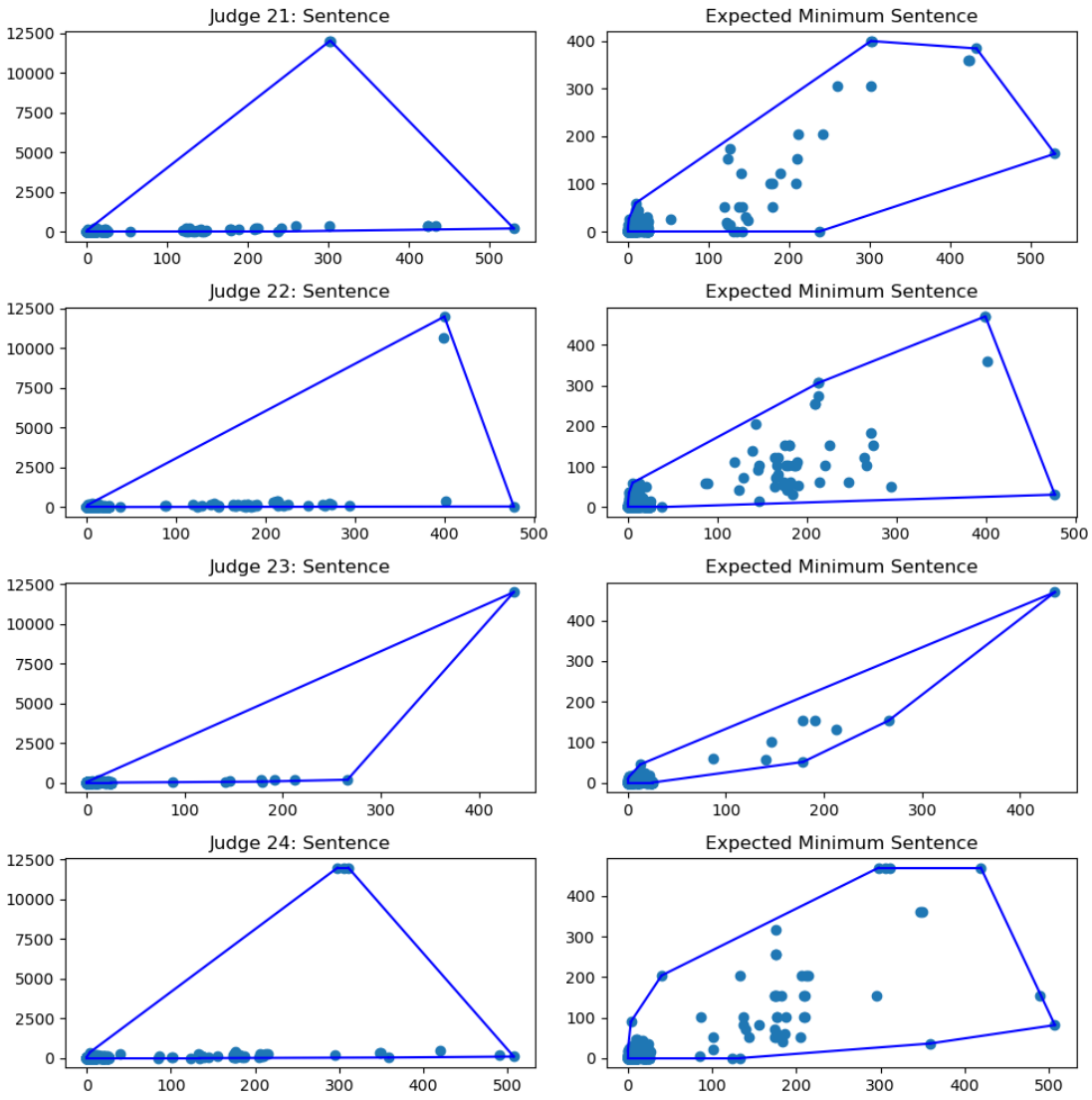

Judge 1: Sentence
Expected Minimum Sentence
Judge 2: Sentence
Expected Minimum Sentence
Judge 3: Sentence
Expected Minimum Sentence
Judge 4: Sentence
Expected Minimum Sentence

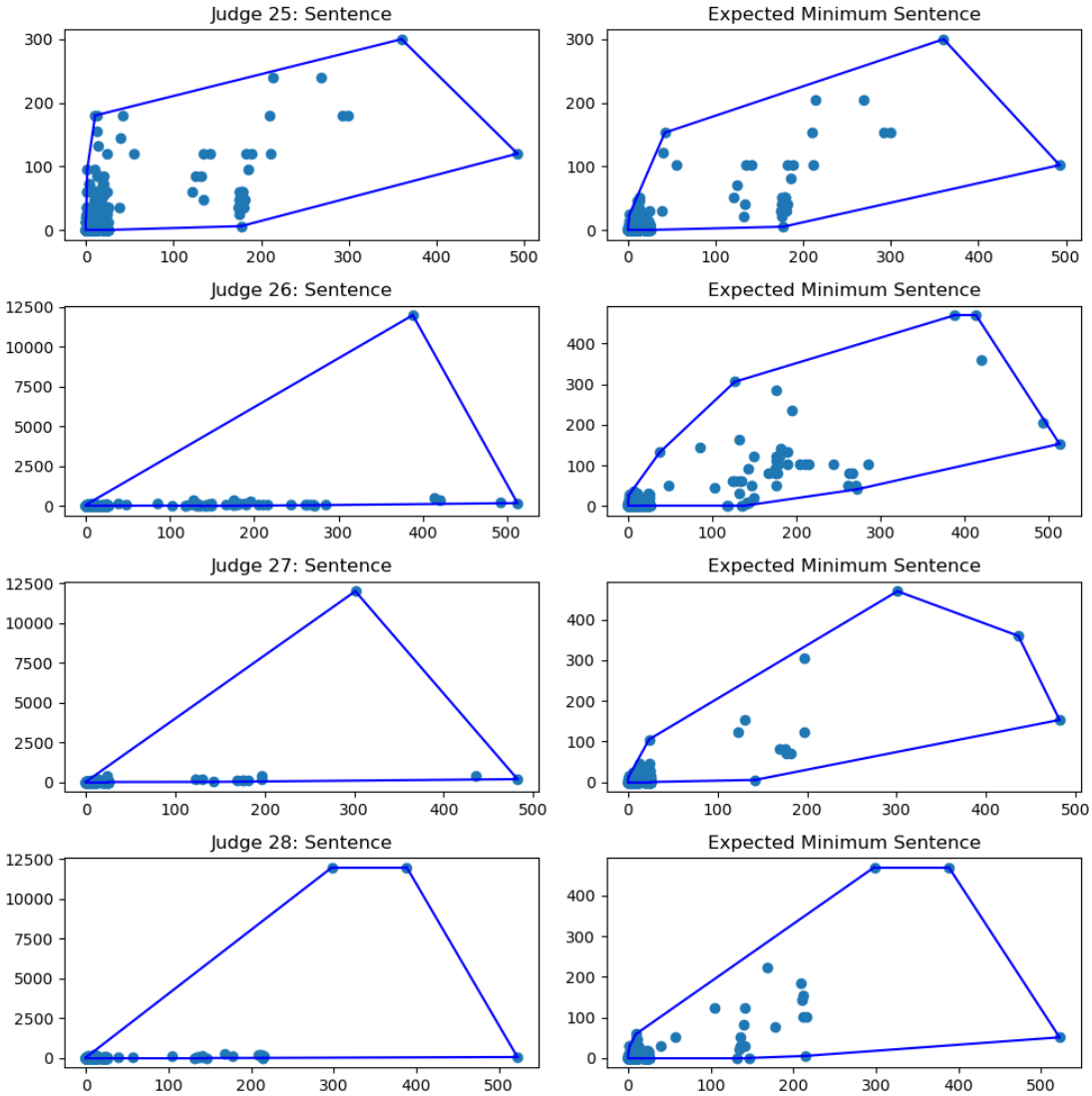

Judge 5: Sentence
Expected Minimum Sentence
Judge 6: Sentence
Expected Minimum Sentence
Judge 7: Sentence
Expected Minimum Sentence
Judge 8: Sentence
Expected Minimum Sentence

