```
=== Loading Data ===
```

de cell output actions

```
Data Shape: (20640, 10)

First 5 Rows:
   longitude  latitude  housing_median_age  total_rooms  total_bedrooms  \
0    -122.23     37.88                41.0        880.0           129.0
1    -122.22     37.86                21.0       7099.0          1106.0
2    -122.24     37.85                52.0       1467.0           190.0
3    -122.25     37.85                52.0       1274.0           235.0
4    -122.25     37.85                52.0       1627.0           280.0

   population  households  median_income  median_house_value ocean_proximity
0       322.0       126.0         8.3252            452600.0        NEAR BAY
1      2401.0      1138.0         8.3014            358500.0        NEAR BAY
2       496.0       177.0         7.2574            352100.0        NEAR BAY
3       558.0       219.0         5.6431            341300.0        NEAR BAY
4       565.0       259.0         3.8462            342200.0        NEAR BAY
```

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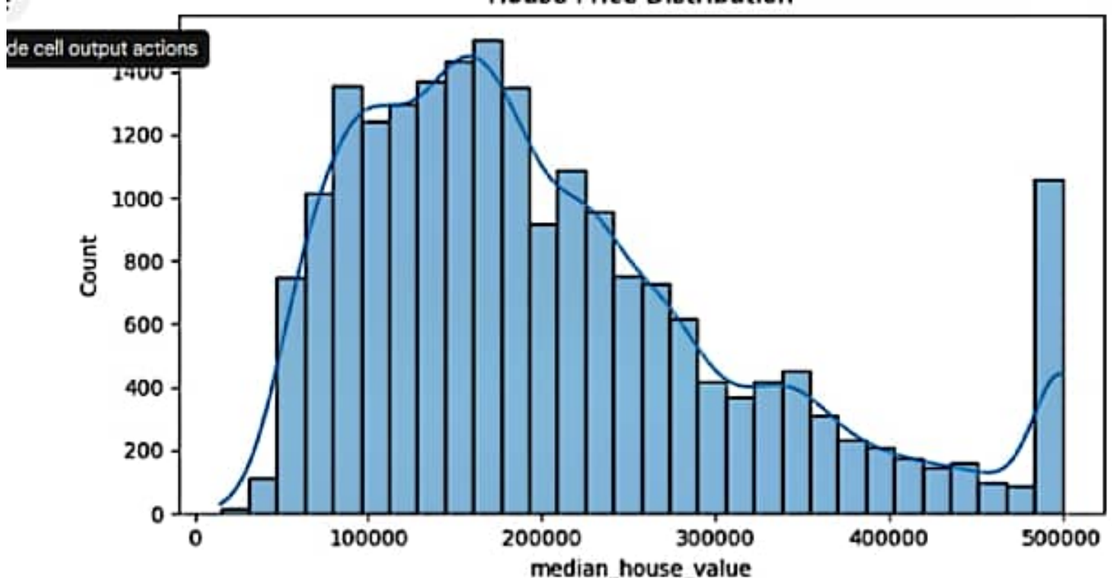

