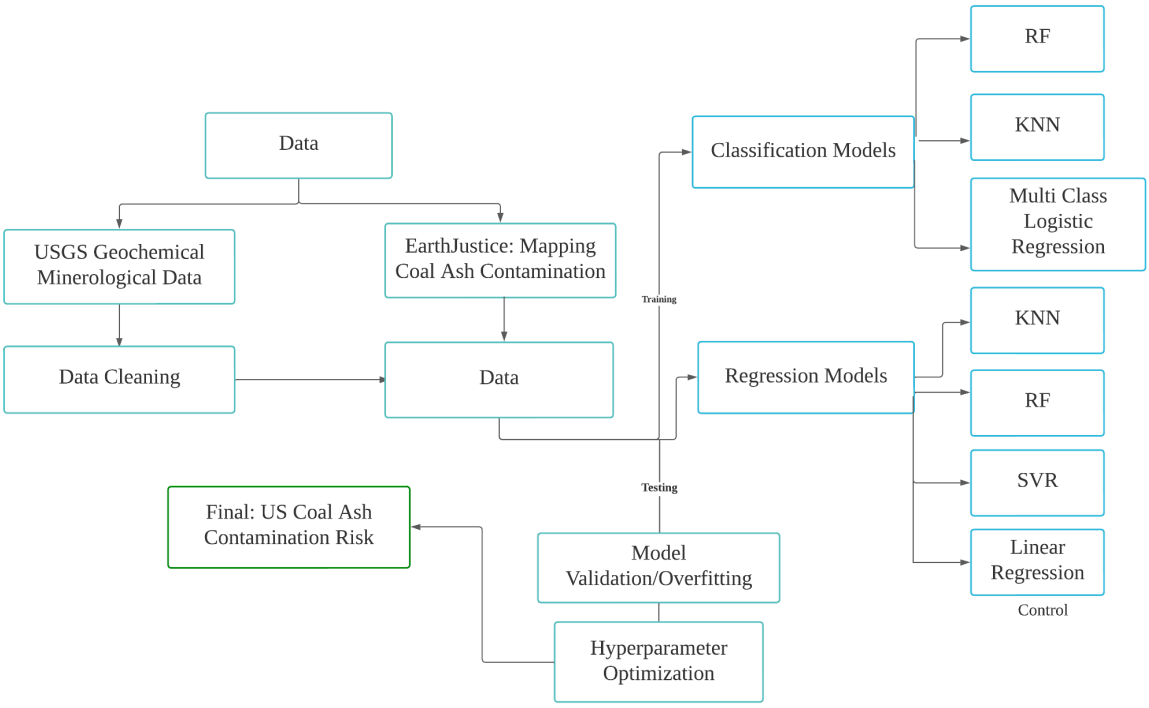

Figure 1. Workflow diagram of process relating to establishing a correlation between heavy metal concentrations and coal ash plants.