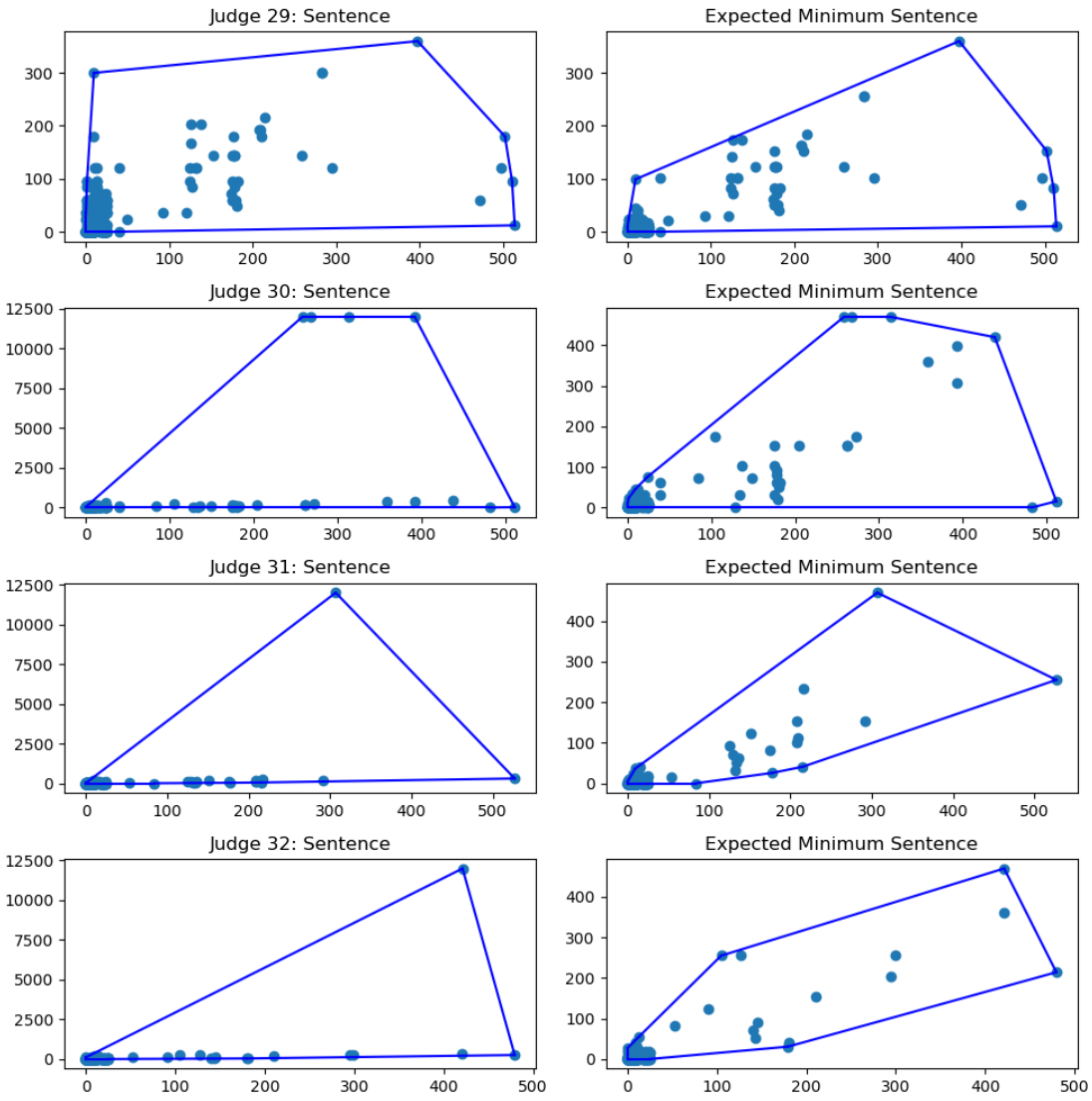

Judge 9: Sentence
Expected Minimum Sentence
Judge 10: Sentence
Expected Minimum Sentence
Judge 11: Sentence
Expected Minimum Sentence
Judge 12: Sentence
Expected Minimum Sentence