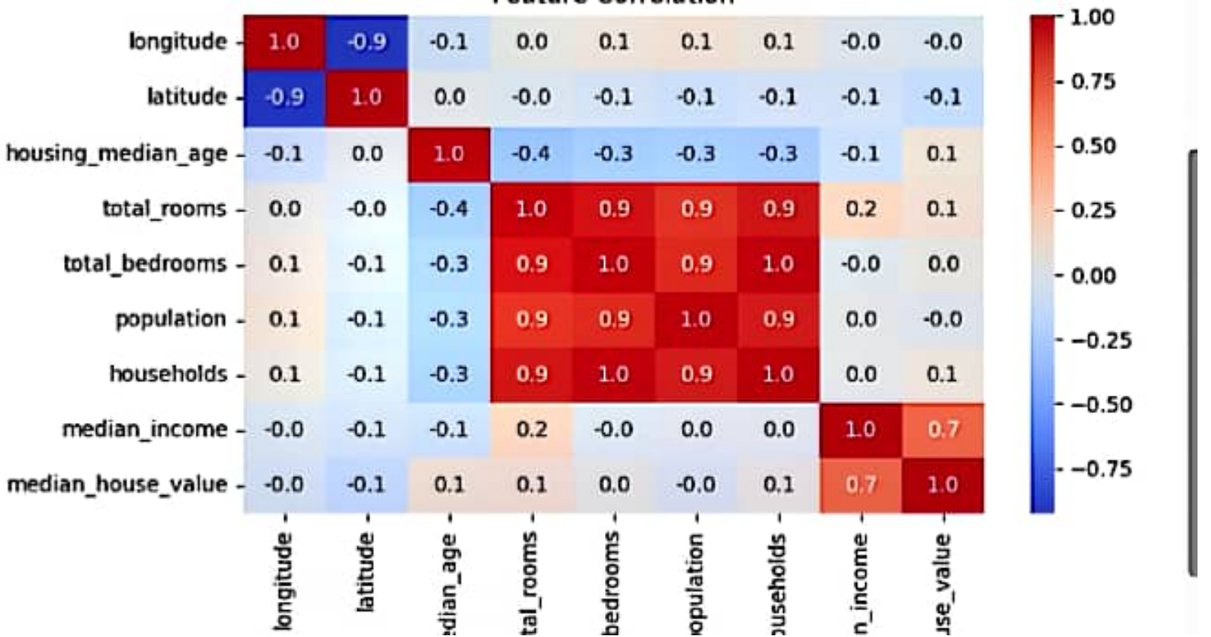

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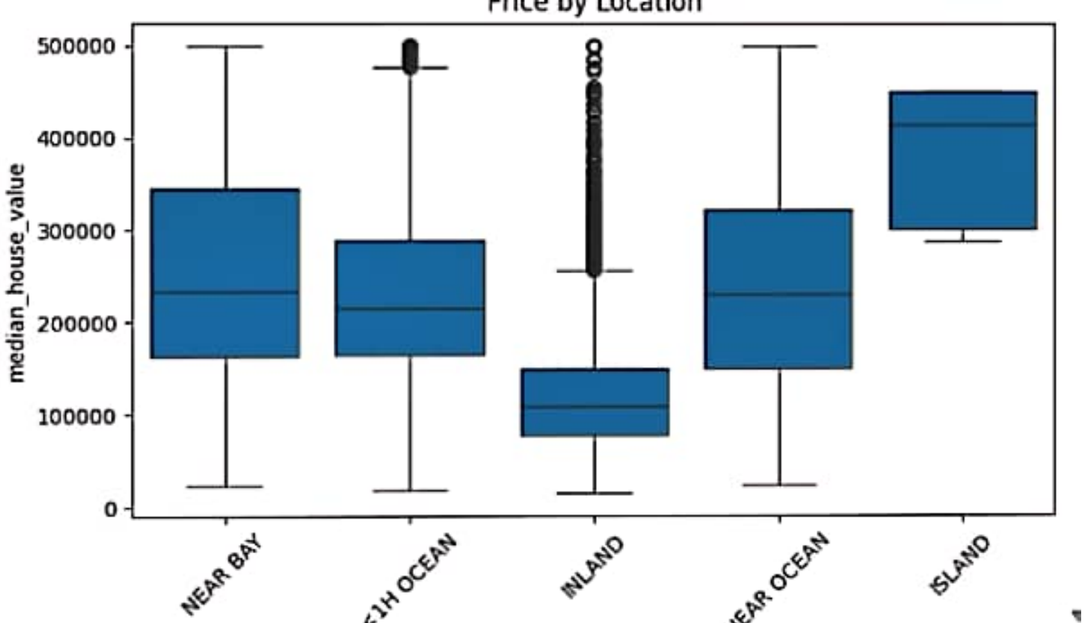

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```
=== Preprocessing Data ===

