

1 Predicting Snow Water Equivalent in regions in Western United States

Estimating snow water equivalent (SWE) at a high spatiotemporal resolution over the Western U.S. using near real-time data sources

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Source: [Reddit.com](https://www.reddit.com)

(https://www.reddit.com/r/EarthPorn/comments/a6ewla/snow_and_flowng_water_is_one_of_the_most_magical/?utm_source=ifttt)

1.1 Overview

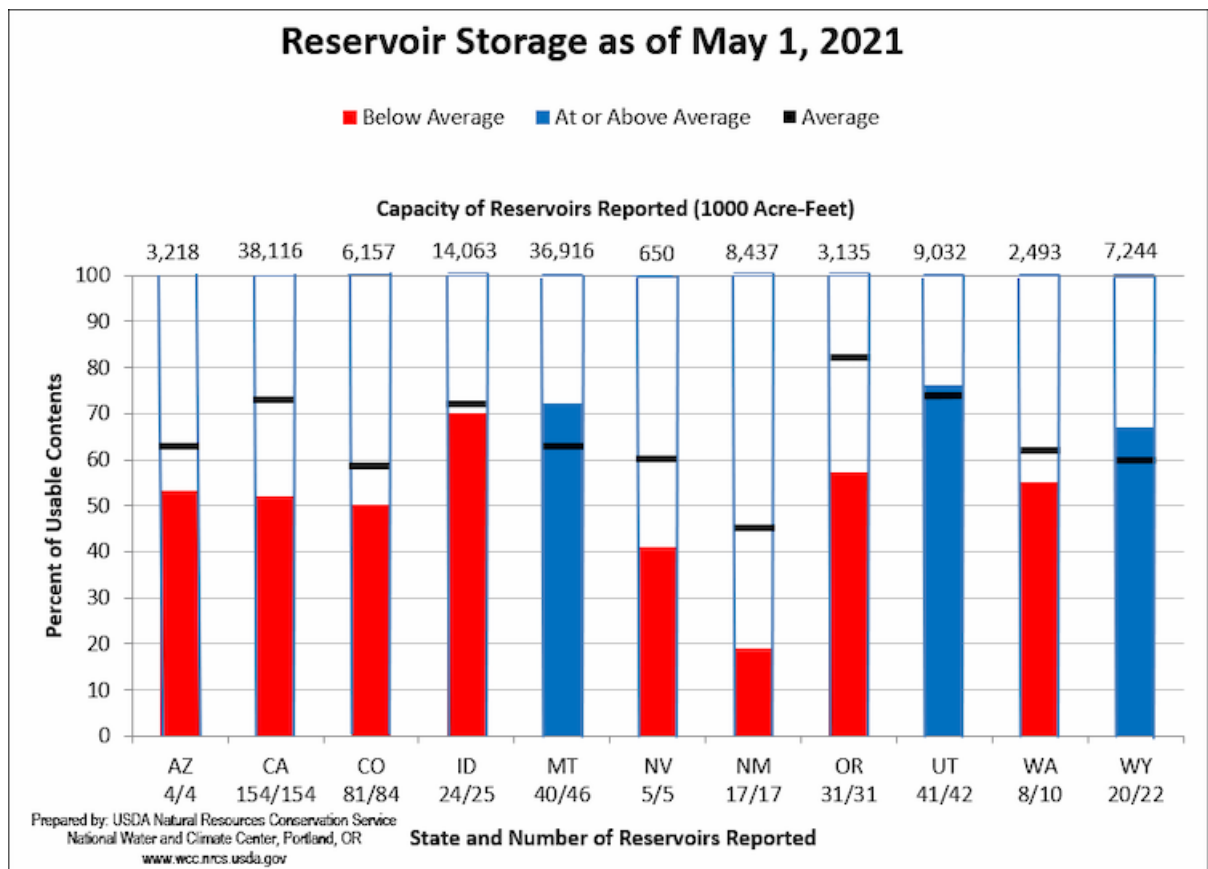
This project budded from a competition titled [Snowcast Showdown](https://www.drivendata.org/competitions/90/competition-reclamation-snow-water-eval/page/431/) (<https://www.drivendata.org/competitions/90/competition-reclamation-snow-water-eval/page/431/>) on [Driven Data](https://www.drivendata.org/) (<https://www.drivendata.org/>). The goal of the project is to develop a predictive model to estimate the distribution of Snow Water Equivalent (SWE) at a high spatiotemporal resolution over the Western U.S. This predictive model will assist NOAA in their [National Integrated Drought Information System \(NIDIS\)](https://www.drought.gov/) (<https://www.drought.gov/>), an initiative to monitor snow drought in the wester United States.

1.2 Introduction

Snow Water Equivalent (SWE) is a common snowpack measurement used by hydrologists and water managers to gage amount of liquid water contained within snowpack. It is equal to the amount of water contained within the snowpack when it melts. It can be thought of as the depth of water that would theoretically result if you melted the entire snowpack instantaneously [1] ([https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nv/snow/?cid=nrcseprd1746821#:~:text=Snow%20Water%20Equivalent%20\(SWE\)%20is,the%20snowpack%20when%20it%20melts,](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nv/snow/?cid=nrcseprd1746821#:~:text=Snow%20Water%20Equivalent%20(SWE)%20is,the%20snowpack%20when%20it%20melts,)).

Water in a snow pack is determined by depth, density, type of snow, changes in the pack, previous freeze/thaw cycles, recent rainfall events, etc. Available water is the amount of water that would be released if the snow pack melted. SWE is an important measure of availability of water resources, since it relates to the runoff of rivers and variations in groundwater levels, so knowing how much water is available in the snow pack is valuable for those managing reservoirs and flood forecasting [2] (<https://www.campbellsci.ca/snow-water-equivalent-measurement>) [3] (<http://www.eumetrain.org/data/3/358/navmenu.php?tab=7&page=1.0.0#:~:text=Climatology%20of%20snow%20cover%20and%20snow%20water%20equivalent,-Table%20of%20Contents&text=SWE%20is%20an%20important%20measure,the%20age%20of%20snow%20cover>).

[Reports](https://www.drought.gov/drought-status-updates/water-year-2021-snow-drought-conditions-summary-and-impacts-west) (<https://www.drought.gov/drought-status-updates/water-year-2021-snow-drought-conditions-summary-and-impacts-west>) by NOAA (through their [National Integrated Drought Information System \(NIDIS\)](https://www.drought.gov/) (<https://www.drought.gov/>) program) on the intensifying snow drought over western U.S raises the alarm on the importance of predicting SWE as accurately possible, especially for remote, high elevation areas where manual ground measure measurements are not feasible. It was reported that the loww snowpack, rapid and early snow melts and poor runoffs had resulted in a significant drop in water supply in the summer of 2021 (fig 1).



Source: [NIDIS, Drought.gov \(https://www.drought.gov/drought-status-updates/water-year-2021-snow-drought-conditions-summary-and-impacts-west\)](https://www.drought.gov/drought-status-updates/water-year-2021-snow-drought-conditions-summary-and-impacts-west)

1.3 Data Understanding

Historical Ground Measures data: Ground measures help provide regularly collected, highly accurate point estimates of SWE at designated stations. Ground measures data range from 2013-2019 and 2020-2021 was provided in [ground_measures_train_features.csv \(/data/ground_measures_train_features.csv\)](#) and [ground_measures_test_features.csv \(/data/ground_measures_test_features.csv\)](#). The ground measures data are from [Snow Telemetry \(SNOTEL\) \(https://www.nrcs.usda.gov/wps/portal/wcc/home/\)](#) and [California Data Exchange Center \(CDEC\) \(https://cdec.water.ca.gov/\)](#). The dataset used from these sources is available in this repo [here \(/data/\)](#).

SNOTEL (https://www.nrcs.usda.gov/wps/portal/wcc/home/): The Snow Telemetry (SNOTEL) program consists of automated and semi-automated data collection sites across the Western U.S.

CDEC (https://cdec.water.ca.gov/): The California Data Exchange Center (CDEC) facilitates the collection, storage, and exchange of hydrologic and climate information to support real-time flood management and water supply needs in California. CDEC operates data collection sites similar to SNOTEL within California.

Ground-based sites from SNOTEL and CDEC are used both as an input data source and in ground truth labels for our predictive model. **Note that, sites that we are predicting SWE for, are entirely distinct from those in the features data.**

MODIS Satellite Imagery (https://microsoft.github.io/AlforEarthDataSets/data/modis.html): The MODIS satellite images consist of MODIS/Terra and MODIS/Aqua Snow Cover Daily L3 Global 500m SIN Grid. Terra's orbit around the Earth is timed so that it passes from north to south across the equator in the morning, while Aqua passes south to north over the equator in the afternoon. Snow-covered land typically has very high reflectance in visible bands and very low reflectance in shortwave infrared bands. The Normalized Difference Snow Index (NDSI) reveals the magnitude of this difference. The snow cover algorithm calculates NDSI for all land and inland water pixels in daylight using MODIS band 4 (visible green) and band 6 (shortwave near-infrared).

The satellite imagery from MODIS were not used for modelling due to constraints in computing power and memory. We did however, pull down the satellite images from their [Azure blob \(/\)](#) and saved it as numpy arrays of pixels. This process was done in this [notebook \(/src/MODIS-DEM-Preprocessing_colab.ipynb\)](#) that was executed in [Google Colab \(https://colab.research.google.com/?utm_source=scs-index\)](https://colab.research.google.com/?utm_source=scs-index).

1.4 Note

Please ensure that you are running this notebook with the correct [conda environment \(../geo_env.yml\)](#) provided in the project's repo. Run the following lines in your command prompt to activate the environment using the .yml file provided. Ensure that you are in the correct directory in your command prompt before executing the lines below.

```
conda env create -f geo_env.yml
conda activate geo_env
```

Before we begin, let's first import our packages to run this notebook.

1.5 Import packages

```
In [135]: import pandas as pd
pd.set_option('display.max_columns', None)

import numpy as np
import math
import pickle
import folium
import json

import matplotlib.pyplot as plt
import seaborn as sns
%matplotlib inline

from xgboost import XGBClassifier

from sklearn.feature_selection import SelectFromModel
from sklearn.model_selection import train_test_split, GridSearchCV, cross_val_score
from sklearn.pipeline import Pipeline
from sklearn.preprocessing import StandardScaler, OneHotEncoder, FunctionTransformer, OrdinalEncode
from sklearn.dummy import DummyRegressor
from sklearn.compose import ColumnTransformer
from sklearn.linear_model import LinearRegression, LogisticRegression, BayesianRidge, Ridge
from sklearn.ensemble import HistGradientBoostingRegressor, GradientBoostingRegressor, RandomForest
from sklearn.experimental import enable_iterative_imputer
from sklearn.impute import IterativeImputer
from catboost import Pool, CatBoostRegressor
from sklearn.decomposition import PCA
from sklearn.metrics import mean_squared_error

import lightgbm as lgb
```

executed in 33ms, finished 20:45:31 2022-05-30

2 Modeling

2.0.1 Load Data

The data we are using for our modeling are cleaned and processed in our [Data Processing notebook \(../Data-Preprocessing-EDA\(02\).ipynb\)](#). This final dataframe is also readily available in the repo [here \(../data/train_labels_final.csv\)](#).

```
In [5]: #Load train data

df_train = pd.read_csv('../data/train_labels_final.csv')
df_train = df_train.drop('Unnamed: 0',axis=1)
df_train
```

executed in 305ms, finished 14:07:48 2022-05-26

Out[5]:

.13	neighbor_14	neighbor_15	neighbor_16	neighbor_17	neighbor_18	neighbor_19	neighbor_20	latitude	longitude	regi
5.9	6.6	10.60	8.4	2.88	4.10	7.24	4.00	-121.9	41.2	oth
5.9	10.6	6.60	8.4	2.88	4.10	7.24	4.00	-120.6	39.7	sierr
5.9	10.6	6.60	8.4	2.88	7.24	4.10	4.00	-119.6	38.3	sierr
4.3	5.9	4.10	4.0	3.40	2.60	2.30	7.20	-107.2	44.6	oth
4.3	5.9	4.10	4.0	3.40	2.60	2.30	10.60	-106.6	40.4	cent rock
...	
5.5	9.9	5.30	6.9	3.70	3.90	1.50	9.93	-105.1	38.9	cent rock
5.5	9.9	5.30	6.9	3.70	3.90	1.50	9.93	-106.1	39.3	cent rock
5.5	9.9	5.30	6.9	3.70	9.93	3.90	1.50	-107.9	37.8	cent rock
9.9	4.1	9.93	5.3	10.92	6.90	3.70	6.00	-122.0	43.9	oth
5.5	9.9	5.30	6.9	3.70	3.90	9.93	1.50	-111.4	44.4	oth

In [6]: `#Make sure our data types is correct
df_train.info()`

executed in 60ms, finished 14:07:48 2022-05-26

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 50458 entries, 0 to 50457
Data columns (total 26 columns):
#   Column          Non-Null Count  Dtype
---  -
0   cell_id         50458 non-null  object
1   dates           50458 non-null  object
2   value           50458 non-null  float64
3   neighbor_1      50458 non-null  float64
4   neighbor_2      50458 non-null  float64
5   neighbor_3      50458 non-null  float64
6   neighbor_4      50458 non-null  float64
7   neighbor_5      50458 non-null  float64
8   neighbor_6      50458 non-null  float64
9   neighbor_7      50458 non-null  float64
10  neighbor_8      42424 non-null  float64
11  neighbor_9      43759 non-null  float64
12  neighbor_10     47152 non-null  float64
13  neighbor_11     49849 non-null  float64
14  neighbor_12     50458 non-null  float64
15  neighbor_13     50458 non-null  float64
16  neighbor_14     50458 non-null  float64
17  neighbor_15     50458 non-null  float64
18  neighbor_16     50458 non-null  float64
19  neighbor_17     50458 non-null  float64
20  neighbor_18     50458 non-null  float64
21  neighbor_19     50458 non-null  float64
22  neighbor_20     50458 non-null  float64
23  latitude        50458 non-null  float64
24  longitude       50458 non-null  float64
25  region          50458 non-null  object
dtypes: float64(23), object(3)
memory usage: 10.0+ MB
```

The below nulls were intentionally left untouched in the data processing, as these nulls will benefit more from being imputed within our modeling workflow.

In [7]: `df_train.isna().sum()/len(df_train)`

executed in 42ms, finished 14:07:48 2022-05-26

```
neighbor_8      0.000000
neighbor_7      0.000000
neighbor_8      0.159222
neighbor_9      0.132764
neighbor_10     0.065520
neighbor_11     0.012069
neighbor_12     0.000000
neighbor_13     0.000000
neighbor_14     0.000000
neighbor_15     0.000000
neighbor_16     0.000000
neighbor_17     0.000000
neighbor_18     0.000000
neighbor_19     0.000000
neighbor_20     0.000000
latitude        0.000000

longitude       0.000000
region          0.000000
dtypes: float64
```

In [132]:

Load test data