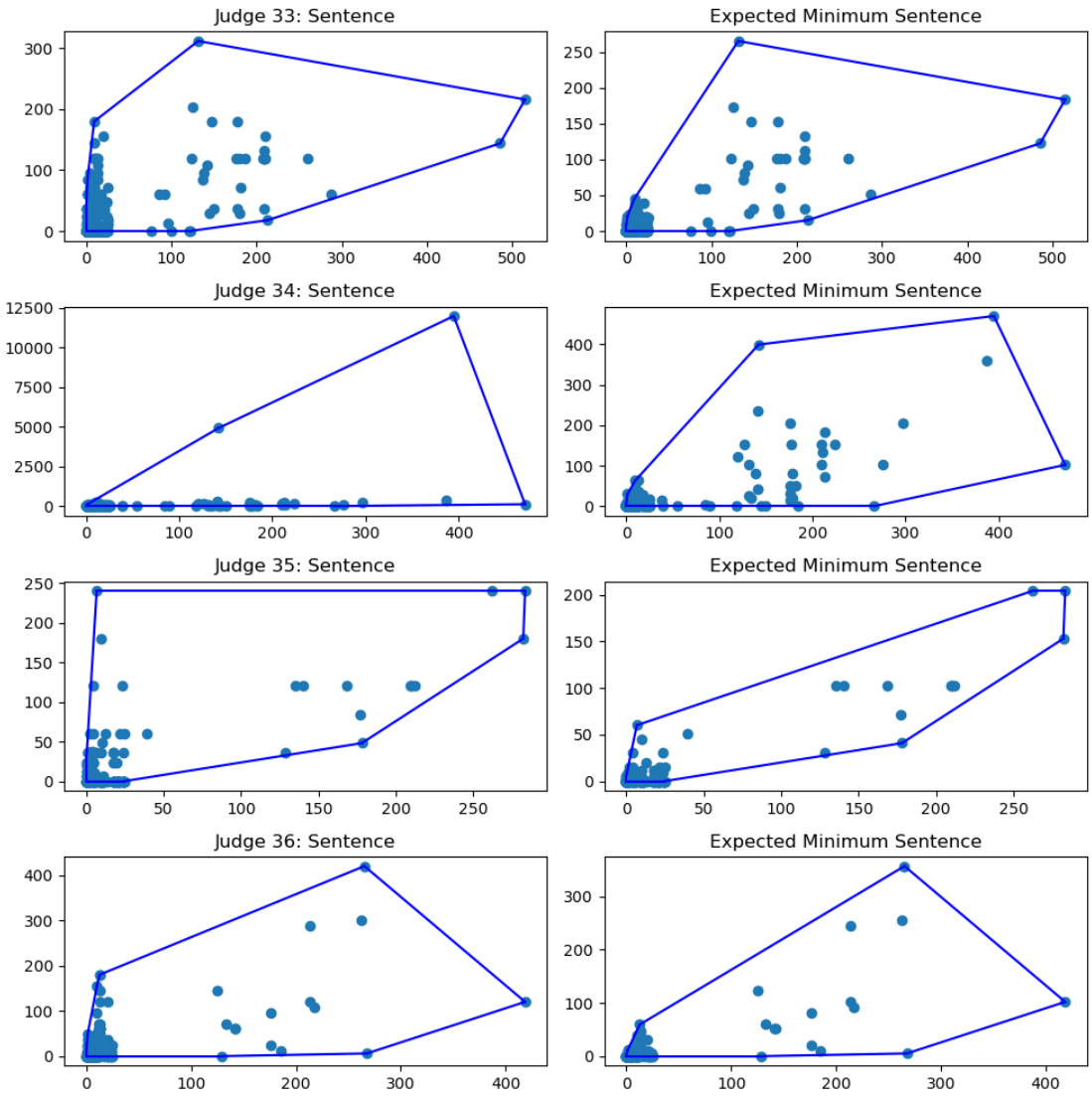

Judge 13: Sentence
Expected Minimum Sentence
Judge 14: Sentence
Expected Minimum Sentence
Judge 15: Sentence
Expected Minimum Sentence
Judge 16: Sentence
Expected Minimum Sentence

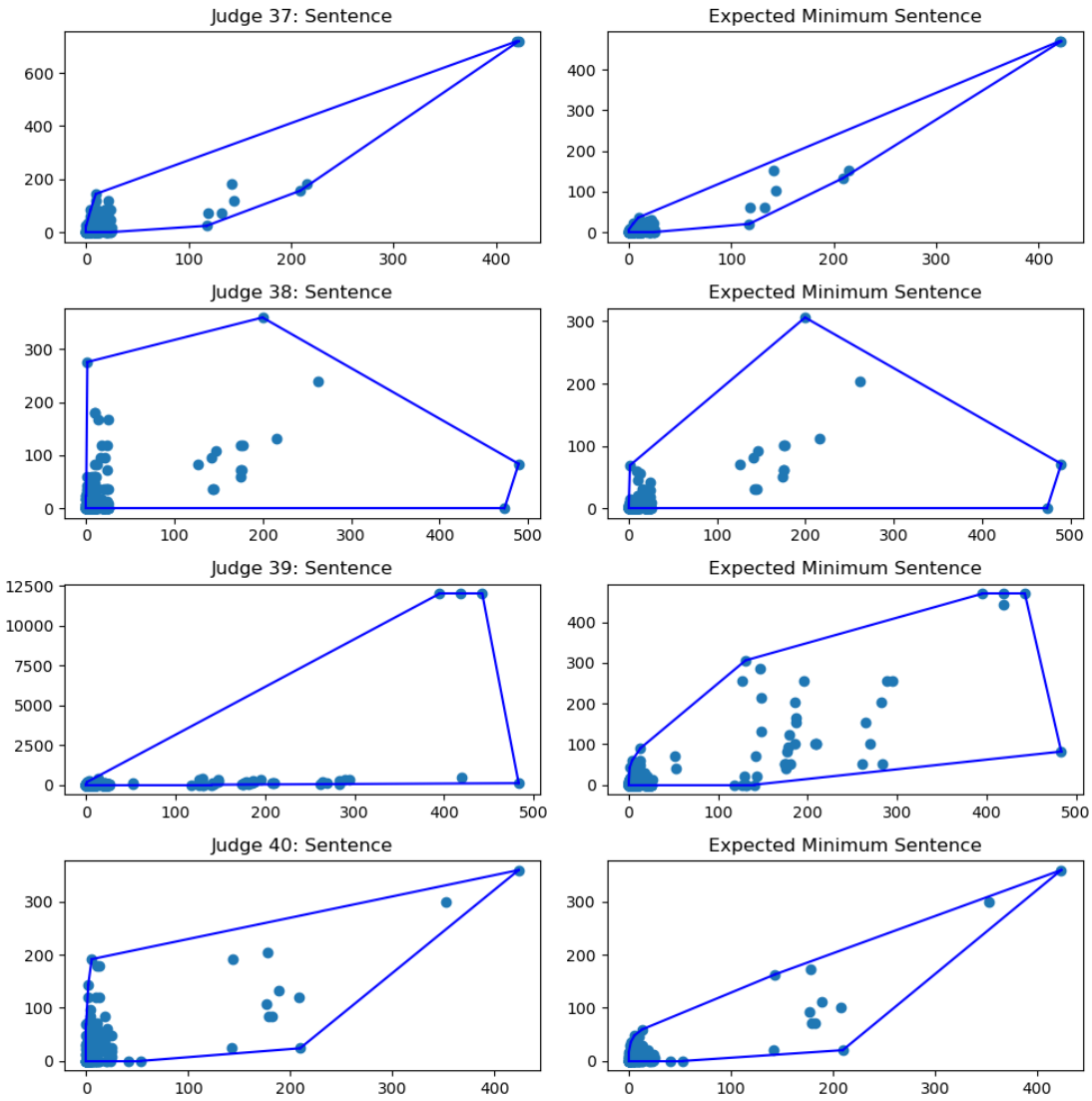

Judge 17: Sentence
Expected Minimum Sentence
Judge 18: Sentence
Expected Minimum Sentence
Judge 19: Sentence
Expected Minimum Sentence
Judge 20: Sentence
Expected Minimum Sentence