=== Training Models ===
Training Linear Regression...
Training Ridge Regression...
Training Lasso Regression...
/usr/local/lib/python3.11/dist-packages/sklearn/linear_model/_coordinate_descent.py:695: ConvergenceWarning: Objective did not converge. You might want to increase the number of iter
  model = cd_fast.enet_coordinate_descent(
Training Decision Tree...
Training Random Forest...
Training Gradient Boosting...
Training XGBoost...
Training SVR...
```

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```
=== Model Performance ===
                            MAE            RMSE        R2
Gradient Boosting  42899.681862   61706.179667  0.709430
XGBoost            43078.089212   62689.820720  0.700093
Random Forest      44795.868522   64658.348085  0.680962
Ridge Regression   50698.989573   70888.282593  0.616521
Linear Regression  50780.097069   71026.417101  0.615025
Lasso Regression   50780.319784   71027.442353  0.615014
Decision Tree      52010.241995   75662.243134  0.563131
SVR                87488.892642  116372.585393 -0.033462

=== Optimizing Best Model ===
Fitting 2 folds for each of 5 candidates, totalling 10 fits

Optimized Model Performance:
MAE: 32525.65
RMSE: 50034.55
R2 Score: 0.8090
```

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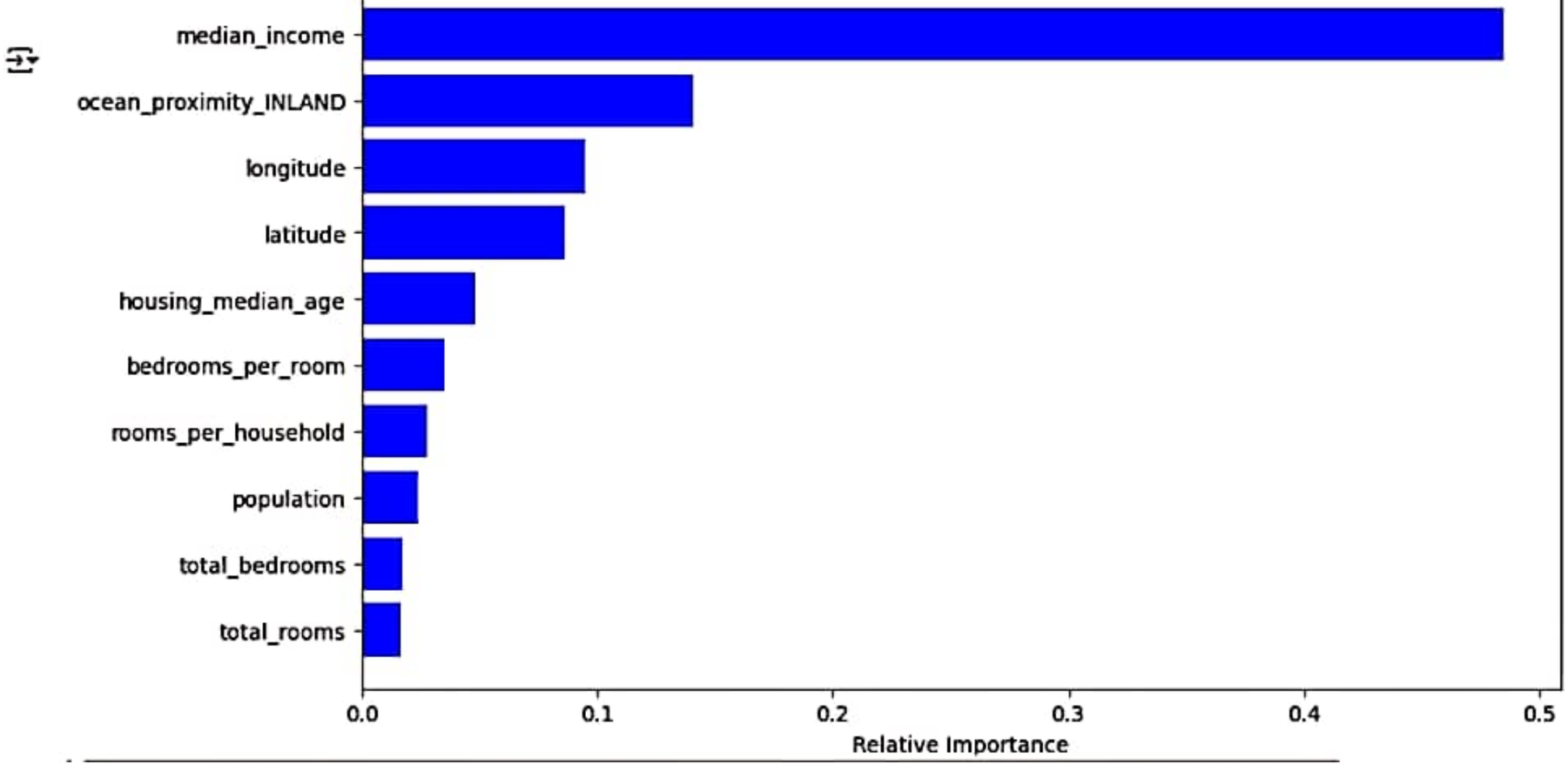