```
df_test = pd.read_csv('../data/test_labels_final.csv')
df_test = df_test.drop('Unnamed: 0',axis=1)
df_test
```

executed in 275ms, finished 20:34:13 2022-05-30

Out[132]:

	cell_id	dates	value	neighbor_1	neighbor_2	neighbor_3	neighbor_4	neighbor_5	neighbor_6	neighbor_7	r
0	00c4db22-a423-41a4-ada6-a8b1b04153a4	2020-01-07	8.0	1.2	2.8	3.7	6.7	2.1	1.6	2.8	
1	018cf1a1-f945-4097-9c47-0c4690538bb5	2020-01-07	11.4	1.2	2.8	3.7	6.7	2.1	1.6	2.8	
2	01be2cc7-ef77-4e4d-80ed-c4f8139162c3	2020-01-07	18.5	1.2	2.8	3.7	6.7	2.1	1.6	2.8	
3	02c3ec4a-8de4-4284-9ec1-5a942d3d098e	2020-01-07	3.9	1.2	2.8	6.7	3.7	2.1	1.6	2.8	
4	02cf33c2-c8e2-48b9-bf72-92506e97e251	2020-01-07	13.0	1.2	2.8	6.7	3.7	2.1	1.6	2.8	
...
45236	fd4492f2-8aa9-4279-bdc0-73991786943f	2021-06-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
45237	fde3221a-9ce3-45a9-857f-bd196b07aa05	2021-06-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
45238	fdeb8912-f9d1-445d-aadb-e943534f67fe	2021-06-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
45239	fe33672e-7ea7-4c5d-8639-96b2cc7edb0c	2021-06-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
45240	ff01e8c2-19a2-4a89-af0e-608b8f40ad5f	2021-06-29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

45241 rows × 26 columns

2.1 Train-test-split

Let's split our dataframes into X_train, y_train, _test and y_test.

In [133]:

```
X_train = df_train.drop(['cell_id', 'dates', 'value'],axis=1)
y_train = df_train['value']
X_test = df_test.drop(['cell_id', 'dates', 'value'],axis=1)
y_test = df_test['value']
```

executed in 1.28s, finished 20:34:44 2022-05-30

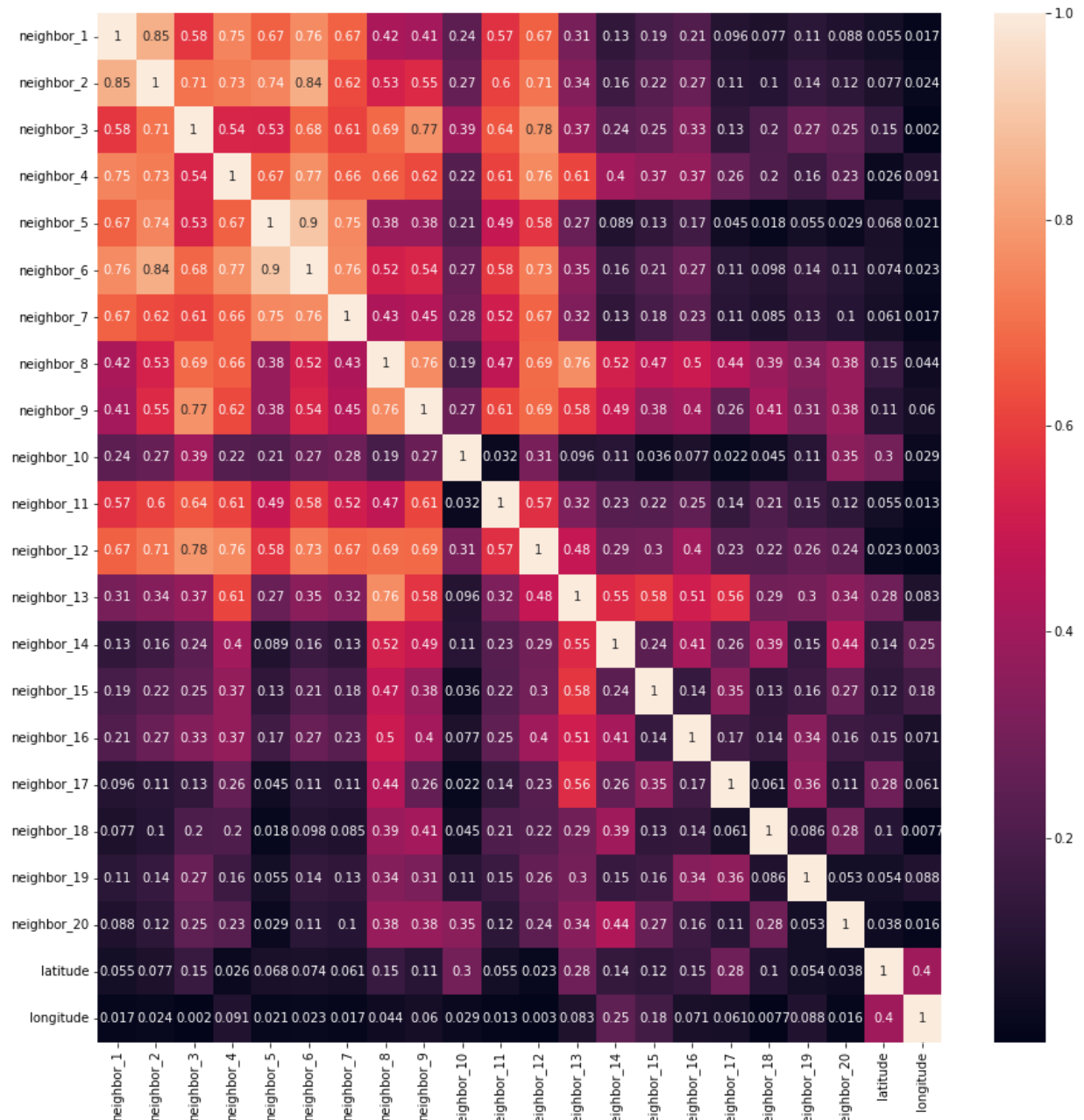
2.2 Modeling EDA

Let's find out the correlation between our model features to ensure we are handling multicollinearity accordingly.

```
In [9]: fig, ax = plt.subplots(figsize = (15,15))
sns.heatmap(abs(X_train.corr()),annot=True, ax=ax)
```

executed in 2.26s, finished 14:07:51 2022-05-26

Out[9]: <AxesSubplot:>



It seems like our top 13 nearest neighbors of ground measured stations are highly correlated. This is possibly because top 13 nearest stations to the grid cell is also near to each other in distance and therefore, the SWE values of the top 13 nearest neighbors are correlated to each other by distance. To reduce the multicollinearity between these stations, we can perform PCA on the first 13 neighbors as part of our pipeline.

2.3 Modeling Building

We are going to begin our model testing with our training data. We will be using pipelines functions, and Function transformers to smooth our model building process and ensure no data leakage takes place in our workflow.

2.3.1 Functions

```
In [10]: ▶ def grab_numeric(df):  
    """  
    Helper function to grab only numeric columns from our dataframe.  
    """  
    return df.select_dtypes(include=['float', 'int'])
```

executed in 12ms, finished 14:07:51 2022-05-26

```
In [11]: ▶ def grab_object(df):  
    """  
    Helper function to grab only categorical columns from our dataframe.  
    """  
    return df.select_dtypes(include=['object'])
```

executed in 12ms, finished 14:07:51 2022-05-26

```

In [12]: ▶ class ModelWithCV():
    '''Structure to save the model and more easily see its crossvalidation'''

    def __init__(self, model, model_name, X, y, cv_now=True):
        self.model = model
        self.name = model_name
        self.X = X
        self.y = y
        # For CV results
        self.cv_results = None
        self.cv_mean = None
        self.cv_median = None
        self.cv_std = None
        #
        if cv_now:
            self.cross_validate()

    def cross_validate(self, X=None, y=None, kfold=5):
        '''
        Perform cross-validation and return results.

        Args:
        X:
            Optional; Training data to perform CV on. Otherwise use X from object
        y:
            Optional; Training data to perform CV on. Otherwise use y from object
        kfold:
            Optional; Number of folds for CV (default is 10)
        '''

        cv_X = X if X else self.X
        cv_y = y if y else self.y

        self.cv_results = cross_val_score(self.model, cv_X, cv_y, cv=kfold)
        self.cv_mean = np.mean(self.cv_results)
        self.cv_median = np.median(self.cv_results)
        self.cv_std = np.std(self.cv_results)

    def print_cv_summary(self):
        cv_summary = (
            f'''CV Results for `{self.name}` model:
              {self.cv_mean:.5f} ± {self.cv_std:.5f} R_squared
            ''')
        print(cv_summary)

    def plot_cv(self, ax):
        '''
        Plot the cross-validation values using the array of results and given
        Axis for plotting.
        '''

        ax.set_title(f'CV Results for `{self.name}` Model')
        # Thinner violinplot with higher bw
        sns.violinplot(y=self.cv_results, ax=ax, bw=.4)
        sns.swarmplot(
            y=self.cv_results,
            color='orange',
            size=10,
            alpha=0.8,
            ax=ax
        )

        return ax

```

executed in 25ms, finished 14:07:51 2022-05-26

2.3.1.1 Testing functions

In [15]:  *#Sniff test, ensuring function outputs what we want*

```
num_df = grab_numeric(df_train)
num_df
```

executed in 58ms, finished 14:07:51 2022-05-26

Out[15]:

	value	neighbor_1	neighbor_2	neighbor_3	neighbor_4	neighbor_5	neighbor_6	neighbor_7	neighbor_8	neighbor_9
0	12.7	2.0	1.6	6.4	3.2	2.7	2.0	2.8	NaN	3.7
1	20.4	2.0	1.6	6.4	3.2	2.7	2.0	2.8	NaN	3.7
2	37.0	2.0	1.6	6.4	3.2	2.7	2.0	2.8	NaN	3.7
3	2.3	2.0	1.6	3.2	6.4	2.7	2.0	2.8	6.6	3.7
4	8.0	2.0	1.6	3.2	6.4	2.7	2.0	2.8	6.6	3.7
...
50453	1.3	1.3	2.7	6.7	4.0	2.1	1.5	2.8	4.1	6.1
50454	5.6	1.3	2.7	6.7	4.0	2.1	1.5	2.8	4.1	6.1
50455	8.8	1.3	2.7	6.7	4.0	2.1	1.5	2.8	6.1	7.1
50456	2.9	1.3	2.7	4.0	6.7	2.1	1.5	2.8	7.1	6.1
50457	4.7	1.3	2.7	6.7	4.0	2.1	1.5	2.8	6.1	7.1

50458 rows × 23 columns

In [16]:  *#Sniff test, ensuring function outputs what we want*


```
cat_df = grab_object(df_train)
cat_df.head()
```

executed in 28ms, finished 14:07:51 2022-05-26

Out[16]:

	cell_id	dates	region
0	00c4db22-a423-41a4-ada6-a8b1b04153a4	2013-01-01	other
1	018cf1a1-f945-4097-9c47-0c4690538bb5	2013-01-01	sierras
2	01be2cc7-ef77-4e4d-80ed-c4f8139162c3	2013-01-01	sierras
3	02c3ec4a-8de4-4284-9ec1-5a942d3d098e	2013-01-01	other
4	02cf33c2-c8e2-48b9-bf72-92506e97e251	2013-01-01	central rockies

2.3.1.2 Building function transformers

In [17]: 

```
GrabNumeric = FunctionTransformer(grab_numeric)
GrabObject = FunctionTransformer(grab_object)
```

executed in 13ms, finished 14:07:51 2022-05-26

2.3.2 Building subpipelines and Column Transformer

We'll create Column Transformers that will scale our features, one hot encode our categorical features and pca the first 13 columns which are our top 13 nearest ground stations.

```

In [46]: # We'll throw these mini-pipelines into our ColumnTransformer: numeric and categorical, then PCA

#subpipe that handles our numerical columns
subpipe_num= Pipeline(steps=[('get_num', GrabNumeric),
                              ('ss', StandardScaler()),
                              ('num_impute', IterativeImputer(estimator=RandomForestRegressor(
                                                                n_estimators=100,
                                                                max_depth=5,
                                                                bootstrap=True,
                                                                max_samples=0.8,
                                                                n_jobs=-1,
                                                                skip_complete=True,
                                                                random_state=250))
                              )])

#Subpipe that handles our categorical columns
subpipe_cat = Pipeline(steps=[('get_obj', GrabObject),
                              ('ohe', OneHotEncoder(sparse=False, handle_unknown='ignore'))
                              ])

#Subpipe that PCA our numerical columns
subpipe_pca = Pipeline(steps= [('PCA', PCA(n_components=3)),
                              ('ss_pca', StandardScaler()),
                              ])

```

executed in 33ms, finished 13:04:59 2022-05-27

subpipe_pca is our attempt to handle multicollinearity between the features that are highly correlated which are our first 13 columns. So, only the first 13 columns will be put through subpipe_pca .

```

In [47]: #First column transformer
ct_all = ColumnTransformer(transformers = [
    ('subpipe_num', subpipe_num, X_train.columns),
    ('subpipe_cat', subpipe_cat, X_train.columns)
])

#Column transformer that will perform PCA on our first 13 columns
ct_pca = ColumnTransformer(transformers=[
    ('subpipe_pca', subpipe_pca, list(range(0,13)))
], remainder='passthrough')

```

executed in 26ms, finished 13:05:09 2022-05-27

Let's run our column transformers here to make sure that they run as expected.