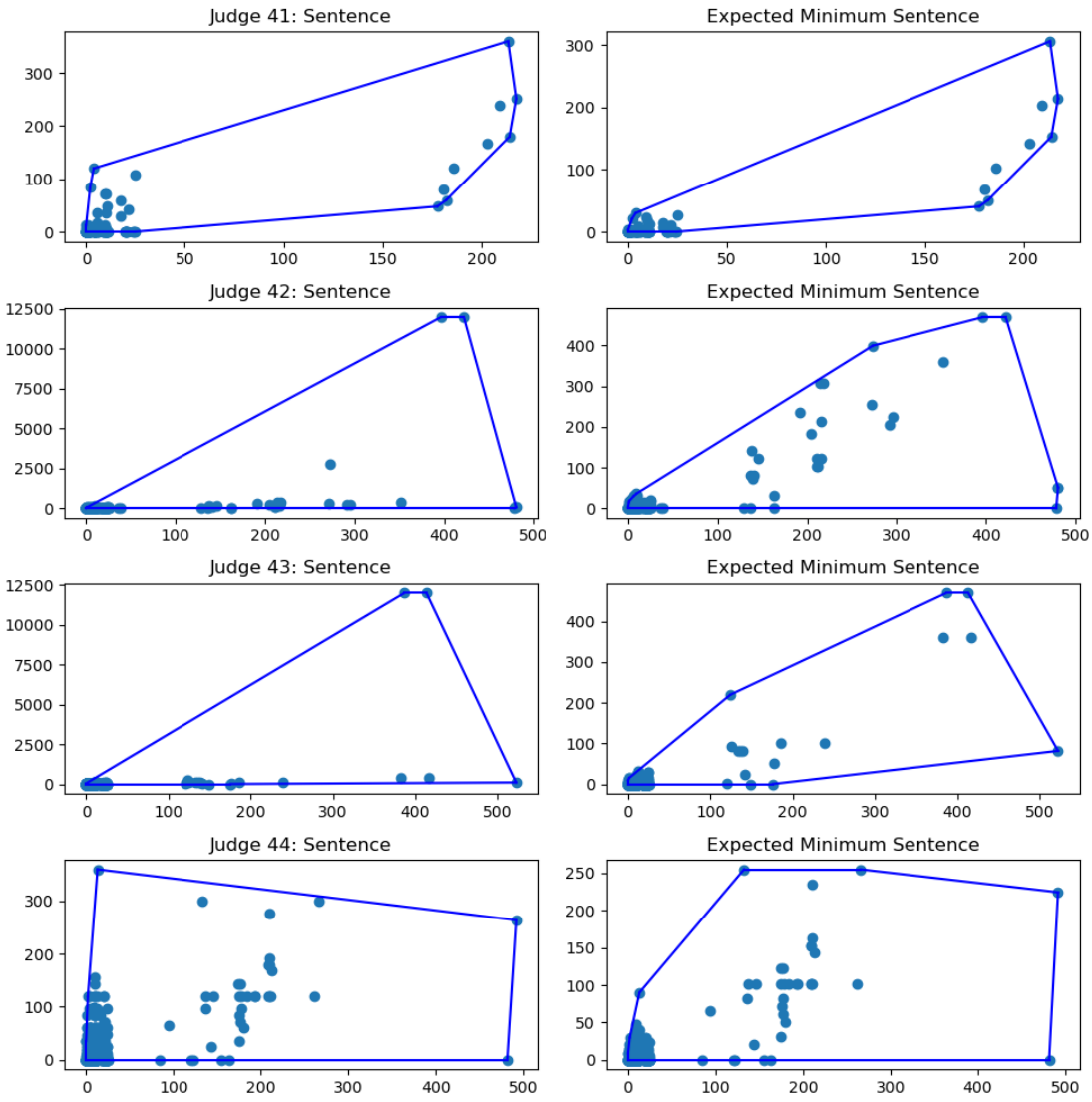

Judge 21: Sentence
Expected Minimum Sentence
Judge 22: Sentence
Expected Minimum Sentence
Judge 23: Sentence
Expected Minimum Sentence
Judge 24: Sentence
Expected Minimum Sentence

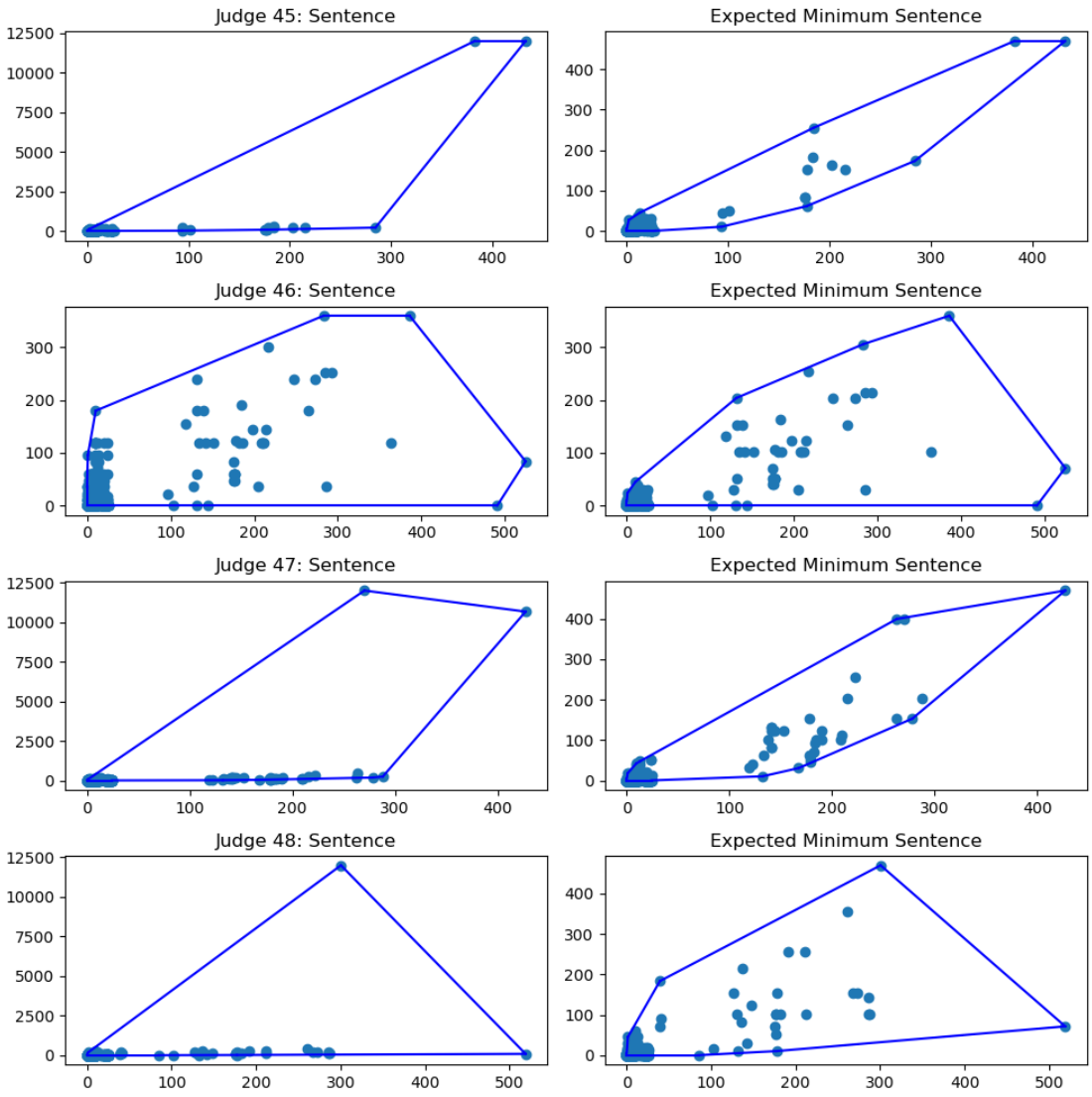

Judge 25: Sentence
Expected Minimum Sentence
Judge 26: Sentence
Expected Minimum Sentence
Judge 27: Sentence
Expected Minimum Sentence
Judge 28: Sentence
Expected Minimum Sentence

