To: Dr. Melodie Wilson

From: Dante Beltran, Hamza Salman, Kevin Truong, Bochi Li, Mark Greenidge

Date: 05/29/2021

Subject: Cycle of Operation

# **3.11.1 Cycle of Operation**

The CSV files are first uploaded to the website through the upload page form. The data in the CSV file is then scrubbed through using Python to verify its integrity. After the verification process, any missing headers for the data are auto generated and added to the CSV. The data is then uploaded into the MongoDB database.

Once the data is successfully uploaded into the MongoDB database it is ready to be used to create visualizations and dashboards. The web app then uses Python to understand the data columns so it can determine which visualizations can be used. After the data is ready, Python then extracts the data from the MongoDB database and sends it to the implemented D3.js and DC.js libraries that generate the visualizations.

The visualizations are then displayed to the user and all the analysis pages are updated to reflect the new data. The user is then able to interact with the visualizations and make any adjustments that they deem necessary. These changes are then managed in the backend using the DC.js libraries and Python. The user is also presented with the ability to extract the dashboards into a PDF or JPEG format.

The user is then presented with the option to restart the procedure or have the option to view how the analysis works in the back end. The web page has all the documentation on how the entire application works, from the backend of how the data is managed, to how they are visualized in the front end. After the user has completed their analysis. The data file they uploaded is removed from the web server after 24 hours.