```
In [21]: #Test out our first column transformer
ct_test_df = pd.DataFrame(ct_all.fit_transform(X_train.head(20)))
ct_test_final_df = pd.DataFrame(ct_pca.fit_transform(ct_test_df))
ct_test_final_df
```

executed in 1.54s, finished 14:10:42 2022-05-26

Out[21]:

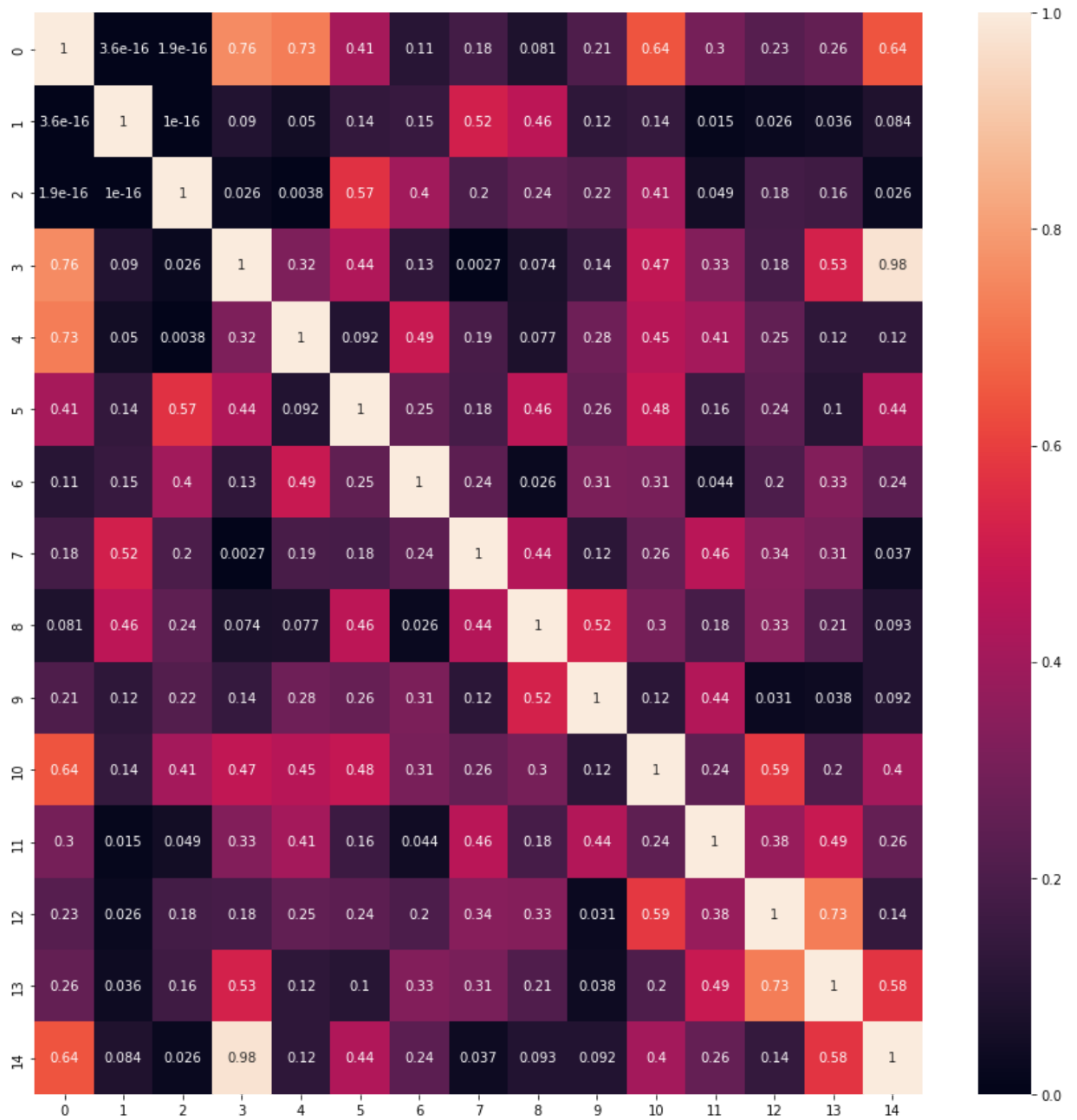
	0	1	2	3	4	5	6	7	8	9	10
0	1.921960	-0.251102	0.079468	0.064701	1.916289	1.309390	-0.705142	-0.376977	0.809579	-0.274829	-1.572454
1	1.921960	-0.251102	0.079468	2.940316	0.367773	1.309390	-0.705142	-0.376977	0.809579	-0.274829	-1.308857
2	1.921960	-0.251102	0.079468	2.940316	0.367773	1.309390	-0.705142	0.599680	-0.250946	-0.274829	-1.106091
3	-0.422931	0.295684	0.032387	-0.438531	-0.600050	-0.570321	-0.477677	-0.843533	-0.858890	0.770894	1.408213
4	-0.194933	1.849411	0.401084	-0.438531	-0.600050	-0.570321	-0.477677	-0.843533	-0.858890	1.881976	1.529873
5	-0.709649	-0.830870	0.431433	-0.438531	-0.600050	-0.570321	-0.477677	-0.843533	1.944408	-0.830370	0.455211
6	-0.709649	-0.830870	0.431433	-0.438531	-0.600050	-0.570321	-0.477677	1.644765	-0.757566	-0.830370	1.347383
7	-0.709649	-0.830870	0.431433	-0.438531	-0.600050	-0.570321	-0.477677	1.644765	-0.757566	-0.830370	1.306830
8	0.234955	0.148202	-0.094996	0.064701	1.916289	-0.527601	1.709487	-0.408081	-0.487368	-0.640833	-0.376132
9	-0.709649	-0.830870	0.431433	-0.438531	-0.600050	-0.570321	-0.477677	1.644765	-0.757566	-0.830370	0.657977
10	-0.473790	0.733282	-2.094076	-0.438531	-0.600050	-0.570321	2.671839	-0.594703	1.201365	-0.732333	-1.410241
11	1.921960	-0.251102	0.079468	0.064701	1.916289	-0.527601	1.709487	-0.408081	-0.662997	-0.470902	-1.349411
12	-0.709649	-0.830870	0.431433	-0.438531	-0.600050	-0.570321	-0.477677	1.644765	-0.757566	1.163041	0.597147
13	-0.441322	3.010023	2.269415	-0.438531	-0.600050	-0.570321	-0.477677	-0.843533	1.944408	-0.830370	0.860744
14	0.234955	0.148202	-0.094996	0.064701	1.916289	-0.527601	1.709487	-0.408081	-0.487368	-0.640833	0.637701
15	-0.709649	-0.830870	0.431433	-0.438531	-0.600050	-0.570321	-0.477677	-0.843533	-0.858890	1.881976	-0.295025
16	-0.709649	-0.830870	0.431433	-0.438531	-0.600050	-0.570321	-0.477677	1.644765	-0.757566	1.163041	-0.234195
17	-0.473790	0.733282	-2.094076	-0.438531	-0.600050	2.249245	-0.215217	-0.594703	1.201365	-0.640833	-0.558622
18	-0.709649	-0.830870	0.431433	-0.438531	-0.600050	-0.570321	-0.477677	-0.843533	-0.858890	1.881976	-0.396408
19	-0.473790	0.733282	-2.094076	-0.438531	-0.600050	2.249245	-0.215217	-0.594703	1.201365	-0.640833	-0.193642

Yay! It performed as expected! Now, let's check for correlation between our features again.

```
In [22]: fig, ax = plt.subplots(figsize = (15,15))
sns.heatmap(abs(ct_test_final_df.corr()),annot=True, ax=ax)
```

executed in 1.01s, finished 14:10:52 2022-05-26

Out[22]: <AxesSubplot:>



The correlation heatmap between our features are looking much better now. However, correlation between column 4 and 14 changed to be more than 0.7. We'll leave this as is.

2.3.3 Dummy Model

Let's build our first simple model using [Dummy Regressor \(https://scikit-learn.org/stable/modules/generated/sklearn.dummy.DummyRegressor.html\)](https://scikit-learn.org/stable/modules/generated/sklearn.dummy.DummyRegressor.html) from sklearn.

```
In [74]: ▶ #Build a dummy model pipeline
dummy_model_pipe = Pipeline(steps=[
    ('ct1', ct_all),
    ('ct2', ct_pca),
    ('dummy_mod', DummyRegressor())
])

dummy_modelCV = ModelWithCV(dummy_model_pipe, model_name = 'dummy_mod', X=X_train, y=y_train)
```

executed in 18.4s, finished 14:56:49 2022-05-27

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
warnings.warn(

```
In [76]: ▶ dummy_modelCV.print_cv_summary()
```

executed in 12ms, finished 14:58:09 2022-05-27

CV Results for `dummy_mod` model:
-0.09730 ± 0.16507 R_squared

The R2 for our dummy model is -0.0973. That's....pretty low. So, our other models should beat our Dummy Model's R2 which is a pretty low bar.

2.3.4 Linear Regression

Let's see if a simple Linear Regression can beat our R2 of our First simple model


```
In [90]: catboost_model_pipe = Pipeline(steps=[
    ('ct1', ct_all),
    ('ct2', ct_pca),
    ('catboost', CatBoostRegressor(random_seed=42))
])