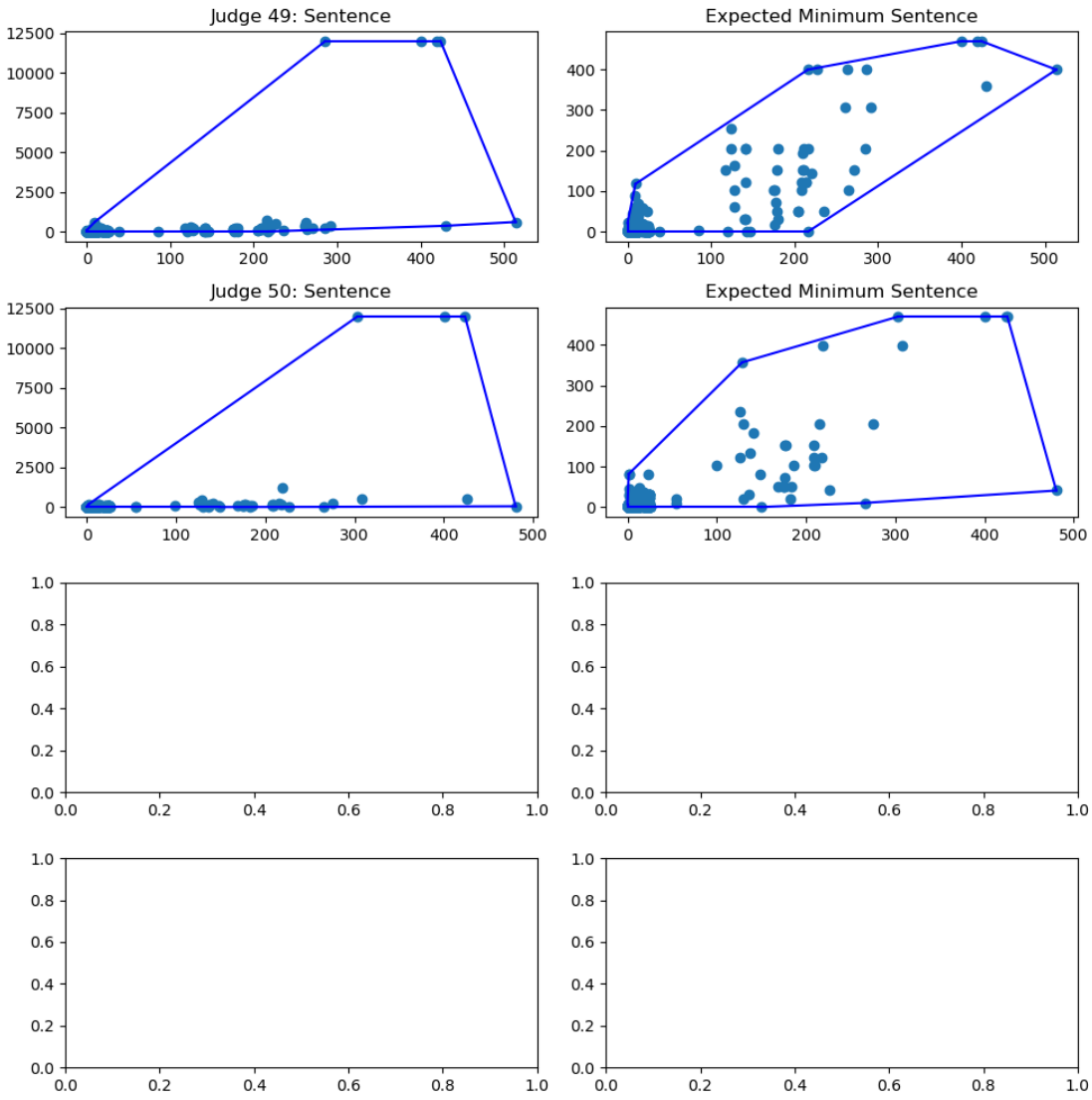

Judge 29: Sentence
Expected Minimum Sentence
Judge 30: Sentence
Expected Minimum Sentence
Judge 31: Sentence
Expected Minimum Sentence
Judge 32: Sentence
Expected Minimum Sentence


Judge 33: Sentence
Expected Minimum Sentence
Judge 34: Sentence
Expected Minimum Sentence
Judge 35: Sentence
Expected Minimum Sentence
Judge 36: Sentence
Expected Minimum Sentence


Judge 37: Sentence
Expected Minimum Sentence
Judge 38: Sentence
Expected Minimum Sentence
Judge 39: Sentence
Expected Minimum Sentence
Judge 40: Sentence
Expected Minimum Sentence


Judge 41: Sentence
Expected Minimum Sentence
Judge 42: Sentence
Expected Minimum Sentence
Judge 43: Sentence
Expected Minimum Sentence
Judge 44: Sentence
Expected Minimum Sentence


Judge 45: Sentence
Expected Minimum Sentence
Judge 46: Sentence
Expected Minimum Sentence
Judge 47: Sentence
Expected Minimum Sentence
Judge 48: Sentence
Expected Minimum Sentence



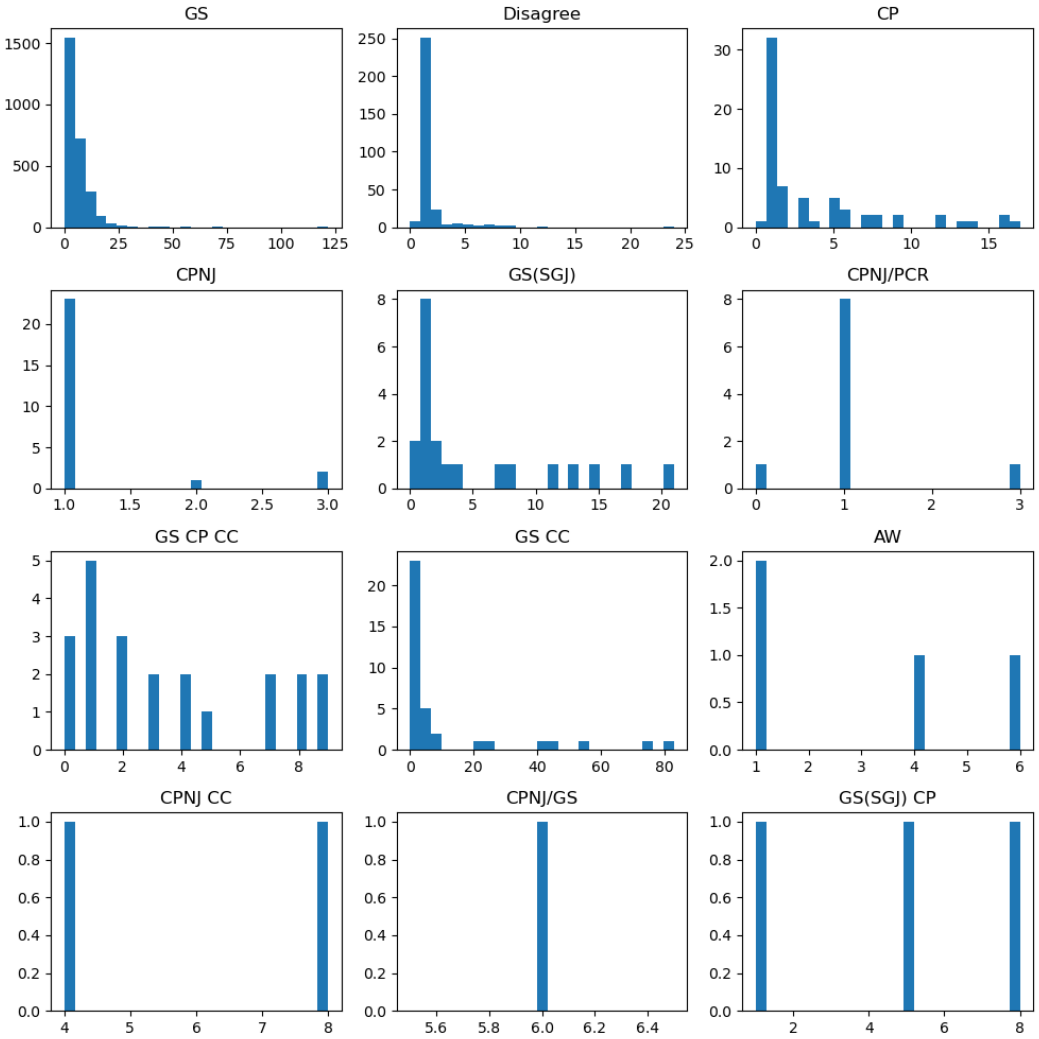
2 Distribution of pleas per day by work type