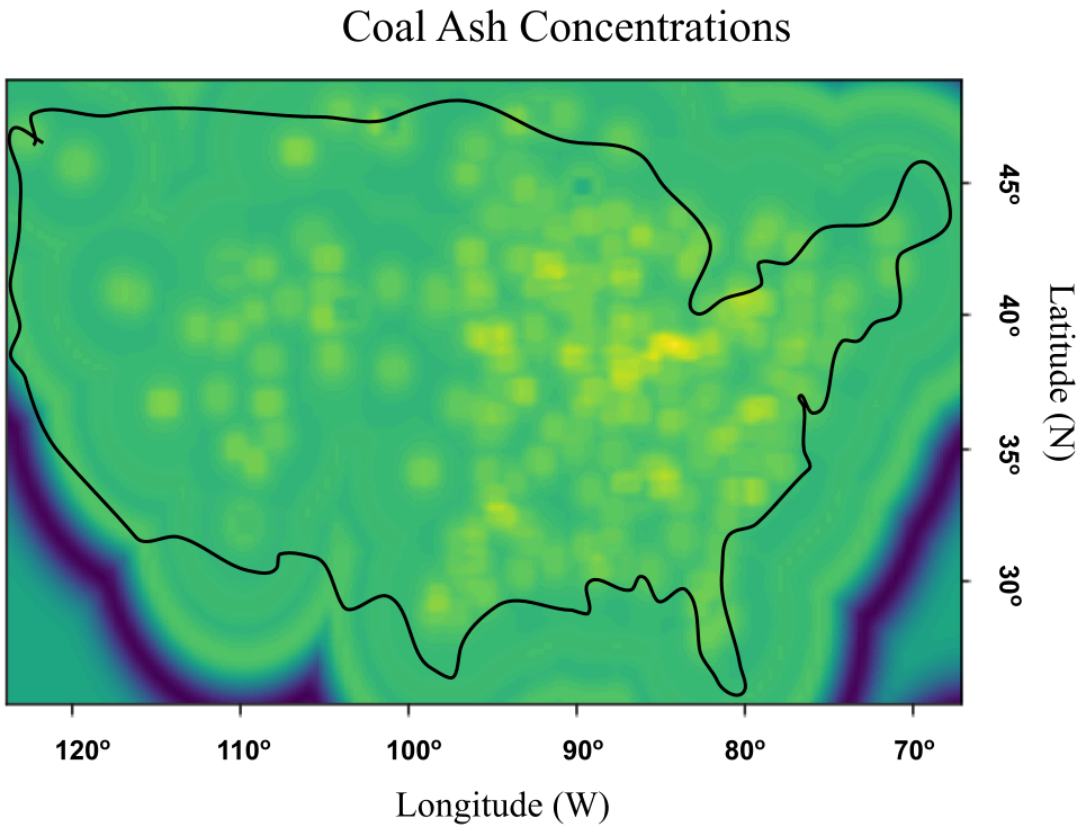

Figure 11. A map predicted by the model of the average concentrations of the 4 heavy metals across the United States for modeling coal ash spread.

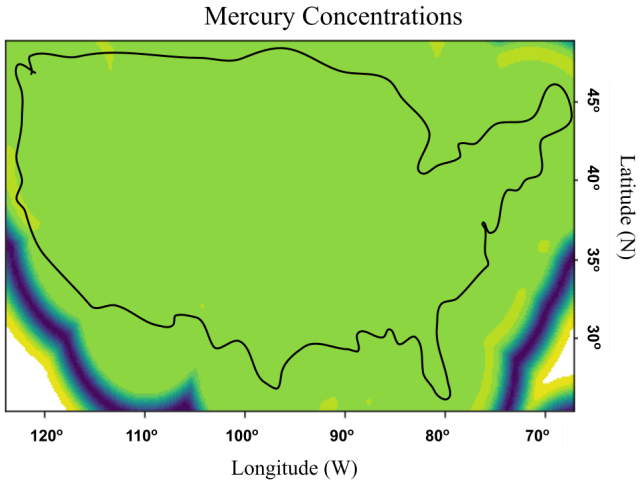

Figure 12. A map generated by the model of the concentrations Mercury across the United States

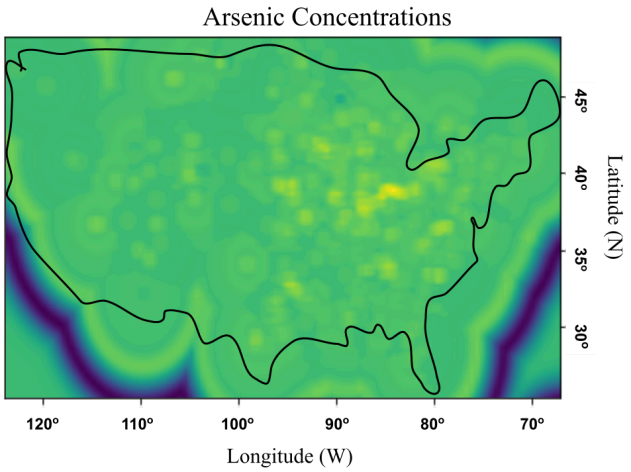

Figure 13. A map generated by the model of the concentrations Arsenic across the United States

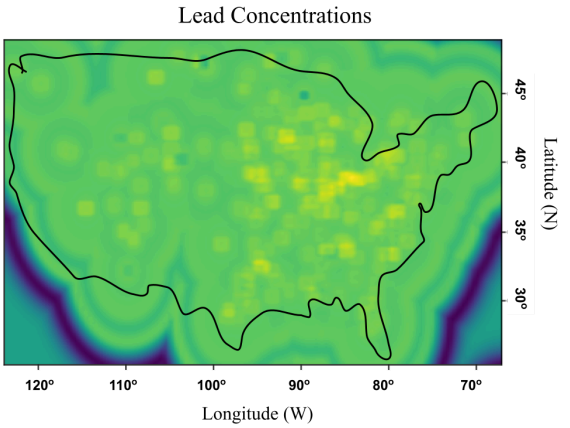

Figure 14. A map generated by the model of the concentrations Lead across the United States