catboost_model = catboost_model_pipe.fit(X_train, y_train)
```

executed in 34.9s, finished 16:03:01 2022-05-27

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
warnings.warn(

Learning rate set to 0.076075

0:	learn: 12.4557434	total: 12.3ms	remaining: 12.3s
1:	learn: 12.2195065	total: 23.9ms	remaining: 11.9s
2:	learn: 12.0278891	total: 34.6ms	remaining: 11.5s
3:	learn: 11.8555841	total: 44.7ms	remaining: 11.1s
4:	learn: 11.6927678	total: 52.8ms	remaining: 10.5s
5:	learn: 11.5300362	total: 61.6ms	remaining: 10.2s
6:	learn: 11.3942079	total: 69.9ms	remaining: 9.91s
7:	learn: 11.2702913	total: 79.3ms	remaining: 9.83s
8:	learn: 11.1522792	total: 88ms	remaining: 9.69s
9:	learn: 11.0529175	total: 94.9ms	remaining: 9.39s
10:	learn: 10.9567380	total: 101ms	remaining: 9.06s
11:	learn: 10.8650715	total: 109ms	remaining: 9s
12:	learn: 10.7839164	total: 117ms	remaining: 8.85s
13:	learn: 10.7069648	total: 124ms	remaining: 8.71s
14:	learn: 10.6331123	total: 130ms	remaining: 8.51s
15:	learn: 10.5571169	total: 136ms	remaining: 8.36s
16:	learn: 10.4870041	total: 145ms	remaining: 8.38s
17:	learn: 10.4224227	total: 152ms	remaining: 8.29s
18:	learn: 10.3646959	total: 158ms	remaining: 8.17s
19:	learn: 10.3030201	total: 165ms	remaining: 8.08s
20:	learn: 10.2604764	total: 172ms	remaining: 8.03s
21:	learn: 10.2100194	total: 180ms	remaining: 7.98s
22:	learn: 10.1633892	total: 186ms	remaining: 7.91s
23:	learn: 10.1157290	total: 193ms	remaining: 7.84s
24:	learn: 10.0617581	total: 200ms	remaining: 7.79s
25:	learn: 10.0067297	total: 211ms	remaining: 7.9s
26:	learn: 9.9601144	total: 220ms	remaining: 7.91s
27:	learn: 9.9259814	total: 230ms	remaining: 7.98s
28:	learn: 9.8950113	total: 236ms	remaining: 7.91s
29:	learn: 9.8615347	total: 244ms	remaining: 7.9s
30:	learn: 9.8312382	total: 251ms	remaining: 7.84s
31:	learn: 9.8015793	total: 260ms	remaining: 7.86s
32:	learn: 9.7694971	total: 267ms	remaining: 7.81s
33:	learn: 9.7219507	total: 275ms	remaining: 7.8s
34:	learn: 9.6911052	total: 281ms	remaining: 7.76s
35:	learn: 9.6690459	total: 289ms	remaining: 7.75s
36:	learn: 9.6353952	total: 296ms	remaining: 7.69s
37:	learn: 9.5865211	total: 302ms	remaining: 7.64s
38:	learn: 9.5490121	total: 311ms	remaining: 7.67s
39:	learn: 9.5176352	total: 319ms	remaining: 7.65s
40:	learn: 9.4940591	total: 326ms	remaining: 7.62s
41:	learn: 9.4649410	total: 332ms	remaining: 7.57s
42:	learn: 9.4362719	total: 340ms	remaining: 7.56s
43:	learn: 9.4077577	total: 347ms	remaining: 7.53s
44:	learn: 9.3884751	total: 356ms	remaining: 7.55s
45:	learn: 9.3492879	total: 362ms	remaining: 7.5s
46:	learn: 9.3341473	total: 368ms	remaining: 7.47s
47:	learn: 9.3161520	total: 376ms	remaining: 7.46s
48:	learn: 9.2980206	total: 384ms	remaining: 7.46s
49:	learn: 9.2760228	total: 390ms	remaining: 7.42s
50:	learn: 9.2540102	total: 404ms	remaining: 7.52s
51:	learn: 9.2339211	total: 416ms	remaining: 7.58s
52:	learn: 9.2201986	total: 425ms	remaining: 7.6s
53:	learn: 9.2010436	total: 437ms	remaining: 7.66s
54:	learn: 9.1895349	total: 444ms	remaining: 7.64s
55:	learn: 9.1742854	total: 452ms	remaining: 7.62s

56:	learn: 9.1627679	total: 459ms	remaining: 7.59s
57:	learn: 9.1427894	total: 465ms	remaining: 7.55s
58:	learn: 9.1133748	total: 474ms	remaining: 7.57s
59:	learn: 9.0841908	total: 481ms	remaining: 7.54s
60:	learn: 9.0675591	total: 487ms	remaining: 7.5s
61:	learn: 9.0505767	total: 494ms	remaining: 7.48s
62:	learn: 9.0388205	total: 503ms	remaining: 7.49s
63:	learn: 9.0234029	total: 510ms	remaining: 7.46s
64:	learn: 9.0101196	total: 517ms	remaining: 7.43s
65:	learn: 9.0007022	total: 524ms	remaining: 7.41s
66:	learn: 8.9810199	total: 532ms	remaining: 7.41s
67:	learn: 8.9675659	total: 553ms	remaining: 7.57s
68:	learn: 8.9512008	total: 559ms	remaining: 7.54s
69:	learn: 8.9388820	total: 571ms	remaining: 7.58s
70:	learn: 8.9223725	total: 579ms	remaining: 7.58s
71:	learn: 8.8945822	total: 585ms	remaining: 7.54s
72:	learn: 8.8836991	total: 592ms	remaining: 7.52s
73:	learn: 8.8624910	total: 599ms	remaining: 7.5s
74:	learn: 8.8517745	total: 607ms	remaining: 7.49s
75:	learn: 8.8387520	total: 618ms	remaining: 7.51s
76:	learn: 8.8289620	total: 625ms	remaining: 7.49s
77:	learn: 8.8158181	total: 637ms	remaining: 7.53s
78:	learn: 8.8049090	total: 644ms	remaining: 7.51s
79:	learn: 8.7932888	total: 651ms	remaining: 7.49s
80:	learn: 8.7801929	total: 659ms	remaining: 7.47s
81:	learn: 8.7738575	total: 665ms	remaining: 7.44s
82:	learn: 8.7614548	total: 673ms	remaining: 7.43s
83:	learn: 8.7484693	total: 688ms	remaining: 7.51s
84:	learn: 8.7294167	total: 698ms	remaining: 7.51s
85:	learn: 8.7165635	total: 708ms	remaining: 7.53s
86:	learn: 8.7034587	total: 717ms	remaining: 7.52s
87:	learn: 8.6908369	total: 723ms	remaining: 7.5s
88:	learn: 8.6808408	total: 729ms	remaining: 7.47s
89:	learn: 8.6680286	total: 738ms	remaining: 7.46s
90:	learn: 8.6490914	total: 746ms	remaining: 7.45s
91:	learn: 8.6347199	total: 752ms	remaining: 7.43s
92:	learn: 8.6253053	total: 759ms	remaining: 7.4s
93:	learn: 8.6195645	total: 767ms	remaining: 7.4s
94:	learn: 8.6115246	total: 775ms	remaining: 7.38s
95:	learn: 8.6049166	total: 782ms	remaining: 7.36s
96:	learn: 8.5955969	total: 788ms	remaining: 7.33s
97:	learn: 8.5844835	total: 794ms	remaining: 7.31s
98:	learn: 8.5747316	total: 804ms	remaining: 7.32s
99:	learn: 8.5679426	total: 814ms	remaining: 7.32s
100:	learn: 8.5572701	total: 822ms	remaining: 7.32s
101:	learn: 8.5442201	total: 833ms	remaining: 7.33s
102:	learn: 8.5351001	total: 845ms	remaining: 7.36s
103:	learn: 8.5258669	total: 851ms	remaining: 7.33s
104:	learn: 8.5176285	total: 858ms	remaining: 7.31s
105:	learn: 8.5108364	total: 866ms	remaining: 7.31s
106:	learn: 8.5034796	total: 873ms	remaining: 7.28s
107:	learn: 8.4968216	total: 880ms	remaining: 7.26s
108:	learn: 8.4746734	total: 886ms	remaining: 7.24s
109:	learn: 8.4610209	total: 894ms	remaining: 7.23s
110:	learn: 8.4525114	total: 902ms	remaining: 7.23s
111:	learn: 8.4419832	total: 910ms	remaining: 7.21s
112:	learn: 8.4364517	total: 916ms	remaining: 7.19s
113:	learn: 8.4159586	total: 923ms	remaining: 7.17s
114:	learn: 8.4052034	total: 932ms	remaining: 7.17s
115:	learn: 8.3965204	total: 938ms	remaining: 7.15s
116:	learn: 8.3884480	total: 946ms	remaining: 7.14s
117:	learn: 8.3783990	total: 953ms	remaining: 7.12s
118:	learn: 8.3708852	total: 962ms	remaining: 7.13s
119:	learn: 8.3641132	total: 969ms	remaining: 7.1s
120:	learn: 8.3571934	total: 976ms	remaining: 7.09s
121:	learn: 8.3420684	total: 982ms	remaining: 7.07s
122:	learn: 8.3336938	total: 989ms	remaining: 7.05s
123:	learn: 8.3232929	total: 997ms	remaining: 7.04s
124:	learn: 8.3173496	total: 1s	remaining: 7.04s
125:	learn: 8.3092448	total: 1.01s	remaining: 7.01s
126:	learn: 8.2941845	total: 1.02s	remaining: 7s
127:	learn: 8.2863387	total: 1.02s	remaining: 6.99s

128:	learn: 8.2808291	total: 1.04s	remaining: 7s
129:	learn: 8.2719479	total: 1.05s	remaining: 7.01s
130:	learn: 8.2613573	total: 1.06s	remaining: 7.02s
131:	learn: 8.2531197	total: 1.07s	remaining: 7.03s
132:	learn: 8.2452200	total: 1.08s	remaining: 7.02s
133:	learn: 8.2385614	total: 1.08s	remaining: 7.01s
134:	learn: 8.2322527	total: 1.1s	remaining: 7.03s
135:	learn: 8.2225883	total: 1.1s	remaining: 7.02s
136:	learn: 8.2171343	total: 1.11s	remaining: 7s
137:	learn: 8.2089260	total: 1.12s	remaining: 6.97s
138:	learn: 8.1971150	total: 1.12s	remaining: 6.96s
139:	learn: 8.1893139	total: 1.13s	remaining: 6.96s
140:	learn: 8.1774511	total: 1.14s	remaining: 6.94s
141:	learn: 8.1694299	total: 1.15s	remaining: 6.92s
142:	learn: 8.1620485	total: 1.15s	remaining: 6.91s
143:	learn: 8.1447109	total: 1.16s	remaining: 6.9s
144:	learn: 8.1384875	total: 1.17s	remaining: 6.88s
145:	learn: 8.1324647	total: 1.17s	remaining: 6.87s
146:	learn: 8.1220225	total: 1.18s	remaining: 6.85s
147:	learn: 8.1046079	total: 1.19s	remaining: 6.85s
148:	learn: 8.0948317	total: 1.2s	remaining: 6.84s
149:	learn: 8.0874220	total: 1.2s	remaining: 6.82s
150:	learn: 8.0823918	total: 1.21s	remaining: 6.8s
151:	learn: 8.0726080	total: 1.22s	remaining: 6.79s
152:	learn: 8.0687082	total: 1.22s	remaining: 6.78s
153:	learn: 8.0582574	total: 1.23s	remaining: 6.78s
154:	learn: 8.0521992	total: 1.24s	remaining: 6.78s
155:	learn: 8.0465159	total: 1.25s	remaining: 6.79s
156:	learn: 8.0404663	total: 1.26s	remaining: 6.79s
157:	learn: 8.0335202	total: 1.27s	remaining: 6.77s
158:	learn: 8.0241709	total: 1.28s	remaining: 6.76s
159:	learn: 8.0127256	total: 1.28s	remaining: 6.75s
160:	learn: 8.0062376	total: 1.29s	remaining: 6.74s
161:	learn: 8.0020655	total: 1.3s	remaining: 6.73s
162:	learn: 7.9971465	total: 1.31s	remaining: 6.71s
163:	learn: 7.9915077	total: 1.32s	remaining: 6.71s
164:	learn: 7.9819397	total: 1.32s	remaining: 6.69s
165:	learn: 7.9755069	total: 1.33s	remaining: 6.69s
166:	learn: 7.9653862	total: 1.34s	remaining: 6.68s
167:	learn: 7.9590487	total: 1.34s	remaining: 6.66s
168:	learn: 7.9540391	total: 1.35s	remaining: 6.65s
169:	learn: 7.9473084	total: 1.36s	remaining: 6.65s
170:	learn: 7.9385300	total: 1.37s	remaining: 6.64s
171:	learn: 7.9337370	total: 1.38s	remaining: 6.62s
172:	learn: 7.9274870	total: 1.38s	remaining: 6.61s
173:	learn: 7.9208255	total: 1.39s	remaining: 6.61s
174:	learn: 7.9155856	total: 1.4s	remaining: 6.59s
175:	learn: 7.9100610	total: 1.41s	remaining: 6.58s
176:	learn: 7.9055604	total: 1.41s	remaining: 6.57s
177:	learn: 7.9007693	total: 1.42s	remaining: 6.55s
178:	learn: 7.8945335	total: 1.43s	remaining: 6.55s
179:	learn: 7.8891283	total: 1.43s	remaining: 6.53s
180:	learn: 7.8849511	total: 1.44s	remaining: 6.53s
181:	learn: 7.8790640	total: 1.45s	remaining: 6.52s
182:	learn: 7.8776206	total: 1.46s	remaining: 6.51s
183:	learn: 7.8674758	total: 1.47s	remaining: 6.5s
184:	learn: 7.8599905	total: 1.47s	remaining: 6.5s
185:	learn: 7.8541842	total: 1.48s	remaining: 6.5s
186:	learn: 7.8434446	total: 1.5s	remaining: 6.5s
187:	learn: 7.8342581	total: 1.5s	remaining: 6.49s
188:	learn: 7.8279764	total: 1.51s	remaining: 6.48s
189:	learn: 7.8236282	total: 1.52s	remaining: 6.47s
190:	learn: 7.8115560	total: 1.52s	remaining: 6.46s
191:	learn: 7.8075580	total: 1.53s	remaining: 6.45s
192:	learn: 7.8014184	total: 1.54s	remaining: 6.43s
193:	learn: 7.7955984	total: 1.55s	remaining: 6.43s
194:	learn: 7.7918281	total: 1.55s	remaining: 6.42s
195:	learn: 7.7879206	total: 1.56s	remaining: 6.41s
196:	learn: 7.7827264	total: 1.57s	remaining: 6.39s
197:	learn: 7.7770086	total: 1.57s	remaining: 6.38s
198:	learn: 7.7700334	total: 1.58s	remaining: 6.37s

199:	learn: 7.7651254	total: 1.59s	remaining: 6.36s
200:	learn: 7.7608888	total: 1.6s	remaining: 6.34s
201:	learn: 7.7544151	total: 1.6s	remaining: 6.33s
202:	learn: 7.7465051	total: 1.61s	remaining: 6.32s
203:	learn: 7.7438388	total: 1.62s	remaining: 6.31s
204:	learn: 7.7367845	total: 1.62s	remaining: 6.3s
205:	learn: 7.7337583	total: 1.63s	remaining: 6.28s
206:	learn: 7.7284633	total: 1.64s	remaining: 6.28s
207:	learn: 7.7231884	total: 1.65s	remaining: 6.26s
208:	learn: 7.7188242	total: 1.66s	remaining: 6.26s
209:	learn: 7.7127076	total: 1.66s	remaining: 6.26s
210:	learn: 7.7079578	total: 1.68s	remaining: 6.26s
211:	learn: 7.7005303	total: 1.68s	remaining: 6.26s
212:	learn: 7.6956414	total: 1.69s	remaining: 6.24s