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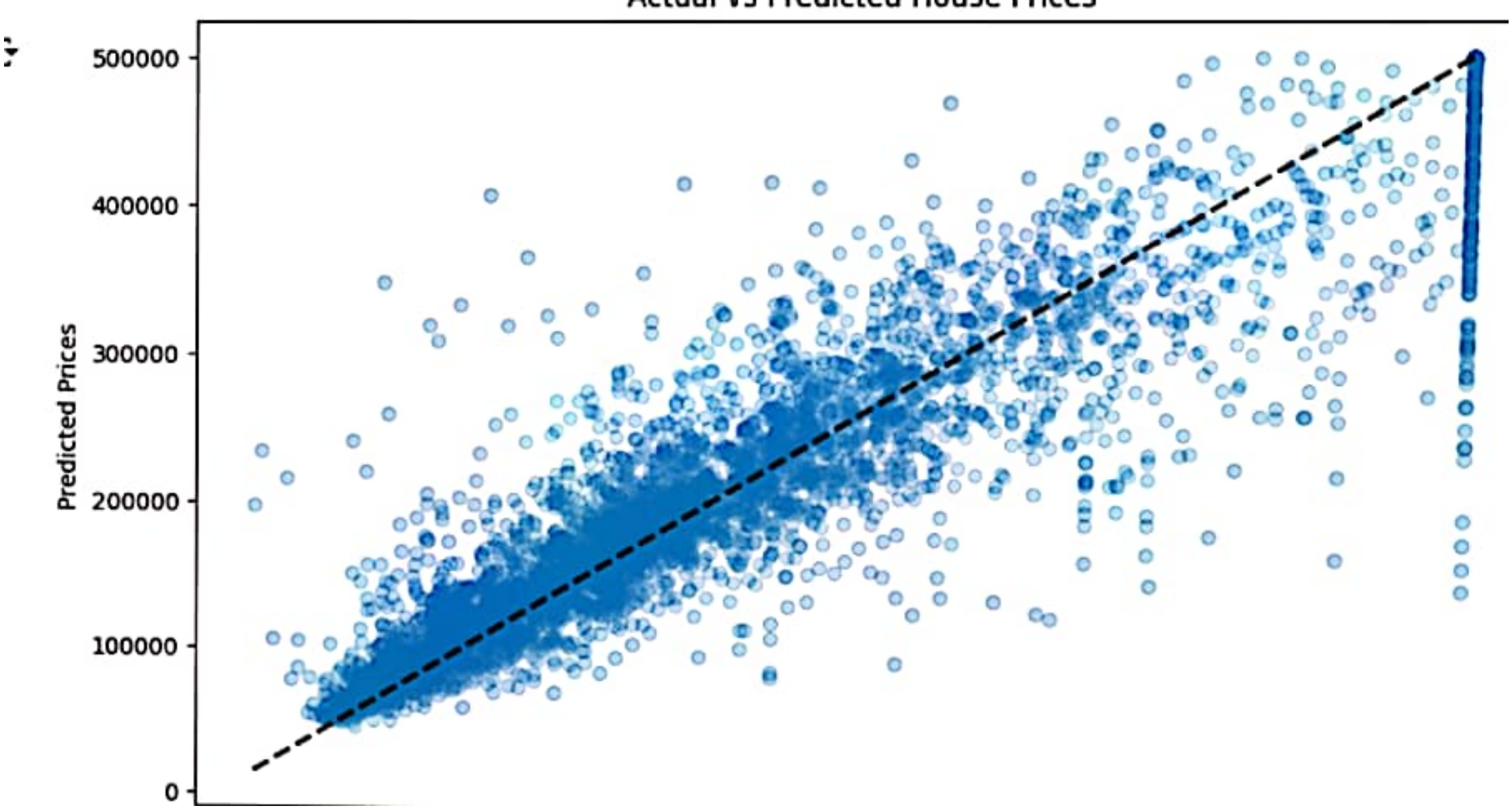