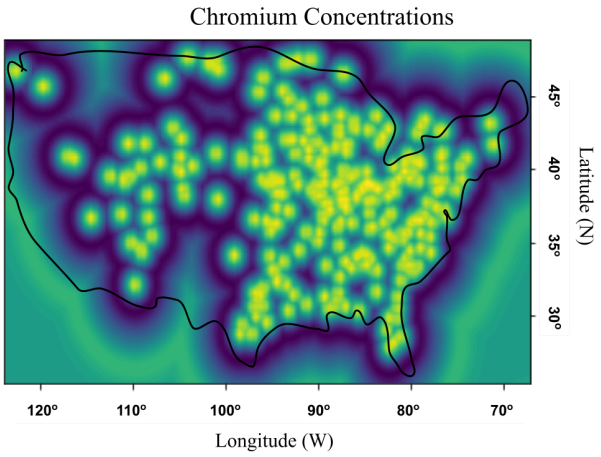

Figure 15. A map generated by the model of the concentrations Mercury across the United States

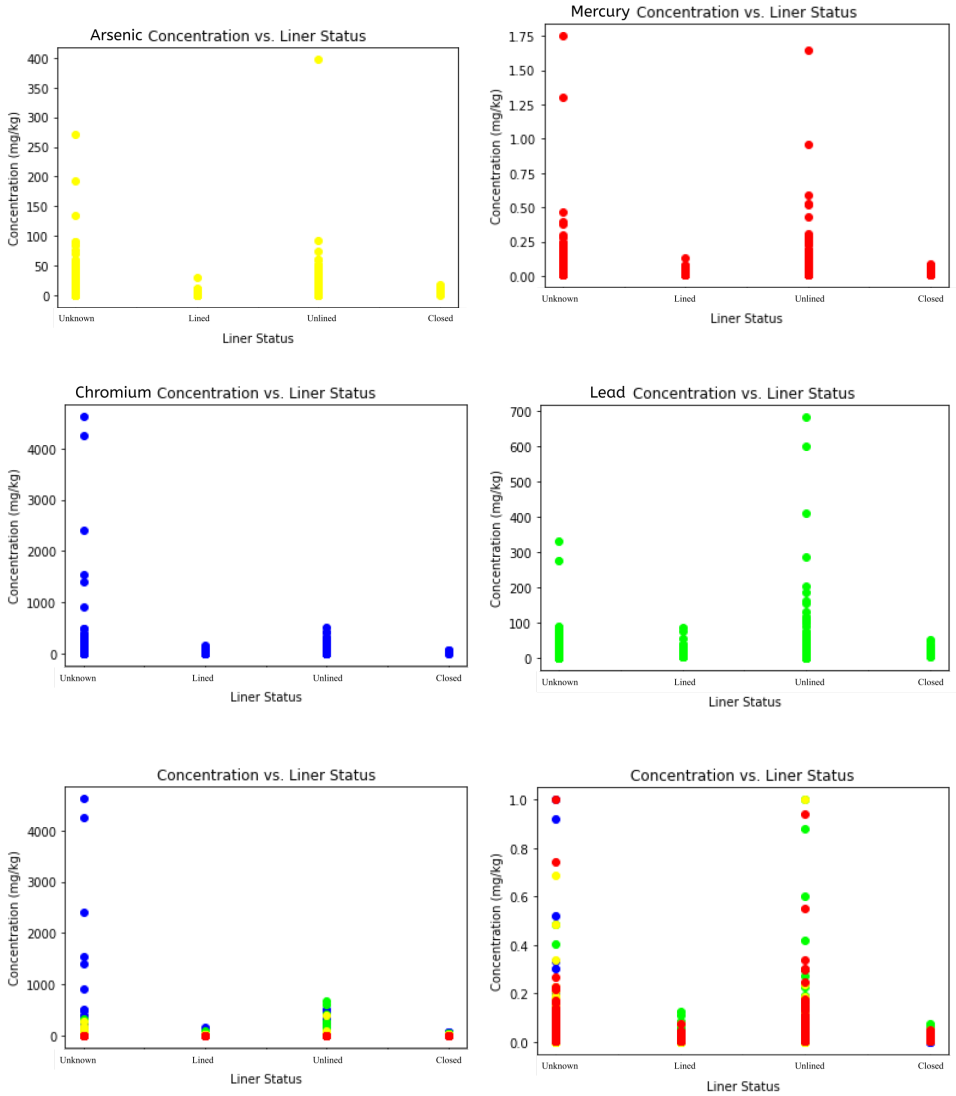

Figure 16. Graphs of Concentration of Metals with respect to Liner Status.