213:	learn: 7.6921221	total: 1.7s	remaining: 6.23s
214:	learn: 7.6874126	total: 1.7s	remaining: 6.22s
215:	learn: 7.6812861	total: 1.71s	remaining: 6.21s
216:	learn: 7.6788253	total: 1.72s	remaining: 6.2s
217:	learn: 7.6708309	total: 1.73s	remaining: 6.19s
218:	learn: 7.6615544	total: 1.73s	remaining: 6.18s
219:	learn: 7.6562070	total: 1.74s	remaining: 6.17s
220:	learn: 7.6501046	total: 1.75s	remaining: 6.16s
221:	learn: 7.6435740	total: 1.76s	remaining: 6.15s
222:	learn: 7.6392667	total: 1.76s	remaining: 6.14s
223:	learn: 7.6344189	total: 1.77s	remaining: 6.13s
224:	learn: 7.6278788	total: 1.78s	remaining: 6.12s
225:	learn: 7.6245232	total: 1.78s	remaining: 6.12s
226:	learn: 7.6180642	total: 1.79s	remaining: 6.11s
227:	learn: 7.6138450	total: 1.8s	remaining: 6.09s
228:	learn: 7.6092118	total: 1.8s	remaining: 6.08s
229:	learn: 7.6042520	total: 1.81s	remaining: 6.07s
230:	learn: 7.6003003	total: 1.82s	remaining: 6.08s
231:	learn: 7.5957546	total: 1.83s	remaining: 6.07s
232:	learn: 7.5925109	total: 1.84s	remaining: 6.06s
233:	learn: 7.5867954	total: 1.85s	remaining: 6.05s
234:	learn: 7.5791600	total: 1.85s	remaining: 6.04s
235:	learn: 7.5663222	total: 1.86s	remaining: 6.04s
236:	learn: 7.5639796	total: 1.88s	remaining: 6.04s
237:	learn: 7.5597019	total: 1.88s	remaining: 6.03s
238:	learn: 7.5531004	total: 1.89s	remaining: 6.03s
239:	learn: 7.5485948	total: 1.9s	remaining: 6.02s
240:	learn: 7.5455605	total: 1.91s	remaining: 6.01s
241:	learn: 7.5405029	total: 1.92s	remaining: 6.01s
242:	learn: 7.5360249	total: 1.93s	remaining: 6s
243:	learn: 7.5323724	total: 1.93s	remaining: 5.99s
244:	learn: 7.5244567	total: 1.94s	remaining: 5.98s
245:	learn: 7.5178214	total: 1.95s	remaining: 5.98s
246:	learn: 7.5119830	total: 1.96s	remaining: 5.97s
247:	learn: 7.5067762	total: 1.97s	remaining: 5.96s
248:	learn: 7.5024080	total: 1.97s	remaining: 5.95s
249:	learn: 7.4990009	total: 1.98s	remaining: 5.94s
250:	learn: 7.4951479	total: 1.99s	remaining: 5.94s
251:	learn: 7.4906181	total: 2s	remaining: 5.93s
252:	learn: 7.4836188	total: 2s	remaining: 5.92s
253:	learn: 7.4790056	total: 2.01s	remaining: 5.91s
254:	learn: 7.4736379	total: 2.02s	remaining: 5.91s
255:	learn: 7.4686773	total: 2.03s	remaining: 5.9s
256:	learn: 7.4652895	total: 2.04s	remaining: 5.89s
257:	learn: 7.4604133	total: 2.05s	remaining: 5.89s
258:	learn: 7.4567828	total: 2.06s	remaining: 5.88s
259:	learn: 7.4534283	total: 2.06s	remaining: 5.87s
260:	learn: 7.4493418	total: 2.08s	remaining: 5.88s
261:	learn: 7.4456445	total: 2.09s	remaining: 5.88s
262:	learn: 7.4409192	total: 2.1s	remaining: 5.87s
263:	learn: 7.4362797	total: 2.11s	remaining: 5.88s
264:	learn: 7.4291495	total: 2.12s	remaining: 5.87s
265:	learn: 7.4230874	total: 2.13s	remaining: 5.87s
266:	learn: 7.4189610	total: 2.14s	remaining: 5.87s
267:	learn: 7.4170904	total: 2.15s	remaining: 5.86s
268:	learn: 7.4128179	total: 2.16s	remaining: 5.86s
269:	learn: 7.4098535	total: 2.17s	remaining: 5.86s
270:	learn: 7.4047850	total: 2.18s	remaining: 5.86s

271:	learn: 7.4015730	total: 2.19s	remaining: 5.85s
272:	learn: 7.3950806	total: 2.2s	remaining: 5.85s
273:	learn: 7.3916135	total: 2.21s	remaining: 5.85s
274:	learn: 7.3895057	total: 2.22s	remaining: 5.85s
275:	learn: 7.3827237	total: 2.23s	remaining: 5.85s
276:	learn: 7.3797714	total: 2.24s	remaining: 5.84s
277:	learn: 7.3766998	total: 2.25s	remaining: 5.84s
278:	learn: 7.3726463	total: 2.26s	remaining: 5.84s
279:	learn: 7.3699601	total: 2.27s	remaining: 5.83s
280:	learn: 7.3671245	total: 2.28s	remaining: 5.83s
281:	learn: 7.3629254	total: 2.29s	remaining: 5.83s
282:	learn: 7.3571775	total: 2.3s	remaining: 5.83s
283:	learn: 7.3539811	total: 2.31s	remaining: 5.84s
284:	learn: 7.3508710	total: 2.33s	remaining: 5.84s
285:	learn: 7.3454837	total: 2.34s	remaining: 5.84s
286:	learn: 7.3352873	total: 2.35s	remaining: 5.83s
287:	learn: 7.3317165	total: 2.36s	remaining: 5.83s
288:	learn: 7.3289419	total: 2.37s	remaining: 5.83s
289:	learn: 7.3249388	total: 2.38s	remaining: 5.83s
290:	learn: 7.3220226	total: 2.39s	remaining: 5.83s
291:	learn: 7.3157897	total: 2.4s	remaining: 5.83s
292:	learn: 7.3128691	total: 2.42s	remaining: 5.83s
293:	learn: 7.3103483	total: 2.43s	remaining: 5.83s
294:	learn: 7.3050042	total: 2.44s	remaining: 5.83s
295:	learn: 7.3011873	total: 2.45s	remaining: 5.83s
296:	learn: 7.2988099	total: 2.46s	remaining: 5.83s
297:	learn: 7.2938836	total: 2.47s	remaining: 5.82s
298:	learn: 7.2904531	total: 2.48s	remaining: 5.82s
299:	learn: 7.2870069	total: 2.49s	remaining: 5.82s
300:	learn: 7.2832772	total: 2.5s	remaining: 5.82s
301:	learn: 7.2807350	total: 2.52s	remaining: 5.82s
302:	learn: 7.2774032	total: 2.53s	remaining: 5.82s
303:	learn: 7.2733750	total: 2.54s	remaining: 5.82s
304:	learn: 7.2705055	total: 2.55s	remaining: 5.82s
305:	learn: 7.2680043	total: 2.56s	remaining: 5.81s
306:	learn: 7.2656037	total: 2.57s	remaining: 5.81s
307:	learn: 7.2595483	total: 2.58s	remaining: 5.8s
308:	learn: 7.2563758	total: 2.59s	remaining: 5.8s
309:	learn: 7.2530957	total: 2.6s	remaining: 5.8s
310:	learn: 7.2503747	total: 2.61s	remaining: 5.79s
311:	learn: 7.2480350	total: 2.62s	remaining: 5.79s
312:	learn: 7.2446328	total: 2.63s	remaining: 5.78s
313:	learn: 7.2410156	total: 2.65s	remaining: 5.78s
314:	learn: 7.2388755	total: 2.66s	remaining: 5.78s
315:	learn: 7.2369448	total: 2.67s	remaining: 5.77s
316:	learn: 7.2345224	total: 2.68s	remaining: 5.77s
317:	learn: 7.2328622	total: 2.69s	remaining: 5.76s
318:	learn: 7.2300017	total: 2.7s	remaining: 5.75s
319:	learn: 7.2275297	total: 2.71s	remaining: 5.75s
320:	learn: 7.2245856	total: 2.72s	remaining: 5.76s
321:	learn: 7.2197499	total: 2.73s	remaining: 5.75s
322:	learn: 7.2154683	total: 2.75s	remaining: 5.75s
323:	learn: 7.2110849	total: 2.75s	remaining: 5.75s
324:	learn: 7.2090566	total: 2.77s	remaining: 5.75s
325:	learn: 7.2071688	total: 2.78s	remaining: 5.74s
326:	learn: 7.2035905	total: 2.79s	remaining: 5.74s
327:	learn: 7.1996224	total: 2.8s	remaining: 5.73s
328:	learn: 7.1966956	total: 2.81s	remaining: 5.73s
329:	learn: 7.1932744	total: 2.82s	remaining: 5.72s
330:	learn: 7.1910025	total: 2.83s	remaining: 5.72s
331:	learn: 7.1875205	total: 2.84s	remaining: 5.72s
332:	learn: 7.1832524	total: 2.85s	remaining: 5.71s
333:	learn: 7.1803716	total: 2.86s	remaining: 5.71s
334:	learn: 7.1757384	total: 2.87s	remaining: 5.7s
335:	learn: 7.1722016	total: 2.88s	remaining: 5.7s
336:	learn: 7.1694187	total: 2.9s	remaining: 5.71s
337:	learn: 7.1647844	total: 2.92s	remaining: 5.71s
338:	learn: 7.1621182	total: 2.93s	remaining: 5.71s
339:	learn: 7.1603093	total: 2.94s	remaining: 5.71s
340:	learn: 7.1557421	total: 2.95s	remaining: 5.71s
341:	learn: 7.1522470	total: 2.96s	remaining: 5.7s
342:	learn: 7.1480640	total: 2.97s	remaining: 5.7s

343:	learn: 7.1458355	total: 2.98s	remaining: 5.69s
344:	learn: 7.1428340	total: 3s	remaining: 5.69s
345:	learn: 7.1415305	total: 3.01s	remaining: 5.68s
346:	learn: 7.1371387	total: 3.02s	remaining: 5.68s
347:	learn: 7.1337261	total: 3.03s	remaining: 5.67s
348:	learn: 7.1306568	total: 3.04s	remaining: 5.67s
349:	learn: 7.1267687	total: 3.05s	remaining: 5.67s
350:	learn: 7.1220902	total: 3.06s	remaining: 5.66s
351:	learn: 7.1198867	total: 3.07s	remaining: 5.66s
352:	learn: 7.1183203	total: 3.08s	remaining: 5.65s
353:	learn: 7.1173489	total: 3.09s	remaining: 5.64s
354:	learn: 7.1153472	total: 3.1s	remaining: 5.63s
355:	learn: 7.1101938	total: 3.11s	remaining: 5.63s
356:	learn: 7.1079443	total: 3.12s	remaining: 5.62s
357:	learn: 7.1057253	total: 3.13s	remaining: 5.62s
358:	learn: 7.1037969	total: 3.16s	remaining: 5.64s
359:	learn: 7.1009451	total: 3.17s	remaining: 5.63s
360:	learn: 7.0975311	total: 3.18s	remaining: 5.63s
361:	learn: 7.0954099	total: 3.19s	remaining: 5.62s
362:	learn: 7.0939507	total: 3.2s	remaining: 5.62s
363:	learn: 7.0906708	total: 3.21s	remaining: 5.61s
364:	learn: 7.0893195	total: 3.22s	remaining: 5.61s
365:	learn: 7.0873835	total: 3.23s	remaining: 5.6s
366:	learn: 7.0836564	total: 3.25s	remaining: 5.6s
367:	learn: 7.0803386	total: 3.25s	remaining: 5.59s
368:	learn: 7.0753780	total: 3.27s	remaining: 5.59s
369:	learn: 7.0725181	total: 3.28s	remaining: 5.58s
370:	learn: 7.0708152	total: 3.29s	remaining: 5.58s
371:	learn: 7.0671054	total: 3.3s	remaining: 5.57s
372:	learn: 7.0646364	total: 3.31s	remaining: 5.57s
373:	learn: 7.0601596	total: 3.32s	remaining: 5.56s
374:	learn: 7.0559138	total: 3.34s	remaining: 5.56s
375:	learn: 7.0546816	total: 3.35s	remaining: 5.56s
376:	learn: 7.0511082	total: 3.36s	remaining: 5.55s
377:	learn: 7.0463551	total: 3.37s	remaining: 5.55s
378:	learn: 7.0439111	total: 3.38s	remaining: 5.54s
379:	learn: 7.0415972	total: 3.39s	remaining: 5.54s
380:	learn: 7.0379537	total: 3.41s	remaining: 5.53s
381:	learn: 7.0363827	total: 3.42s	remaining: 5.53s
382:	learn: 7.0335377	total: 3.43s	remaining: 5.53s
383:	learn: 7.0309460	total: 3.44s	remaining: 5.52s
384:	learn: 7.0272563	total: 3.45s	remaining: 5.52s
385:	learn: 7.0237763	total: 3.47s	remaining: 5.51s
386:	learn: 7.0219139	total: 3.48s	remaining: 5.51s
387:	learn: 7.0198468	total: 3.49s	remaining: 5.5s
388:	learn: 7.0158537	total: 3.5s	remaining: 5.5s
389:	learn: 7.0104368	total: 3.51s	remaining: 5.49s
390:	learn: 7.0078985	total: 3.52s	remaining: 5.48s
391:	learn: 7.0054695	total: 3.53s	remaining: 5.48s
392:	learn: 7.0034874	total: 3.55s	remaining: 5.48s
393:	learn: 7.0002809	total: 3.56s	remaining: 5.47s
394:	learn: 6.9967851	total: 3.57s	remaining: 5.47s
395:	learn: 6.9950373	total: 3.58s	remaining: 5.46s
396:	learn: 6.9932600	total: 3.59s	remaining: 5.46s
397:	learn: 6.9907590	total: 3.6s	remaining: 5.45s
398:	learn: 6.9890490	total: 3.61s	remaining: 5.44s
399:	learn: 6.9860642	total: 3.62s	remaining: 5.44s
400:	learn: 6.9837507	total: 3.64s	remaining: 5.43s
401:	learn: 6.9820481	total: 3.65s	remaining: 5.42s
402:	learn: 6.9800899	total: 3.65s	remaining: 5.42s
403:	learn: 6.9781812	total: 3.67s	remaining: 5.41s
404:	learn: 6.9745439	total: 3.68s	remaining: 5.4s
405:	learn: 6.9730093	total: 3.69s	remaining: 5.39s
406:	learn: 6.9710801	total: 3.7s	remaining: 5.39s
407:	learn: 6.9686907	total: 3.71s	remaining: 5.38s
408:	learn: 6.9663942	total: 3.72s	remaining: 5.37s
409:	learn: 6.9630572	total: 3.73s	remaining: 5.37s
410:	learn: 6.9614648	total: 3.74s	remaining: 5.36s
411:	learn: 6.9591737	total: 3.76s	remaining: 5.36s
412:	learn: 6.9575910	total: 3.77s	remaining: 5.36s

413:	learn: 6.9546930	total: 3.78s	remaining: 5.35s
414:	learn: 6.9525742	total: 3.79s	remaining: 5.35s
415:	learn: 6.9510123	total: 3.8s	remaining: 5.34s
416:	learn: 6.9490426	total: 3.81s	remaining: 5.33s
417:	learn: 6.9467523	total: 3.83s	remaining: 5.33s
418:	learn: 6.9442694	total: 3.84s	remaining: 5.32s
419:	learn: 6.9417788	total: 3.85s	remaining: 5.31s
420:	learn: 6.9397705	total: 3.86s	remaining: 5.3s
421:	learn: 6.9370825	total: 3.87s	remaining: 5.3s
422:	learn: 6.9349907	total: 3.88s	remaining: 5.29s
423:	learn: 6.9326775	total: 3.89s	remaining: 5.28s
424:	learn: 6.9294117	total: 3.9s	remaining: 5.28s
425:	learn: 6.9271293	total: 3.92s	remaining: 5.28s
426:	learn: 6.9256107	total: 3.93s	remaining: 5.27s
427:	learn: 6.9236535	total: 3.94s	remaining: 5.26s
428:	learn: 6.9219221	total: 3.95s	remaining: 5.26s
