****Overview** of the analysis: Explain the purpose of this analysis.**

From a CSV containing more than 34,000 organizations that have received funding from Alphabet Soup over the years, develop a tool to utilize that can help Alphabet Soup select the applicants for funding with the best chance of success in their ventures.

****Results**: Using bulleted lists and images to support your answers, address the following questions.**

After first reading in the charity_data.csv to a Pandas DataFrame. The next steps were to Identify the following in your dataset.

* *What variable(s) are the target(s) for your model?* The target variable is the feature of a dataset that you want to understand more clearly. It is the variable that the user would want to predict using the rest of the dataset. In this analysis, the target variable is "IS_SUCCESSFUL".

* *What variable(s) are the feature(s) for your model?* A feature is defined asa measurable property of the object you're trying to analyze. In datasets, features appear as columns. The APPLICATION_TYPE, AFFILIATION, CLASSIFICATION, USE_CASE, ORGANIZATION, STATUS, INCOME_AMT, SPECIAL_CONSIDERATIONS, ASK_AMT, IS_SUCCESSFUL columns are the featured in the dataset.

* *What variable(s) should be removed from the input data because they are neither targets nor features?* The EIN and NAME columns were dropped from the model. APPLICATION_TYPE and CLASSIFICATION were replaced into the other category.

Categorical data was converted to numeric with `pd.get_dummies`. Split the preprocessed data into the features and target arrays. Followed by a Split of the preprocessed data into a training and testing dataset. Finally, the data was scaled.

	APPLICATION_TYPE	AFFILIATION	CLASSIFICATION	USE_CASE	ORGANIZATION	STATUS	INCOME_AMT	SPECIAL_CONSIDERATIONS
0	T10	Independent	C1000	ProductDev	Association	1	0	N
1	T3	Independent	C2000	Preservation	Co-operative	1	1-9999	N
2	T5	CompanySponsored	C3000	ProductDev	Association	1	0	N
3	T3	CompanySponsored	C2000	Preservation	Trust	1	10000-24999	N
4	T3	Independent	C1000	Heathcare	Trust	1	100000-499999	N

* Compiling, Training, and Evaluating the Model

* How many neurons, layers, and activation functions did you select for your neural network model, and why?

The method used to determine the number of neurons, layers and activation functions was simple trial and error. This is a more basic choice. There were 3 layers including the outer layer with 80 and 30 for each hidden node respectively. Relu and sigmoid were the activation functions.

* Were you able to achieve the target model performance? After the initial run through the data the accuracy of the model was approximately 73%.

* What steps did you take in your attempts to increase model performance? In increasing the performance of the model, the Ein column was the lone column that was removed. The second model had 4 layers including the outer using relu for the first 2, tahn for the 3rd and sigmoid once again as the outer. With the second model 78% accuracy was achieved.

```
Model: "sequential"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 dense (Dense)               (None, 80)                3520

 dense_1 (Dense)             (None, 30)                2430

 dense_2 (Dense)             (None, 1)                 31

=================================================================
Total params: 5,981
Trainable params: 5,981
Non-trainable params: 0
```

****Summary**: Summarize the overall results of the deep learning model. Include a recommendation for how a different model could solve this classification problem, and then explain your recommendation**.

The deep learning model provides solid accuracy results at 73% and 78%. However, the volatility of the in the model indicates that more epochs maybe necessary. An increased number of epochs leading to a smoother line is ideal. It is recommended to gather a good amount of data to get reliable predictions. Considering accuracy and/or Interpretability of the output, speed time, linearity and number of are key. A logistic regression model may suffice because it predicts a dependent data variable by analyzing the relationship between one or more existing independent variables to predict a binary outcome.