These are the distributions of number of pleas per day by work type. They are conditional on there being at least one sentencing event on that day. It's kind of hard to tell zeros apart from small numbers in some of the histograms, so I'm including a table with the number of days with zero pleas for each work type.

Table 1: Number of days with zero pleas by work type

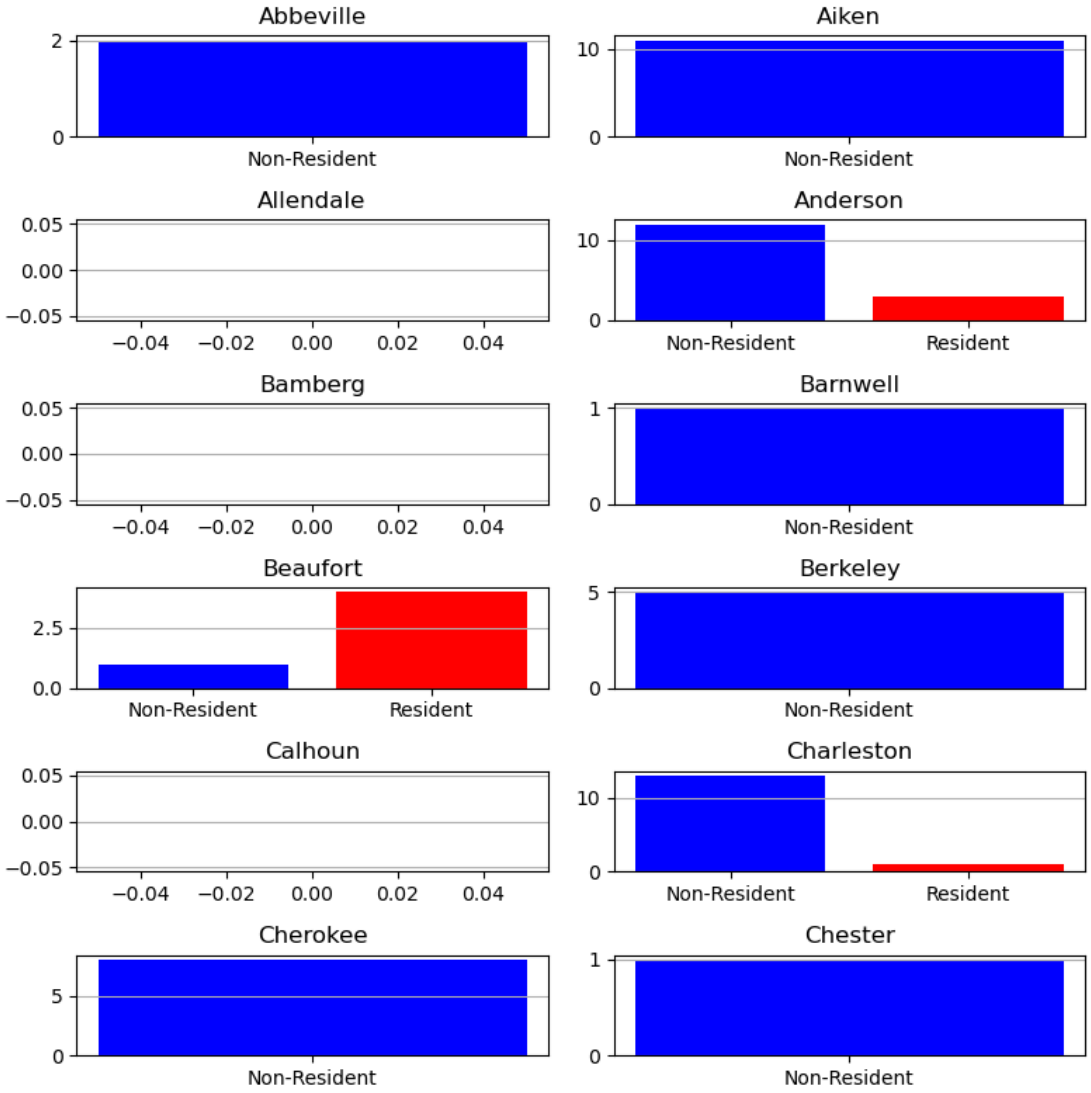
WorkType	N
CP	1
CPNJ/PCR	1
Disagree	8
GS	72
GS CC	2
GS CP CC	3
GS(SGJ)	2