429:	learn: 6.9193241	total: 3.97s	remaining: 5.26s
430:	learn: 6.9170025	total: 3.98s	remaining: 5.25s
431:	learn: 6.9149533	total: 3.99s	remaining: 5.25s
432:	learn: 6.9114219	total: 4s	remaining: 5.24s
433:	learn: 6.9102207	total: 4.01s	remaining: 5.23s
434:	learn: 6.9082828	total: 4.02s	remaining: 5.22s
435:	learn: 6.9056181	total: 4.04s	remaining: 5.22s
436:	learn: 6.9023782	total: 4.05s	remaining: 5.22s
437:	learn: 6.9009241	total: 4.06s	remaining: 5.21s
438:	learn: 6.8994839	total: 4.07s	remaining: 5.2s
439:	learn: 6.8968153	total: 4.08s	remaining: 5.2s
440:	learn: 6.8948623	total: 4.1s	remaining: 5.19s
441:	learn: 6.8917457	total: 4.11s	remaining: 5.18s
442:	learn: 6.8900143	total: 4.12s	remaining: 5.18s
443:	learn: 6.8882886	total: 4.13s	remaining: 5.17s
444:	learn: 6.8838784	total: 4.14s	remaining: 5.16s
445:	learn: 6.8831137	total: 4.15s	remaining: 5.16s
446:	learn: 6.8815655	total: 4.16s	remaining: 5.15s
447:	learn: 6.8795458	total: 4.17s	remaining: 5.14s
448:	learn: 6.8765288	total: 4.18s	remaining: 5.14s
449:	learn: 6.8736940	total: 4.2s	remaining: 5.13s
450:	learn: 6.8722359	total: 4.21s	remaining: 5.13s
451:	learn: 6.8701207	total: 4.22s	remaining: 5.12s
452:	learn: 6.8694682	total: 4.23s	remaining: 5.11s
453:	learn: 6.8640966	total: 4.24s	remaining: 5.1s
454:	learn: 6.8614710	total: 4.25s	remaining: 5.1s
455:	learn: 6.8600202	total: 4.27s	remaining: 5.09s
456:	learn: 6.8578674	total: 4.28s	remaining: 5.08s
457:	learn: 6.8563791	total: 4.29s	remaining: 5.08s
458:	learn: 6.8536330	total: 4.3s	remaining: 5.07s
459:	learn: 6.8519454	total: 4.31s	remaining: 5.06s
460:	learn: 6.8499638	total: 4.32s	remaining: 5.05s
461:	learn: 6.8476359	total: 4.33s	remaining: 5.05s
462:	learn: 6.8465924	total: 4.34s	remaining: 5.04s
463:	learn: 6.8443523	total: 4.36s	remaining: 5.03s
464:	learn: 6.8401297	total: 4.37s	remaining: 5.02s
465:	learn: 6.8384877	total: 4.38s	remaining: 5.01s
466:	learn: 6.8366786	total: 4.39s	remaining: 5.01s
467:	learn: 6.8345020	total: 4.4s	remaining: 5.01s
468:	learn: 6.8324810	total: 4.42s	remaining: 5s
469:	learn: 6.8304366	total: 4.43s	remaining: 5s
470:	learn: 6.8288494	total: 4.44s	remaining: 4.99s
471:	learn: 6.8264263	total: 4.46s	remaining: 4.98s
472:	learn: 6.8229564	total: 4.47s	remaining: 4.98s
473:	learn: 6.8213006	total: 4.48s	remaining: 4.97s
474:	learn: 6.8197229	total: 4.49s	remaining: 4.97s
475:	learn: 6.8174292	total: 4.51s	remaining: 4.96s
476:	learn: 6.8157360	total: 4.52s	remaining: 4.95s
477:	learn: 6.8142463	total: 4.53s	remaining: 4.95s
478:	learn: 6.8130827	total: 4.54s	remaining: 4.94s
479:	learn: 6.8104636	total: 4.55s	remaining: 4.93s
480:	learn: 6.8089457	total: 4.56s	remaining: 4.92s
481:	learn: 6.8076223	total: 4.57s	remaining: 4.91s
482:	learn: 6.8050726	total: 4.58s	remaining: 4.91s
483:	learn: 6.8024921	total: 4.6s	remaining: 4.9s
484:	learn: 6.8009688	total: 4.61s	remaining: 4.89s

485:	learn: 6.7992549	total: 4.62s	remaining: 4.89s
486:	learn: 6.7970647	total: 4.63s	remaining: 4.88s
487:	learn: 6.7957477	total: 4.65s	remaining: 4.87s
488:	learn: 6.7945439	total: 4.66s	remaining: 4.87s
489:	learn: 6.7930104	total: 4.67s	remaining: 4.86s
490:	learn: 6.7909885	total: 4.68s	remaining: 4.85s
491:	learn: 6.7904285	total: 4.68s	remaining: 4.84s
492:	learn: 6.7886753	total: 4.7s	remaining: 4.83s
493:	learn: 6.7865886	total: 4.71s	remaining: 4.82s
494:	learn: 6.7850525	total: 4.72s	remaining: 4.81s
495:	learn: 6.7839024	total: 4.73s	remaining: 4.8s
496:	learn: 6.7808829	total: 4.74s	remaining: 4.8s
497:	learn: 6.7794918	total: 4.75s	remaining: 4.79s
498:	learn: 6.7780782	total: 4.76s	remaining: 4.78s
499:	learn: 6.7701410	total: 4.77s	remaining: 4.77s
500:	learn: 6.7670180	total: 4.78s	remaining: 4.76s
501:	learn: 6.7654495	total: 4.79s	remaining: 4.76s
502:	learn: 6.7640696	total: 4.81s	remaining: 4.75s
503:	learn: 6.7627110	total: 4.82s	remaining: 4.74s
504:	learn: 6.7609990	total: 4.83s	remaining: 4.74s
505:	learn: 6.7588909	total: 4.84s	remaining: 4.73s
506:	learn: 6.7563948	total: 4.86s	remaining: 4.72s
507:	learn: 6.7537052	total: 4.87s	remaining: 4.72s
508:	learn: 6.7521302	total: 4.88s	remaining: 4.71s
509:	learn: 6.7505087	total: 4.9s	remaining: 4.71s
510:	learn: 6.7488240	total: 4.91s	remaining: 4.7s
511:	learn: 6.7471655	total: 4.92s	remaining: 4.69s
512:	learn: 6.7441262	total: 4.93s	remaining: 4.68s
513:	learn: 6.7427697	total: 4.94s	remaining: 4.67s
514:	learn: 6.7414530	total: 4.95s	remaining: 4.67s
515:	learn: 6.7397010	total: 4.96s	remaining: 4.66s
516:	learn: 6.7356087	total: 4.98s	remaining: 4.65s
517:	learn: 6.7336542	total: 4.99s	remaining: 4.64s
518:	learn: 6.7304246	total: 5s	remaining: 4.64s
519:	learn: 6.7284251	total: 5.02s	remaining: 4.63s
520:	learn: 6.7273333	total: 5.03s	remaining: 4.63s
521:	learn: 6.7262543	total: 5.05s	remaining: 4.62s
522:	learn: 6.7244281	total: 5.06s	remaining: 4.62s
523:	learn: 6.7223453	total: 5.08s	remaining: 4.61s
524:	learn: 6.7209412	total: 5.09s	remaining: 4.6s
525:	learn: 6.7195894	total: 5.1s	remaining: 4.6s
526:	learn: 6.7181143	total: 5.11s	remaining: 4.59s
527:	learn: 6.7168077	total: 5.13s	remaining: 4.58s
528:	learn: 6.7147448	total: 5.14s	remaining: 4.57s
529:	learn: 6.7133389	total: 5.15s	remaining: 4.57s
530:	learn: 6.7124070	total: 5.16s	remaining: 4.56s
531:	learn: 6.7109324	total: 5.17s	remaining: 4.55s
532:	learn: 6.7095620	total: 5.18s	remaining: 4.54s
533:	learn: 6.7068280	total: 5.19s	remaining: 4.53s
534:	learn: 6.7056697	total: 5.21s	remaining: 4.52s
535:	learn: 6.7042996	total: 5.22s	remaining: 4.52s
536:	learn: 6.7029526	total: 5.23s	remaining: 4.51s
537:	learn: 6.6995144	total: 5.24s	remaining: 4.5s
538:	learn: 6.6975915	total: 5.25s	remaining: 4.49s
539:	learn: 6.6943270	total: 5.27s	remaining: 4.49s
540:	learn: 6.6927226	total: 5.28s	remaining: 4.48s
541:	learn: 6.6902227	total: 5.29s	remaining: 4.47s
542:	learn: 6.6889762	total: 5.3s	remaining: 4.46s
543:	learn: 6.6880059	total: 5.31s	remaining: 4.45s
544:	learn: 6.6862397	total: 5.32s	remaining: 4.44s
545:	learn: 6.6848765	total: 5.33s	remaining: 4.43s
546:	learn: 6.6830065	total: 5.34s	remaining: 4.42s
547:	learn: 6.6811539	total: 5.36s	remaining: 4.42s
548:	learn: 6.6794799	total: 5.37s	remaining: 4.41s
549:	learn: 6.6767609	total: 5.38s	remaining: 4.4s
550:	learn: 6.6753905	total: 5.39s	remaining: 4.39s
551:	learn: 6.6729562	total: 5.4s	remaining: 4.38s
552:	learn: 6.6703010	total: 5.41s	remaining: 4.38s
553:	learn: 6.6636327	total: 5.43s	remaining: 4.37s
554:	learn: 6.6614977	total: 5.44s	remaining: 4.36s
555:	learn: 6.6600650	total: 5.45s	remaining: 4.35s

556:	learn: 6.6583228	total: 5.46s	remaining: 4.34s
557:	learn: 6.6568800	total: 5.47s	remaining: 4.34s
558:	learn: 6.6536456	total: 5.49s	remaining: 4.33s
559:	learn: 6.6519543	total: 5.5s	remaining: 4.32s
560:	learn: 6.6506929	total: 5.51s	remaining: 4.31s
561:	learn: 6.6493529	total: 5.52s	remaining: 4.3s
562:	learn: 6.6474770	total: 5.53s	remaining: 4.29s
563:	learn: 6.6461619	total: 5.54s	remaining: 4.28s
564:	learn: 6.6445684	total: 5.55s	remaining: 4.28s
565:	learn: 6.6431890	total: 5.57s	remaining: 4.27s
566:	learn: 6.6419959	total: 5.58s	remaining: 4.26s
567:	learn: 6.6397112	total: 5.59s	remaining: 4.25s
568:	learn: 6.6371711	total: 5.6s	remaining: 4.24s
569:	learn: 6.6322360	total: 5.61s	remaining: 4.23s
570:	learn: 6.6311452	total: 5.62s	remaining: 4.22s
571:	learn: 6.6289594	total: 5.63s	remaining: 4.21s
572:	learn: 6.6259042	total: 5.64s	remaining: 4.2s
573:	learn: 6.6244452	total: 5.65s	remaining: 4.19s
574:	learn: 6.6230250	total: 5.66s	remaining: 4.18s
575:	learn: 6.6205207	total: 5.67s	remaining: 4.17s
576:	learn: 6.6188489	total: 5.68s	remaining: 4.17s
577:	learn: 6.6140607	total: 5.69s	remaining: 4.16s
578:	learn: 6.6123395	total: 5.71s	remaining: 4.15s
579:	learn: 6.6113112	total: 5.71s	remaining: 4.14s
580:	learn: 6.6102222	total: 5.72s	remaining: 4.13s
581:	learn: 6.6093559	total: 5.73s	remaining: 4.12s
582:	learn: 6.6081324	total: 5.74s	remaining: 4.11s
583:	learn: 6.6065021	total: 5.75s	remaining: 4.1s
584:	learn: 6.6047832	total: 5.76s	remaining: 4.09s
585:	learn: 6.6037199	total: 5.78s	remaining: 4.08s
586:	learn: 6.6020915	total: 5.79s	remaining: 4.07s
587:	learn: 6.6006309	total: 5.8s	remaining: 4.06s
588:	learn: 6.5991933	total: 5.81s	remaining: 4.05s
589:	learn: 6.5971296	total: 5.82s	remaining: 4.04s
590:	learn: 6.5957496	total: 5.83s	remaining: 4.03s
591:	learn: 6.5948699	total: 5.84s	remaining: 4.02s
592:	learn: 6.5935880	total: 5.85s	remaining: 4.02s
593:	learn: 6.5927086	total: 5.86s	remaining: 4.01s
594:	learn: 6.5913266	total: 5.87s	remaining: 4s
595:	learn: 6.5903367	total: 5.89s	remaining: 3.99s
596:	learn: 6.5884153	total: 5.9s	remaining: 3.98s
597:	learn: 6.5873637	total: 5.91s	remaining: 3.97s
598:	learn: 6.5861154	total: 5.92s	remaining: 3.96s
599:	learn: 6.5838079	total: 5.93s	remaining: 3.95s
600:	learn: 6.5817819	total: 5.94s	remaining: 3.94s
601:	learn: 6.5805561	total: 5.95s	remaining: 3.93s
602:	learn: 6.5793062	total: 5.96s	remaining: 3.92s
603:	learn: 6.5784495	total: 5.97s	remaining: 3.92s
604:	learn: 6.5761415	total: 5.98s	remaining: 3.91s
605:	learn: 6.5748859	total: 5.99s	remaining: 3.9s
606:	learn: 6.5735216	total: 6s	remaining: 3.89s
607:	learn: 6.5718531	total: 6.01s	remaining: 3.88s
608:	learn: 6.5699753	total: 6.02s	remaining: 3.87s
609:	learn: 6.5676567	total: 6.04s	remaining: 3.86s
610:	learn: 6.5659634	total: 6.05s	remaining: 3.85s
611:	learn: 6.5651762	total: 6.06s	remaining: 3.84s
612:	learn: 6.5642339	total: 6.07s	remaining: 3.83s
613:	learn: 6.5630405	total: 6.08s	remaining: 3.82s
614:	learn: 6.5621292	total: 6.09s	remaining: 3.81s
615:	learn: 6.5604555	total: 6.1s	remaining: 3.8s
616:	learn: 6.5587079	total: 6.12s	remaining: 3.8s
617:	learn: 6.5578480	total: 6.13s	remaining: 3.79s
618:	learn: 6.5567536	total: 6.14s	remaining: 3.78s
619:	learn: 6.5554280	total: 6.15s	remaining: 3.77s
620:	learn: 6.5538463	total: 6.16s	remaining: 3.76s
621:	learn: 6.5521029	total: 6.17s	remaining: 3.75s
622:	learn: 6.5499776	total: 6.18s	remaining: 3.74s
623:	learn: 6.5482150	total: 6.19s	remaining: 3.73s
624:	learn: 6.5464482	total: 6.2s	remaining: 3.72s
625:	learn: 6.5454579	total: 6.21s	remaining: 3.71s
626:	learn: 6.5437830	total: 6.22s	remaining: 3.7s
627:	learn: 6.5426112	total: 6.24s	remaining: 3.69s

628:	learn: 6.5379278	total: 6.25s	remaining: 3.69s
629:	learn: 6.5362543	total: 6.26s	remaining: 3.67s
630:	learn: 6.5348529	total: 6.27s	remaining: 3.67s
631:	learn: 6.5302111	total: 6.28s	remaining: 3.66s
632:	learn: 6.5290936	total: 6.3s	remaining: 3.65s
633:	learn: 6.5276245	total: 6.31s	remaining: 3.64s
634:	learn: 6.5266278	total: 6.32s	remaining: 3.63s
635:	learn: 6.5254887	total: 6.33s	remaining: 3.63s
636:	learn: 6.5235647	total: 6.34s	remaining: 3.62s
637:	learn: 6.5224028	total: 6.36s	remaining: 3.6s
638:	learn: 6.5208710	total: 6.37s	remaining: 3.6s
639:	learn: 6.5191837	total: 6.38s	remaining: 3.59s
640:	learn: 6.5179834	total: 6.39s	remaining: 3.58s
641:	learn: 6.5167829	total: 6.4s	remaining: 3.57s
642:	learn: 6.5157133	total: 6.41s	remaining: 3.56s
643:	learn: 6.5151037	total: 6.42s	remaining: 3.55s
644:	learn: 6.5136837	total: 6.43s	remaining: 3.54s
645:	learn: 6.5118278	total: 6.44s	remaining: 3.53s
