Dear Dr. Penelope Dyson

I am Carmen Santana and I am the data scientist that will be working with you on the data investigation on behalf of *Awkward Problem SolutionsTM (*APS). After a first explorative look at the training dataset and reading through your exchange with Henry, I have collected some open questions that I would appreciate some clarifications on:

1) Are you more interested to into know with certainty and precision if an individual will commit a crime again, with the trade-off not accounting for all individuals who will commit a crime but weren't predicted as such by the model. Or are you more interested into identifying the greater number of individual that are likely to commit a crime, with the downside of sometimes labeling innocent people as recidivates? , this last one might contribute in the racial group bias. Since I saw that your dataset is unbalance, posibily labeling black people as reoffenders. Personally, I think we should start with looking for precision (the first approach), and check how the model behaves (using a confusion matrix).

2) What does the name of each column mean?

3) I also wanted to ask, which column corresponds to the prediction data from your current model. From the data I think those the columns are:

type\_of\_assessment [Risk of Recidivism]

decile\_score

score\_text [

v\_type\_of\_assessment [Risk of Violence]

v\_decile\_score

v\_score\_text

However I wanted to clarify with you.

4) As well, I wanted to clarify, Does the column called is\_recid has the true (real) value if they have commited a crime after release (labeled as 1) or if they haven’t (labeled as 0) or is it the prediction from your current model. The same question goes for the column called **two\_year\_recid,** is the real (true) value if they recidivated during the two years after they were release (labeled as 0 if not, and 1 if yes) or does it come from the predicted value from the other model? .

5) There is a column called names, are does the actual names of the convicts? Shouldn’t the names be anonymized due to data privacy concerns?

6) To clarify, is dob, day of birth?

For the race, did the data was obtained by self-identification of the convict or by what the police officer thinks?

7) Regarding c\_offence\_date and c\_arrest\_date:

When offense date (c\_offence\_date) is missing there is usually a value for arrest date (c\_arrest\_date:)). However some rows are missing both, does that mean that they were never arrested but they commited crime? Or does it mean that they didn’t commit a crime? If they have c\_offense\_date but not c\_arrest\_date does it mean that they were never arrested or is it an error from the database and I should take as arrest date the offense date in those cases?

8) There are some columns with NAN in c\_case\_number, but with values in 'r\_case\_number' and 'vr\_case\_number', what does that mean? How can a convict recidivate if they doesn’t have a first crime (c\_case\_number)? Or am I understanding wrongly what a c\_case\_number mean?

9) What does the values for c\_charge\_degree and vr\_charge\_degree stand for?

10) What is consider juvenile (less than 12 yo, 15 yo, or 18 yo?) in juv\_fel\_count and is it 10 really the max of felonies someone can commit ?

11) juv\_misd\_count maximum value is 13, is it a fixed roof of misdemeanors that a juvenile can commit?

12) Priors\_count , does it mean the times the covicts have been in jail before or being detained by the police but not put in jail or being denounced by victims?

13) What is compas\_screeing\_date?

14) Does type\_of\_assesment(Risk of Recidivism) includes also violent crime ?

15) In theory what decile\_scores correspond to each score\_text?

16) does v\_type\_of\_assessment mean violent crime?

17 ) What in theory what v\_decile\_scores correspond to each v\_score\_text?

18) Are the columns starting with vr\_ mean violence reincide?

19) What are your requirements for the REST API? In particular, I would appreciate if you could illustrate what type of requests it should be able to handle by supplying a sample query.

As well, the first exploratory analysis shows that there might be bias in the labelling of High risk for of recidivated and violent recidivated, towards afrcan-americans (even if they haven’t recidivated), and low risk towards Caucasian. In a correlation analysis, race groups were correlated with risk scores to identify any potential biases in scoring. For instance, the correlation coefficient between African-Americans individuals and receiving a high-risk score was found to be 0.29 Pearson correlation coefficient. This indicates a weak positive association, suggesting that as the proportion of African-American individuals increases, there is a slight trend towards higher risk scores. However, this correlation is weak and does not imply causation, and further analysis would be necessary to understand the underlying factors contributing to this pattern. We also found that Caucasians tend to get lower risk scores (with a coefficient of 0.18).