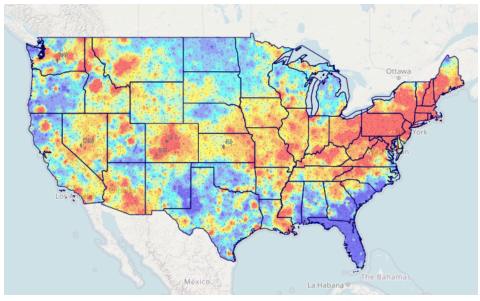

Figure 2. Map of Concentrations of Lead found in Top 5 cm Soil (Used for Data) [Credit USGS]

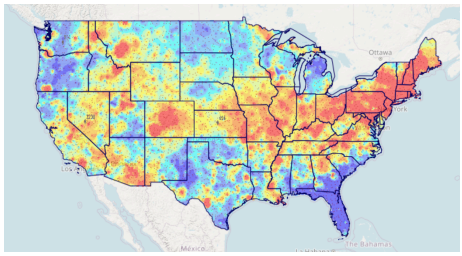

Figure 3. Map of Concentrations of Lead found in Horizon A Soil (Used for Data) [Credit USGS]

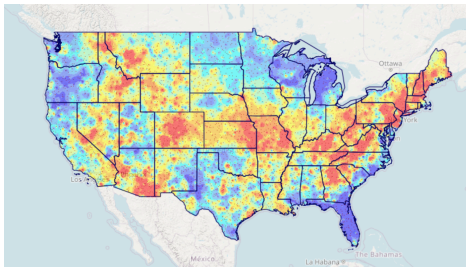

Figure 4. Map of Concentrations of Lead found in Horizon C Soil (Used for Data) [Credit USGS]

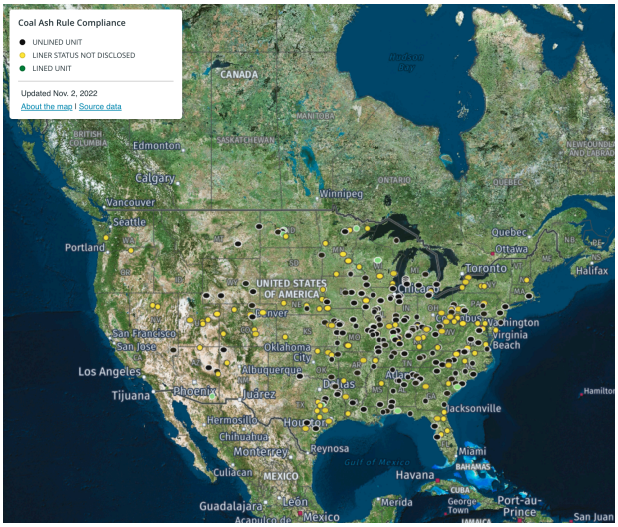

Figure 5. Earthjustice Coal Ash Sites

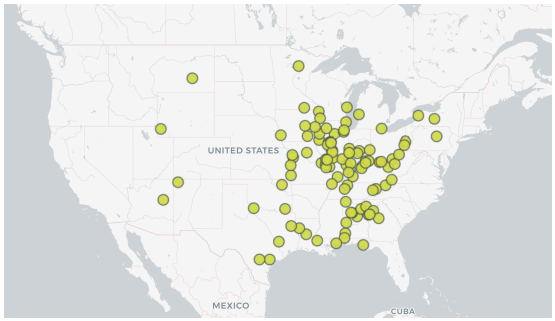

Figure 6. Earthjustice Coal Ash Sites

$$y = b + m_1 x_1 + m_2 x_2 + m_3 x_3 + m_4 x_4 + m_5 x_5$$

Figure 6. Mathematical equation of linear regression

```
[ ]  from sklearn import linear_model
     from sklearn.metrics import mean_squared_error, r2_score
     model = linear_model.LinearRegression()
     model.fit(X_train, Y_train)

     LinearRegression()
```

Figure 7. Basic code used for running the linear regression model on dataset

$$\sqrt{\Sigma_{i=1}^{k}(x_i - y_i)^2}$$

Figure 8. Euclidean distance calculation in KNNs

$$f(x) = x'\beta + b$$

Figure 9. Linear function SVM

$$J(\beta) = \frac{1}{2}\beta'\beta + C\sum_{n=1}^{N}\left(\xi_n + \xi_n^*\right)$$

Figure 10. Primal function SVM