646:	learn: 6.5094986	total: 6.46s	remaining: 3.52s
647:	learn: 6.5076290	total: 6.47s	remaining: 3.51s
648:	learn: 6.5065491	total: 6.48s	remaining: 3.5s
649:	learn: 6.5053610	total: 6.49s	remaining: 3.49s
650:	learn: 6.5044795	total: 6.5s	remaining: 3.48s
651:	learn: 6.5035238	total: 6.52s	remaining: 3.48s
652:	learn: 6.5020795	total: 6.53s	remaining: 3.47s
653:	learn: 6.5007542	total: 6.54s	remaining: 3.46s
654:	learn: 6.4997080	total: 6.55s	remaining: 3.45s
655:	learn: 6.4969661	total: 6.57s	remaining: 3.44s
656:	learn: 6.4950870	total: 6.58s	remaining: 3.43s
657:	learn: 6.4924131	total: 6.59s	remaining: 3.42s
658:	learn: 6.4913917	total: 6.6s	remaining: 3.42s
659:	learn: 6.4902387	total: 6.61s	remaining: 3.41s
660:	learn: 6.4894467	total: 6.62s	remaining: 3.4s
661:	learn: 6.4876928	total: 6.63s	remaining: 3.39s
662:	learn: 6.4862396	total: 6.64s	remaining: 3.38s
663:	learn: 6.4858636	total: 6.66s	remaining: 3.37s
664:	learn: 6.4842906	total: 6.67s	remaining: 3.36s
665:	learn: 6.4830814	total: 6.68s	remaining: 3.35s
666:	learn: 6.4814062	total: 6.69s	remaining: 3.34s
667:	learn: 6.4806433	total: 6.7s	remaining: 3.33s
668:	learn: 6.4779178	total: 6.71s	remaining: 3.32s
669:	learn: 6.4766459	total: 6.74s	remaining: 3.32s
670:	learn: 6.4749358	total: 6.75s	remaining: 3.31s
671:	learn: 6.4733003	total: 6.77s	remaining: 3.3s
672:	learn: 6.4720165	total: 6.78s	remaining: 3.29s
673:	learn: 6.4712265	total: 6.79s	remaining: 3.28s
674:	learn: 6.4701215	total: 6.8s	remaining: 3.27s
675:	learn: 6.4687899	total: 6.8s	remaining: 3.26s
676:	learn: 6.4673536	total: 6.82s	remaining: 3.25s
677:	learn: 6.4653948	total: 6.83s	remaining: 3.24s
678:	learn: 6.4635232	total: 6.84s	remaining: 3.23s
679:	learn: 6.4602300	total: 6.85s	remaining: 3.22s
680:	learn: 6.4590780	total: 6.86s	remaining: 3.21s
681:	learn: 6.4570370	total: 6.87s	remaining: 3.2s
682:	learn: 6.4558271	total: 6.88s	remaining: 3.19s
683:	learn: 6.4551991	total: 6.89s	remaining: 3.19s
684:	learn: 6.4536124	total: 6.91s	remaining: 3.17s
685:	learn: 6.4524771	total: 6.92s	remaining: 3.17s
686:	learn: 6.4509519	total: 6.93s	remaining: 3.16s
687:	learn: 6.4499209	total: 6.95s	remaining: 3.15s
688:	learn: 6.4485109	total: 6.96s	remaining: 3.14s
689:	learn: 6.4473200	total: 6.97s	remaining: 3.13s
690:	learn: 6.4460693	total: 6.98s	remaining: 3.12s
691:	learn: 6.4452557	total: 6.99s	remaining: 3.11s
692:	learn: 6.4440758	total: 7s	remaining: 3.1s
693:	learn: 6.4428023	total: 7.01s	remaining: 3.09s
694:	learn: 6.4413955	total: 7.02s	remaining: 3.08s
695:	learn: 6.4400521	total: 7.03s	remaining: 3.07s
696:	learn: 6.4384775	total: 7.04s	remaining: 3.06s
697:	learn: 6.4370252	total: 7.05s	remaining: 3.05s

698:	learn: 6.4348820	total: 7.07s	remaining: 3.04s
699:	learn: 6.4338793	total: 7.08s	remaining: 3.03s
700:	learn: 6.4319687	total: 7.09s	remaining: 3.02s
701:	learn: 6.4307258	total: 7.1s	remaining: 3.01s
702:	learn: 6.4299180	total: 7.12s	remaining: 3.01s
703:	learn: 6.4278259	total: 7.13s	remaining: 3s
704:	learn: 6.4271707	total: 7.14s	remaining: 2.99s
705:	learn: 6.4262379	total: 7.16s	remaining: 2.98s
706:	learn: 6.4252976	total: 7.17s	remaining: 2.97s
707:	learn: 6.4242932	total: 7.18s	remaining: 2.96s
708:	learn: 6.4233664	total: 7.19s	remaining: 2.95s
709:	learn: 6.4227282	total: 7.2s	remaining: 2.94s
710:	learn: 6.4213860	total: 7.21s	remaining: 2.93s
711:	learn: 6.4199405	total: 7.22s	remaining: 2.92s
712:	learn: 6.4191503	total: 7.23s	remaining: 2.91s
713:	learn: 6.4182492	total: 7.24s	remaining: 2.9s
714:	learn: 6.4169743	total: 7.25s	remaining: 2.89s
715:	learn: 6.4163814	total: 7.26s	remaining: 2.88s
716:	learn: 6.4155187	total: 7.27s	remaining: 2.87s
717:	learn: 6.4148131	total: 7.28s	remaining: 2.86s
718:	learn: 6.4134976	total: 7.29s	remaining: 2.85s
719:	learn: 6.4116525	total: 7.3s	remaining: 2.84s
720:	learn: 6.4097157	total: 7.32s	remaining: 2.83s
721:	learn: 6.4083011	total: 7.33s	remaining: 2.82s
722:	learn: 6.4071984	total: 7.34s	remaining: 2.81s
723:	learn: 6.4059987	total: 7.36s	remaining: 2.8s
724:	learn: 6.4051373	total: 7.37s	remaining: 2.79s
725:	learn: 6.4035391	total: 7.38s	remaining: 2.78s
726:	learn: 6.4023342	total: 7.39s	remaining: 2.77s
727:	learn: 6.4011104	total: 7.4s	remaining: 2.76s
728:	learn: 6.4002421	total: 7.41s	remaining: 2.75s
729:	learn: 6.3996456	total: 7.42s	remaining: 2.74s
730:	learn: 6.3976817	total: 7.43s	remaining: 2.73s
731:	learn: 6.3966603	total: 7.44s	remaining: 2.72s
732:	learn: 6.3956238	total: 7.45s	remaining: 2.71s
733:	learn: 6.3946853	total: 7.46s	remaining: 2.7s
734:	learn: 6.3937687	total: 7.47s	remaining: 2.69s
735:	learn: 6.3925257	total: 7.48s	remaining: 2.68s
736:	learn: 6.3916104	total: 7.49s	remaining: 2.67s
737:	learn: 6.3903792	total: 7.51s	remaining: 2.66s
738:	learn: 6.3880728	total: 7.52s	remaining: 2.65s
739:	learn: 6.3863255	total: 7.53s	remaining: 2.65s
740:	learn: 6.3851473	total: 7.54s	remaining: 2.64s
741:	learn: 6.3837592	total: 7.56s	remaining: 2.63s
742:	learn: 6.3828621	total: 7.57s	remaining: 2.62s
743:	learn: 6.3820451	total: 7.58s	remaining: 2.61s
744:	learn: 6.3812571	total: 7.59s	remaining: 2.6s
745:	learn: 6.3796325	total: 7.6s	remaining: 2.59s
746:	learn: 6.3787864	total: 7.61s	remaining: 2.58s
747:	learn: 6.3777679	total: 7.62s	remaining: 2.57s
748:	learn: 6.3760479	total: 7.63s	remaining: 2.56s
749:	learn: 6.3750113	total: 7.64s	remaining: 2.55s
750:	learn: 6.3739136	total: 7.65s	remaining: 2.54s
751:	learn: 6.3721643	total: 7.66s	remaining: 2.53s
752:	learn: 6.3707316	total: 7.67s	remaining: 2.52s
753:	learn: 6.3687074	total: 7.68s	remaining: 2.51s
754:	learn: 6.3681759	total: 7.69s	remaining: 2.5s
755:	learn: 6.3671651	total: 7.7s	remaining: 2.49s
756:	learn: 6.3661740	total: 7.71s	remaining: 2.48s
757:	learn: 6.3646603	total: 7.72s	remaining: 2.46s
758:	learn: 6.3641917	total: 7.73s	remaining: 2.46s
759:	learn: 6.3618441	total: 7.74s	remaining: 2.44s
760:	learn: 6.3605233	total: 7.76s	remaining: 2.44s
761:	learn: 6.3594624	total: 7.77s	remaining: 2.43s
762:	learn: 6.3586918	total: 7.78s	remaining: 2.42s
763:	learn: 6.3558889	total: 7.79s	remaining: 2.41s
764:	learn: 6.3551794	total: 7.8s	remaining: 2.4s
765:	learn: 6.3531387	total: 7.81s	remaining: 2.38s
766:	learn: 6.3526182	total: 7.82s	remaining: 2.38s
767:	learn: 6.3516205	total: 7.83s	remaining: 2.37s
768:	learn: 6.3500993	total: 7.84s	remaining: 2.35s
769:	learn: 6.3481029	total: 7.85s	remaining: 2.35s

770:	learn: 6.3468590	total: 7.86s	remaining: 2.33s
771:	learn: 6.3457188	total: 7.87s	remaining: 2.33s
772:	learn: 6.3444893	total: 7.88s	remaining: 2.31s
773:	learn: 6.3431503	total: 7.89s	remaining: 2.31s
774:	learn: 6.3417956	total: 7.91s	remaining: 2.29s
775:	learn: 6.3404981	total: 7.92s	remaining: 2.29s
776:	learn: 6.3394835	total: 7.93s	remaining: 2.27s
777:	learn: 6.3386960	total: 7.94s	remaining: 2.27s
778:	learn: 6.3379845	total: 7.95s	remaining: 2.25s
779:	learn: 6.3368488	total: 7.97s	remaining: 2.25s
780:	learn: 6.3351594	total: 7.98s	remaining: 2.24s
781:	learn: 6.3342820	total: 7.99s	remaining: 2.23s
782:	learn: 6.3308430	total: 8s	remaining: 2.22s
783:	learn: 6.3282600	total: 8.02s	remaining: 2.21s
784:	learn: 6.3276020	total: 8.03s	remaining: 2.2s
785:	learn: 6.3267171	total: 8.04s	remaining: 2.19s
786:	learn: 6.3254077	total: 8.05s	remaining: 2.18s
787:	learn: 6.3234757	total: 8.06s	remaining: 2.17s
788:	learn: 6.3224856	total: 8.07s	remaining: 2.16s
789:	learn: 6.3216622	total: 8.08s	remaining: 2.15s
790:	learn: 6.3201740	total: 8.09s	remaining: 2.14s
791:	learn: 6.3191889	total: 8.1s	remaining: 2.13s
792:	learn: 6.3159278	total: 8.11s	remaining: 2.12s
793:	learn: 6.3147453	total: 8.12s	remaining: 2.11s
794:	learn: 6.3131689	total: 8.13s	remaining: 2.1s
795:	learn: 6.3122558	total: 8.14s	remaining: 2.09s
796:	learn: 6.3115544	total: 8.15s	remaining: 2.08s
797:	learn: 6.3106282	total: 8.17s	remaining: 2.07s
798:	learn: 6.3100568	total: 8.2s	remaining: 2.06s
799:	learn: 6.3092186	total: 8.22s	remaining: 2.05s
800:	learn: 6.3081349	total: 8.23s	remaining: 2.04s
801:	learn: 6.3072076	total: 8.24s	remaining: 2.04s
802:	learn: 6.3064317	total: 8.25s	remaining: 2.02s
803:	learn: 6.3058867	total: 8.26s	remaining: 2.01s
804:	learn: 6.3047865	total: 8.27s	remaining: 2s
805:	learn: 6.3038565	total: 8.29s	remaining: 1.99s
806:	learn: 6.3029234	total: 8.29s	remaining: 1.98s
807:	learn: 6.3020000	total: 8.3s	remaining: 1.97s
808:	learn: 6.3012705	total: 8.31s	remaining: 1.96s
809:	learn: 6.3001028	total: 8.33s	remaining: 1.95s
810:	learn: 6.2986108	total: 8.34s	remaining: 1.94s
811:	learn: 6.2971058	total: 8.35s	remaining: 1.93s
812:	learn: 6.2957330	total: 8.36s	remaining: 1.92s
813:	learn: 6.2945535	total: 8.37s	remaining: 1.91s
814:	learn: 6.2936634	total: 8.39s	remaining: 1.9s
815:	learn: 6.2925190	total: 8.4s	remaining: 1.89s
816:	learn: 6.2908992	total: 8.41s	remaining: 1.88s
817:	learn: 6.2887086	total: 8.42s	remaining: 1.87s
818:	learn: 6.2872037	total: 8.43s	remaining: 1.86s
819:	learn: 6.2862557	total: 8.44s	remaining: 1.85s
820:	learn: 6.2849783	total: 8.45s	remaining: 1.84s
821:	learn: 6.2838851	total: 8.46s	remaining: 1.83s
822:	learn: 6.2830431	total: 8.47s	remaining: 1.82s
823:	learn: 6.2820277	total: 8.48s	remaining: 1.81s
824:	learn: 6.2814106	total: 8.49s	remaining: 1.8s
825:	learn: 6.2805874	total: 8.5s	remaining: 1.79s
826:	learn: 6.2793772	total: 8.52s	remaining: 1.78s
827:	learn: 6.2788981	total: 8.52s	remaining: 1.77s
828:	learn: 6.2775232	total: 8.54s	remaining: 1.76s
829:	learn: 6.2758855	total: 8.55s	remaining: 1.75s
830:	learn: 6.2749498	total: 8.56s	remaining: 1.74s
831:	learn: 6.2737908	total: 8.57s	remaining: 1.73s
832:	learn: 6.2726317	total: 8.58s	remaining: 1.72s
833:	learn: 6.2714527	total: 8.6s	remaining: 1.71s
834:	learn: 6.2692234	total: 8.61s	remaining: 1.7s
835:	learn: 6.2683872	total: 8.62s	remaining: 1.69s
836:	learn: 6.2678553	total: 8.63s	remaining: 1.68s
837:	learn: 6.2668409	total: 8.64s	remaining: 1.67s
838:	learn: 6.2650507	total: 8.65s	remaining: 1.66s
839:	learn: 6.2633837	total: 8.66s	remaining: 1.65s
840:	learn: 6.2629162	total: 8.67s	remaining: 1.64s
841:	learn: 6.2619549	total: 8.69s	remaining: 1.63s

842:	learn: 6.2609153	total: 8.7s	remaining: 1.62s
843:	learn: 6.2600156	total: 8.71s	remaining: 1.61s
844:	learn: 6.2590196	total: 8.72s	remaining: 1.6s
845:	learn: 6.2582841	total: 8.73s	remaining: 1.59s
846:	learn: 6.2574872	total: 8.74s	remaining: 1.58s
847:	learn: 6.2568794	total: 8.75s	remaining: 1.57s
848:	learn: 6.2562125	total: 8.76s	remaining: 1.56s
849:	learn: 6.2553811	total: 8.77s	remaining: 1.55s
850:	learn: 6.2538309	total: 8.78s	remaining: 1.54s
851:	learn: 6.2535723	total: 8.79s	remaining: 1.53s
852:	learn: 6.2520732	total: 8.8s	remaining: 1.52s
853:	learn: 6.2510876	total: 8.81s	remaining: 1.51s
854:	learn: 6.2504784	total: 8.82s	remaining: 1.5s
855:	learn: 6.2495032	total: 8.83s	remaining: 1.49s
856:	learn: 6.2489258	total: 8.85s	remaining: 1.48s
857:	learn: 6.2474884	total: 8.86s	remaining: 1.47s
858:	learn: 6.2455349	total: 8.87s	remaining: 1.46s
859:	learn: 6.2438640	total: 8.88s	remaining: 1.45s
860:	learn: 6.2432085	total: 8.89s	remaining: 1.43s
861:	learn: 6.2427784	total: 8.9s	remaining: 1.42s
