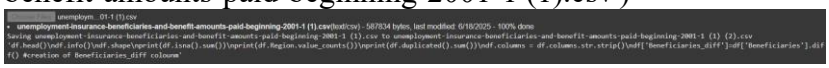
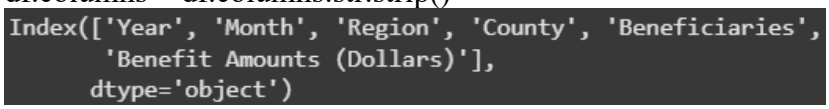
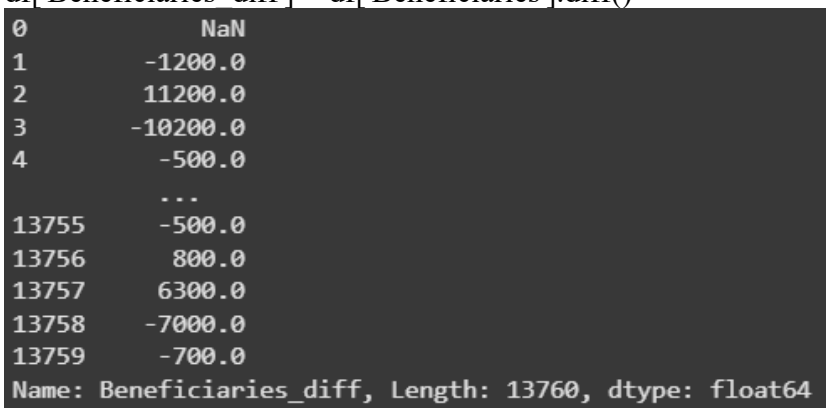
Data Collection and Preprocessing Phase

Date	18 June 2025
Team	178047
Project Title	Unemployed Insurance Beneficiary Forecasting
Maximum Marks	6 Marks

Data Exploration and Preprocessing Template

Identifies data sources, assesses quality issues like missing values and duplicates, and implements resolution plans to ensure accurate and reliable analysis.

Section	Description
Data Overview	Calculated dataset shape with df.shape and checked data types and structure using df.info(). Dataset contains monthly records of beneficiaries, benefit amounts, regions, and counties.
Univariate Analysis	Used df.describe() and line plots to explore distributions and summary statistics (mean, median, min, max) for variables like 'Beneficiaries' and 'Benefit Amounts (Dollars)'.
Bivariate Analysis	Examined relationships between pairs of variables, such as plotting 'Beneficiaries' over time for different counties and comparing beneficiary counts across regions using bar plots.
Multivariate Analysis	Generated boxplots for multiple numeric columns to identify patterns, distributions, and outliers across several variables simultaneously.
Outliers and Anomalies	Detected outliers using boxplots and summary statistics; treated anomalies by reviewing data points and deciding whether to keep, transform, or remove them as appropriate.

Data Preprocessing Code Screenshots	
Loading Data	uploaded = files.upload() df = pd.read_csv('unemployment-insurance-beneficiaries-and-benefit-amounts-paid-beginning-2001-1 (1).csv') 
Handling Missing Data	print(df.isna().sum()) 
Data Transformation	df.columns = df.columns.str.strip() 
Feature Engineering	df['Beneficiaries_diff'] = df['Beneficiaries'].diff() 
Save Processed Data	df.to_csv('processed_unemployment_data.csv', index=False)