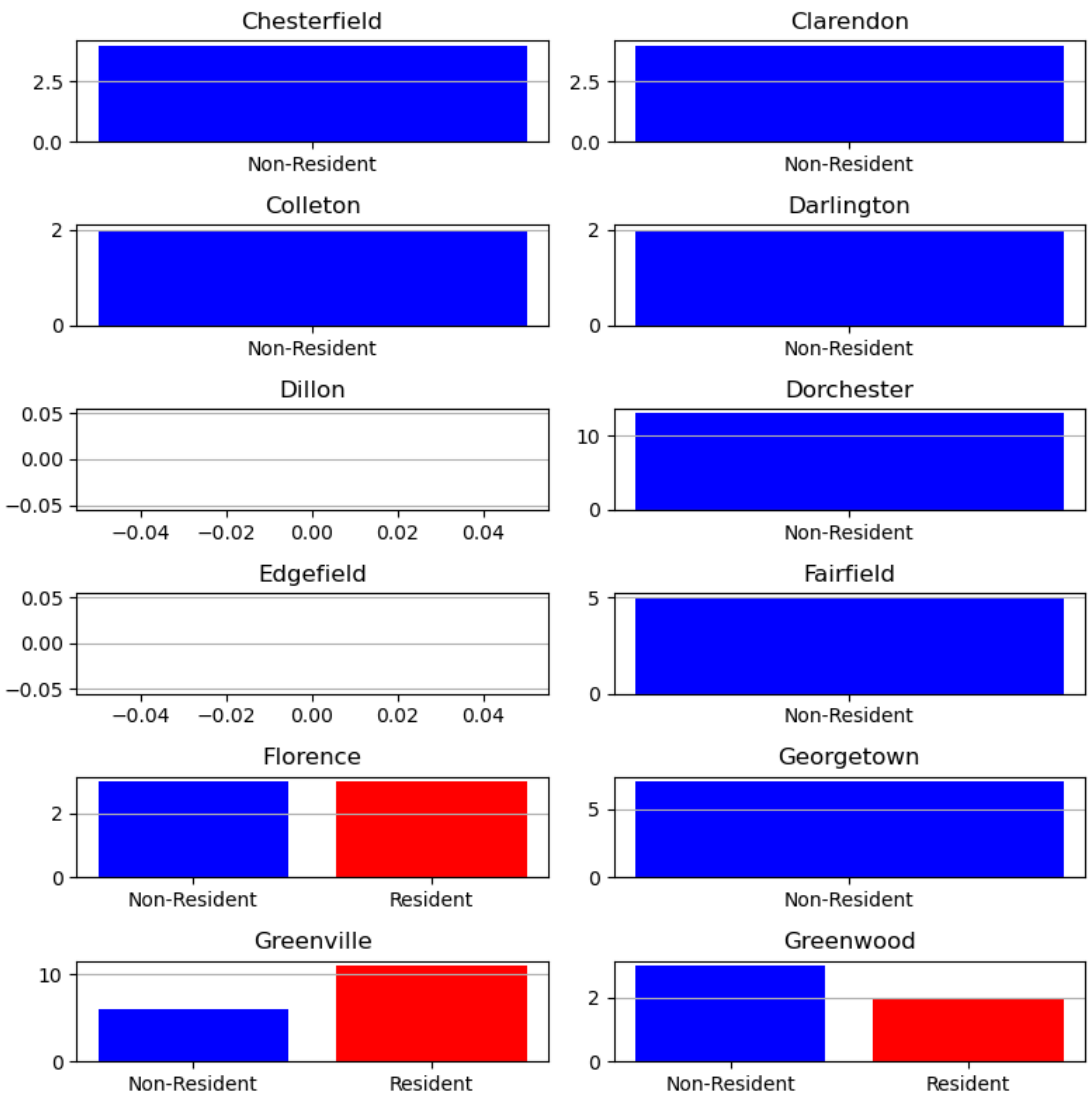
Figure 1: Histogram of pleas by work type