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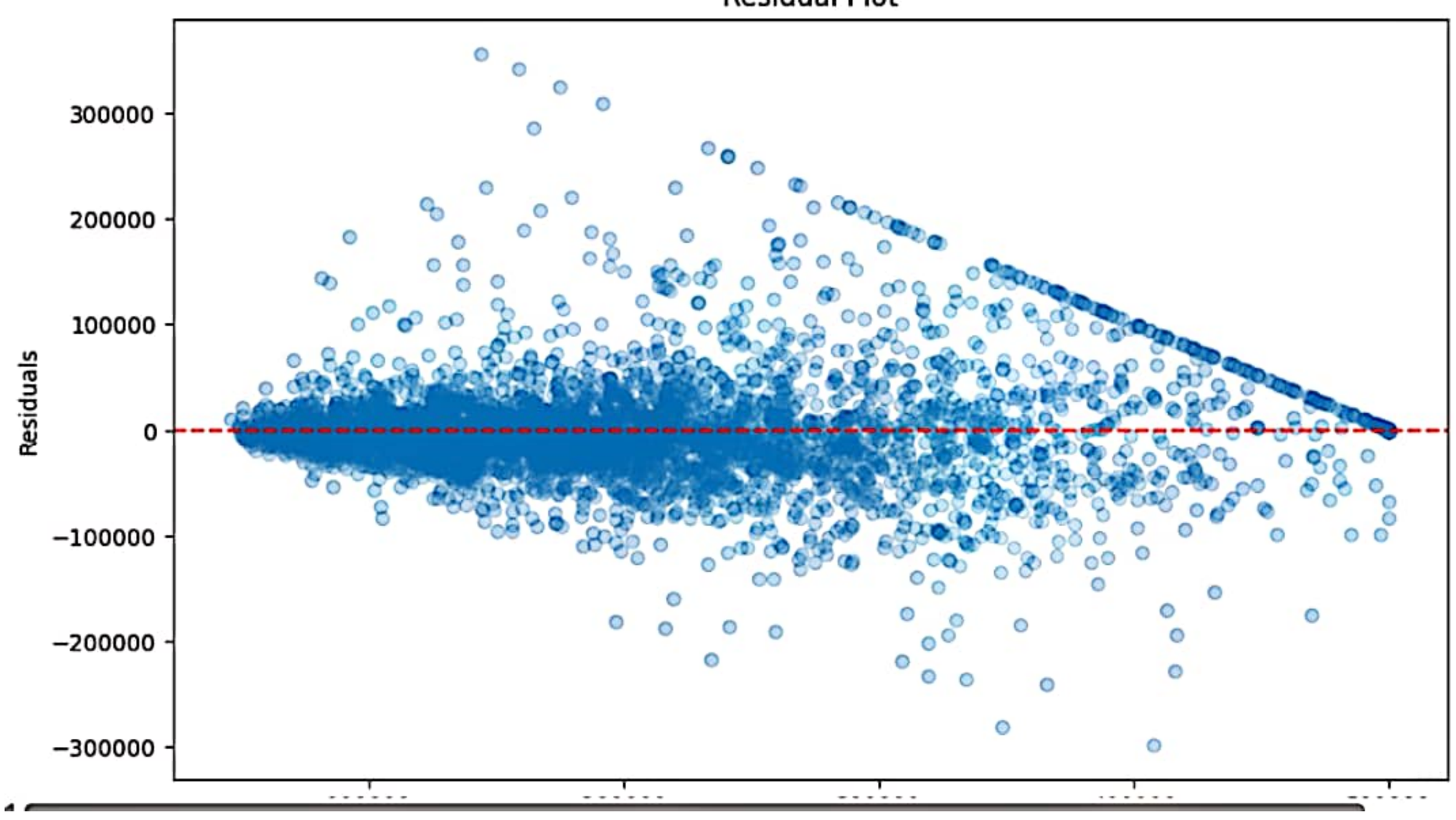

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```
=== Program Execution Complete ===
```

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