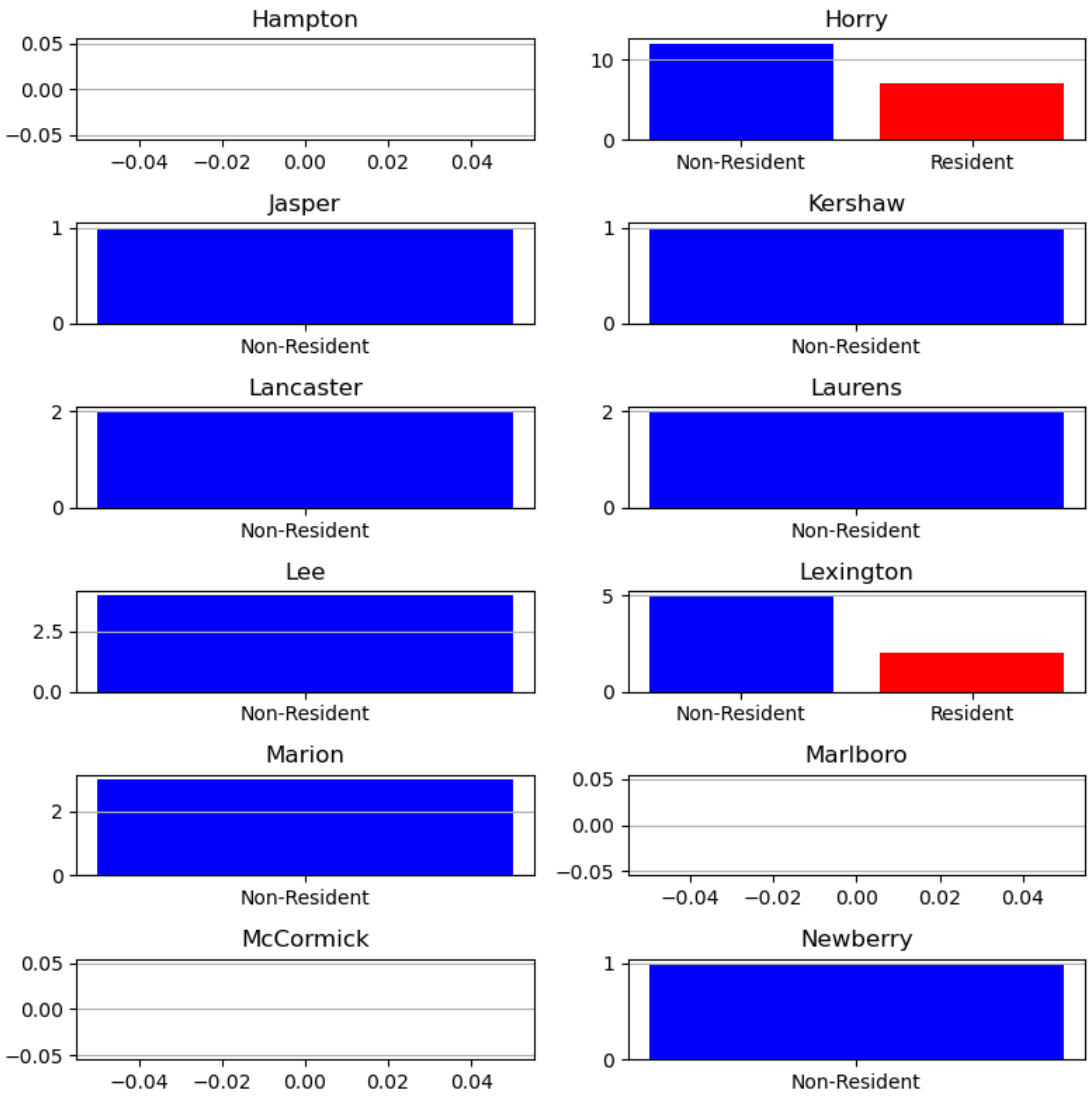


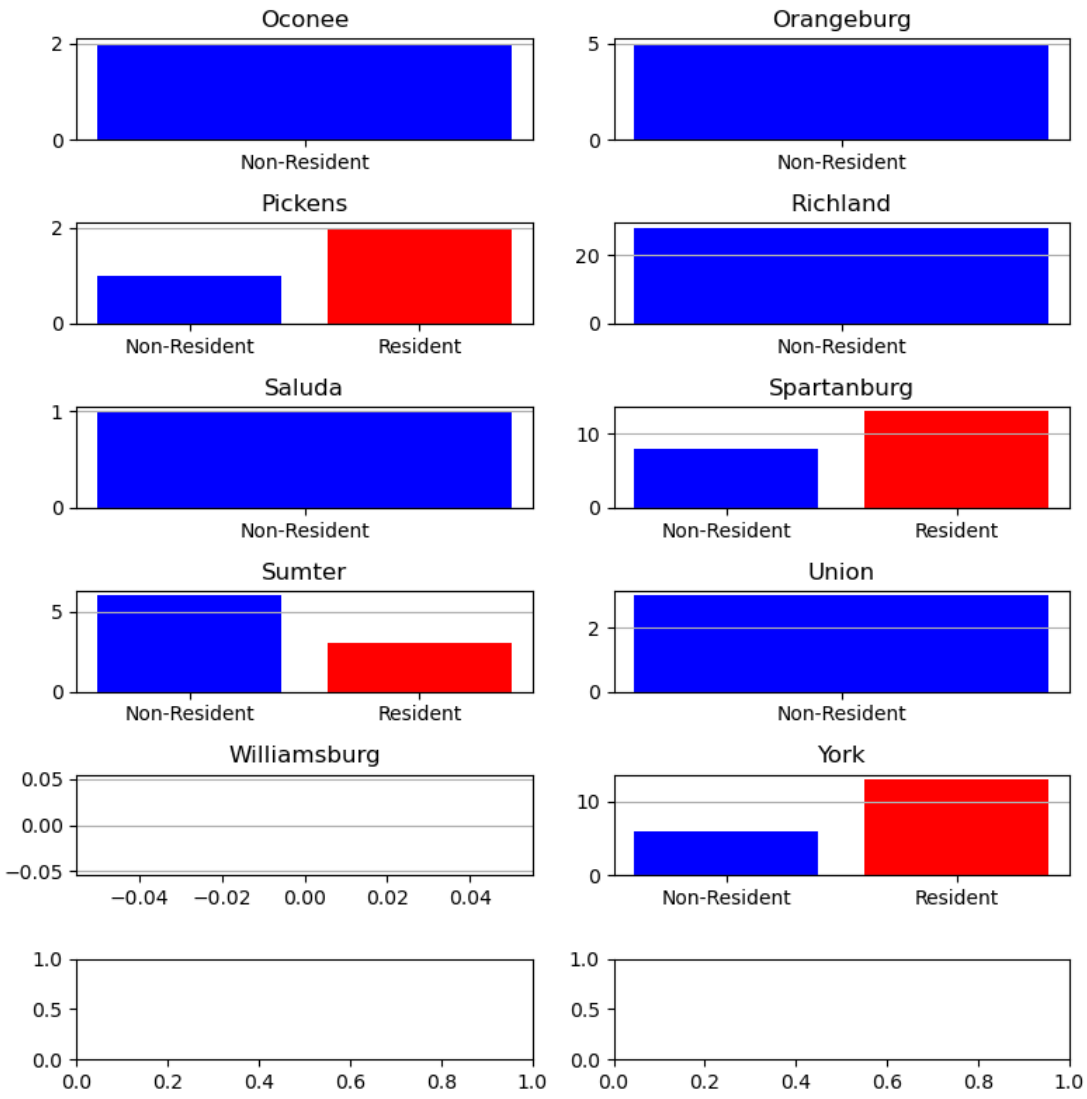
3 Trials by Resident vs Non-Resident Judges by County

To determine each judge's home county, I used Rhys's home circuit assignments to determine each judge's home circuit. For those judges that had a home circuit, I made their home county the county to which they are assigned to the most days according to the calendar data. In the histograms below, the blue bars are the number of trials heard by a non-resident judge, and the red bars are the number of trials heard by a resident judge. Overall, it looks like it is common for non-resident judges to hear trials in each county.




Chesterfield
2.5
0.0
Non-Resident
Clarendon
2.5
0.0
Non-Resident
Colleton
2
0
Non-Resident
Darlington
2
0
Non-Resident
Dillon
0.05
0.00
−0.05
−0.04
−0.02
0.00
0.02
0.04
Dorchester
10
0
Non-Resident
Edgefield
0.05
0.00
−0.05
−0.04
−0.02
0.00
0.02
0.04
Fairfield
5
0
Non-Resident
Florence
2
0
Non-Resident
Resident
Georgetown
5
0
Non-Resident
Greenville
10
0
Non-Resident
Resident
Greenwood
2
0
Non-Resident
Resident


Hampton
0.05
0.00
−0.05
−0.04
−0.02
0.00
0.02
0.04
Horry
10
0
Non-Resident
Resident
Jasper
1
0
Non-Resident
Kershaw
1
0
Non-Resident
Lancaster
2
0
Non-Resident
Laurens
2
0
Non-Resident
Lee
2.5
0.0
Non-Resident
Lexington
5
0
Non-Resident
Resident
Marion
2
0
Non-Resident
Marlboro
0.05
0.00
−0.05
−0.04
−0.02
0.00
0.02
0.04
McCormick
0.05
0.00
−0.05
−0.04
−0.02
0.00
0.02
0.04
Newberry
1
0
Non-Resident



4 Sentencing events with missing dates

We will deal with trials with missing dates in the following way. Suppose judge j has m sentencing events with missing dates in county c. We first use the calendar data to determine what days judge j was scheduled to be in county c. Let n_{jc} be the number of days that judge j was scheduled to be in county c and let D_{jc} be the set of all days in which judge j was scheduled to be in county c. For each day $d \in D_{jc}$, we would increase the day's event count by $\frac{m}{n_{jc}}$. **Note:** I think it might be a good idea to restrict D_{jc} and n_{jc} to be the set/number of days in which the judge processed at least one sentencing event, otherwise, we will probably end up with a lot of days with just $1/n_{jc}$ pleas sentenced, which would be excluded from our capacity calculations because we currently exclude days with less than 1 sentencing event. However, this would assume that if a plea is processed at all, it is more likely that it was processed on a day in which other pleas were also processed. We should probably try both ways.

5 Trial Scheduling in the Simulation

We first describe a method to assign a set of judges to a set of counties for T time periods. The time periods here are discrete and we think of them as weeks. We describe how the assignment would work for each individual week, but in practice all the assignments would be determined before running the rest of the simulation. Since there are 50 judges and 46 counties, in each period we would randomly draw, without replacement, 46 judges from the list of 50. Then, each of the selected judges will stay in his "home" county with probability η and with probability $1 - \eta$ he will be assigned to another county. We refer to judges that don't stay in their home county in a specific week as "rotating judges", and we refer to counties whose home judge will be rotating as "rotating counties". We assign rotating judges to rotating counties as follows: we randomly shuffle the rotating judges and the rotating counties are sorted alphabetically. So the rotating judge in the first position after shuffling would be assigned to county A, the second to County B, and so on.

We would schedule trials in the following way. First, for each county, we would randomly select the trial dates. Then, in each time period, we would randomly assign judges to counties as described above, if a judge lands on a county on a day in which a trial is scheduled in that county, then the judge would stay there for 2 weeks. As a result, when assigning judges and counties for the next period, the county and the judge would be removed from the list of available counties/judges. In other words, the assignment for that judge and county would already be determined for the next week as well. We could then assign the remaining judges/counties using the original method.