862:	learn: 6.2415891	total: 8.91s	remaining: 1.41s
863:	learn: 6.2406909	total: 8.92s	remaining: 1.4s
864:	learn: 6.2401309	total: 8.93s	remaining: 1.39s
865:	learn: 6.2391881	total: 8.94s	remaining: 1.38s
866:	learn: 6.2381874	total: 8.95s	remaining: 1.37s
867:	learn: 6.2379633	total: 8.96s	remaining: 1.36s
868:	learn: 6.2371614	total: 8.97s	remaining: 1.35s
869:	learn: 6.2362793	total: 8.98s	remaining: 1.34s
870:	learn: 6.2354621	total: 8.99s	remaining: 1.33s
871:	learn: 6.2343029	total: 9.01s	remaining: 1.32s
872:	learn: 6.2338101	total: 9.02s	remaining: 1.31s
873:	learn: 6.2329034	total: 9.03s	remaining: 1.3s
874:	learn: 6.2318459	total: 9.04s	remaining: 1.29s
875:	learn: 6.2310586	total: 9.05s	remaining: 1.28s
876:	learn: 6.2300072	total: 9.06s	remaining: 1.27s
877:	learn: 6.2291719	total: 9.07s	remaining: 1.26s
878:	learn: 6.2281961	total: 9.08s	remaining: 1.25s
879:	learn: 6.2269340	total: 9.09s	remaining: 1.24s
880:	learn: 6.2257161	total: 9.11s	remaining: 1.23s
881:	learn: 6.2247162	total: 9.12s	remaining: 1.22s
882:	learn: 6.2242010	total: 9.13s	remaining: 1.21s
883:	learn: 6.2229059	total: 9.14s	remaining: 1.2s
884:	learn: 6.2209863	total: 9.15s	remaining: 1.19s
885:	learn: 6.2202079	total: 9.16s	remaining: 1.18s
886:	learn: 6.2196462	total: 9.17s	remaining: 1.17s
887:	learn: 6.2182147	total: 9.18s	remaining: 1.16s
888:	learn: 6.2168960	total: 9.19s	remaining: 1.15s
889:	learn: 6.2162363	total: 9.2s	remaining: 1.14s
890:	learn: 6.2145024	total: 9.22s	remaining: 1.13s
891:	learn: 6.2137446	total: 9.23s	remaining: 1.12s
892:	learn: 6.2130073	total: 9.24s	remaining: 1.11s
893:	learn: 6.2117794	total: 9.25s	remaining: 1.1s
894:	learn: 6.2099026	total: 9.26s	remaining: 1.09s
895:	learn: 6.2092697	total: 9.27s	remaining: 1.08s
896:	learn: 6.2063918	total: 9.28s	remaining: 1.06s
897:	learn: 6.2058107	total: 9.29s	remaining: 1.05s
898:	learn: 6.2052734	total: 9.3s	remaining: 1.04s
899:	learn: 6.2041514	total: 9.31s	remaining: 1.03s
900:	learn: 6.2036592	total: 9.32s	remaining: 1.02s
901:	learn: 6.2026088	total: 9.34s	remaining: 1.01s
902:	learn: 6.2018544	total: 9.35s	remaining: 1s
903:	learn: 6.2010638	total: 9.37s	remaining: 995ms
904:	learn: 6.2006983	total: 9.38s	remaining: 984ms
905:	learn: 6.1995086	total: 9.39s	remaining: 974ms
906:	learn: 6.1985611	total: 9.4s	remaining: 964ms
907:	learn: 6.1977707	total: 9.41s	remaining: 954ms
908:	learn: 6.1967455	total: 9.43s	remaining: 944ms
909:	learn: 6.1960334	total: 9.44s	remaining: 934ms
910:	learn: 6.1948907	total: 9.45s	remaining: 924ms
911:	learn: 6.1939246	total: 9.46s	remaining: 913ms
912:	learn: 6.1934897	total: 9.47s	remaining: 903ms

913:	learn: 6.1932993	total: 9.48s	remaining: 892ms
914:	learn: 6.1921030	total: 9.49s	remaining: 882ms
915:	learn: 6.1909242	total: 9.5s	remaining: 871ms
916:	learn: 6.1899397	total: 9.51s	remaining: 861ms
917:	learn: 6.1884439	total: 9.53s	remaining: 851ms
918:	learn: 6.1877115	total: 9.54s	remaining: 841ms
919:	learn: 6.1873860	total: 9.54s	remaining: 830ms
920:	learn: 6.1863981	total: 9.55s	remaining: 820ms
921:	learn: 6.1858400	total: 9.56s	remaining: 809ms
922:	learn: 6.1851845	total: 9.58s	remaining: 799ms
923:	learn: 6.1843263	total: 9.59s	remaining: 788ms
924:	learn: 6.1834782	total: 9.6s	remaining: 778ms
925:	learn: 6.1817583	total: 9.61s	remaining: 768ms
926:	learn: 6.1811730	total: 9.62s	remaining: 757ms
927:	learn: 6.1794650	total: 9.63s	remaining: 747ms
928:	learn: 6.1786605	total: 9.64s	remaining: 737ms
929:	learn: 6.1781732	total: 9.65s	remaining: 726ms
930:	learn: 6.1775515	total: 9.66s	remaining: 716ms
931:	learn: 6.1769040	total: 9.67s	remaining: 706ms
932:	learn: 6.1764449	total: 9.68s	remaining: 695ms
933:	learn: 6.1757527	total: 9.69s	remaining: 685ms
934:	learn: 6.1731578	total: 9.7s	remaining: 675ms
935:	learn: 6.1718611	total: 9.71s	remaining: 664ms
936:	learn: 6.1706228	total: 9.72s	remaining: 654ms
937:	learn: 6.1696076	total: 9.73s	remaining: 643ms
938:	learn: 6.1687754	total: 9.75s	remaining: 633ms
939:	learn: 6.1678695	total: 9.76s	remaining: 623ms
940:	learn: 6.1664044	total: 9.77s	remaining: 613ms
941:	learn: 6.1650263	total: 9.78s	remaining: 602ms
942:	learn: 6.1639806	total: 9.79s	remaining: 592ms
943:	learn: 6.1628895	total: 9.8s	remaining: 581ms
944:	learn: 6.1622697	total: 9.81s	remaining: 571ms
945:	learn: 6.1613668	total: 9.83s	remaining: 561ms
946:	learn: 6.1603006	total: 9.84s	remaining: 551ms
947:	learn: 6.1585151	total: 9.85s	remaining: 540ms
948:	learn: 6.1572506	total: 9.86s	remaining: 530ms
949:	learn: 6.1562953	total: 9.87s	remaining: 520ms
950:	learn: 6.1558564	total: 9.88s	remaining: 509ms
951:	learn: 6.1552876	total: 9.89s	remaining: 499ms
952:	learn: 6.1544570	total: 9.9s	remaining: 488ms
953:	learn: 6.1530197	total: 9.92s	remaining: 478ms
954:	learn: 6.1519085	total: 9.93s	remaining: 468ms
955:	learn: 6.1507688	total: 9.94s	remaining: 457ms
956:	learn: 6.1491955	total: 9.95s	remaining: 447ms
957:	learn: 6.1484989	total: 9.96s	remaining: 437ms
958:	learn: 6.1477110	total: 9.98s	remaining: 427ms
959:	learn: 6.1469303	total: 9.99s	remaining: 416ms
960:	learn: 6.1459078	total: 10s	remaining: 406ms
961:	learn: 6.1449601	total: 10s	remaining: 396ms
962:	learn: 6.1433687	total: 10s	remaining: 385ms
963:	learn: 6.1426434	total: 10s	remaining: 375ms
964:	learn: 6.1420038	total: 10.1s	remaining: 365ms
965:	learn: 6.1409519	total: 10.1s	remaining: 354ms
966:	learn: 6.1404608	total: 10.1s	remaining: 344ms
967:	learn: 6.1398360	total: 10.1s	remaining: 334ms
968:	learn: 6.1394367	total: 10.1s	remaining: 323ms
969:	learn: 6.1387403	total: 10.1s	remaining: 313ms
970:	learn: 6.1370675	total: 10.1s	remaining: 302ms
971:	learn: 6.1366376	total: 10.1s	remaining: 292ms
972:	learn: 6.1360630	total: 10.1s	remaining: 281ms
973:	learn: 6.1348483	total: 10.2s	remaining: 271ms
974:	learn: 6.1342277	total: 10.2s	remaining: 261ms
975:	learn: 6.1333679	total: 10.2s	remaining: 250ms
976:	learn: 6.1328278	total: 10.2s	remaining: 240ms
977:	learn: 6.1314294	total: 10.2s	remaining: 229ms
978:	learn: 6.1308573	total: 10.2s	remaining: 219ms
979:	learn: 6.1301412	total: 10.2s	remaining: 208ms
980:	learn: 6.1286037	total: 10.2s	remaining: 198ms
981:	learn: 6.1278882	total: 10.2s	remaining: 188ms
982:	learn: 6.1269250	total: 10.2s	remaining: 177ms
983:	learn: 6.1264260	total: 10.3s	remaining: 167ms
984:	learn: 6.1256796	total: 10.3s	remaining: 156ms

985:	learn: 6.1246131	total: 10.3s	remaining: 146ms
986:	learn: 6.1238617	total: 10.3s	remaining: 136ms
987:	learn: 6.1231161	total: 10.3s	remaining: 125ms
988:	learn: 6.1225381	total: 10.3s	remaining: 115ms
989:	learn: 6.1220333	total: 10.3s	remaining: 104ms
990:	learn: 6.1215197	total: 10.3s	remaining: 93.8ms
991:	learn: 6.1210885	total: 10.3s	remaining: 83.4ms
992:	learn: 6.1202605	total: 10.3s	remaining: 73ms
993:	learn: 6.1188559	total: 10.4s	remaining: 62.5ms
994:	learn: 6.1178188	total: 10.4s	remaining: 52.1ms
995:	learn: 6.1170716	total: 10.4s	remaining: 41.7ms
996:	learn: 6.1164477	total: 10.4s	remaining: 31.3ms
997:	learn: 6.1148823	total: 10.4s	remaining: 20.9ms
998:	learn: 6.1135376	total: 10.4s	remaining: 10.4ms
999:	learn: 6.1121897	total: 10.4s	remaining: 0us

In [80]: `catboost_model = ModelWithCV(catboost_model_pipe,model_name = 'catboost', X=X_train,y=y_train)`

executed in 2m 16s, finished 15:38:48 2022-05-27

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
warnings.warn(

Learning rate set to 0.07344

0:	learn: 12.9011616	total: 7.46ms	remaining: 7.46s
1:	learn: 12.6675687	total: 14ms	remaining: 6.98s
2:	learn: 12.4526476	total: 21.3ms	remaining: 7.07s
3:	learn: 12.2711169	total: 27.8ms	remaining: 6.92s
4:	learn: 12.0910767	total: 35.4ms	remaining: 7.05s
5:	learn: 11.9363495	total: 43.3ms	remaining: 7.17s
6:	learn: 11.7842784	total: 50.6ms	remaining: 7.17s
7:	learn: 11.6449428	total: 59ms	remaining: 7.32s
8:	learn: 11.5350789	total: 65.6ms	remaining: 7.22s
9:	learn: 11.4211548	total: 74.3ms	remaining: 7.36s
10:	learn: 11.3173309	total: 81.7ms	remaining: 7.34s
11:	learn: 11.2227504	total: 90.3ms	remaining: 7.44s
12:	learn: 11.1185473	total: 97.1ms	remaining: 7.38s
13:	learn: 11.0329780	total: 110ms	remaining: 7.74s
14:	learn: 10.9489837	total: 119ms	remaining: 7.84s
15:	learn: 10.8610063	total: 127ms	remaining: 7.81s
16:	learn: 10.7803513	total: 139ms	remaining: 8.03s
17:	learn: 10.7237153	total: 146ms	remaining: 7.96s
18:	learn: 10.6687079	total: 153ms	remaining: 7.91s
19:	learn: 10.6110989	total: 161ms	remaining: 7.91s
20:	learn: 10.5537254	total: 171ms	remaining: 7.99s
21:	learn: 10.4998181	total: 179ms	remaining: 7.97s
22:	learn: 10.4401287	total: 187ms	remaining: 7.95s
23:	learn: 10.3858463	total: 198ms	remaining: 8.05s
24:	learn: 10.3483849	total: 209ms	remaining: 8.15s
25:	learn: 10.2973864	total: 220ms	remaining: 8.23s
26:	learn: 10.2539501	total: 237ms	remaining: 8.56s
27:	learn: 10.2224849	total: 246ms	remaining: 8.52s
28:	learn: 10.1918770	total: 254ms	remaining: 8.51s
29:	learn: 10.1544665	total: 263ms	remaining: 8.5s
30:	learn: 10.1243997	total: 272ms	remaining: 8.49s
31:	learn: 10.0934854	total: 279ms	remaining: 8.44s
32:	learn: 10.0664084	total: 289ms	remaining: 8.46s
33:	learn: 10.0349217	total: 297ms	remaining: 8.43s
34:	learn: 10.0152540	total: 306ms	remaining: 8.44s
35:	learn: 9.9663394	total: 315ms	remaining: 8.44s
36:	learn: 9.9412453	total: 325ms	remaining: 8.45s
37:	learn: 9.9060734	total: 335ms	remaining: 8.47s
38:	learn: 9.8852239	total: 344ms	remaining: 8.47s
39:	learn: 9.8659476	total: 354ms	remaining: 8.49s
40:	learn: 9.8216339	total: 363ms	remaining: 8.49s
41:	learn: 9.7947865	total: 373ms	remaining: 8.5s
42:	learn: 9.7747641	total: 382ms	remaining: 8.5s
43:	learn: 9.7536265	total: 391ms	remaining: 8.49s
44:	learn: 9.7280248	total: 401ms	remaining: 8.51s
45:	learn: 9.7066882	total: 413ms	remaining: 8.56s
46:	learn: 9.6793410	total: 426ms	remaining: 8.63s
47:	learn: 9.6642985	total: 441ms	remaining: 8.74s
48:	learn: 9.6490156	total: 451ms	remaining: 8.74s
49:	learn: 9.6290547	total: 460ms	remaining: 8.73s
50:	learn: 9.6072678	total: 470ms	remaining: 8.75s
51:	learn: 9.5895015	total: 479ms	remaining: 8.73s
52:	learn: 9.5781642	total: 488ms	remaining: 8.72s
53:	learn: 9.5638345	total: 500ms	remaining: 8.75s
54:	learn: 9.5460053	total: 509ms	remaining: 8.75s
55:	learn: 9.5351693	total: 519ms	remaining: 8.75s
56:	learn: 9.5190464	total: 530ms	remaining: 8.77s
57:	learn: 9.4900948	total: 541ms	remaining: 8.78s
58:	learn: 9.4802053	total: 551ms	remaining: 8.78s
59:	learn: 9.4642162	total: 561ms	remaining: 8.78s
60:	learn: 9.4437978	total: 572ms	remaining: 8.8s
61:	learn: 9.4248166	total: 581ms	remaining: 8.79s

62:	learn: 9.4077193	total: 591ms	remaining: 8.78s
63:	learn: 9.3914869	total: 601ms	remaining: 8.79s
64:	learn: 9.3794212	total: 611ms	remaining: 8.79s
65:	learn: 9.3687278	total: 628ms	remaining: 8.88s
66:	learn: 9.3536524	total: 642ms	remaining: 8.94s
67:	learn: 9.3419176	total: 657ms	remaining: 9.01s
68:	learn: 9.3345737	total: 672ms	remaining: 9.07s
69:	learn: 9.3226085	total: 688ms	remaining: 9.14s
70:	learn: 9.3077024	total: 702ms	remaining: 9.18s
71:	learn: 9.2913973	total: 715ms	remaining: 9.21s
72:	learn: 9.2725169	total: 729ms	remaining: 9.26s
73:	learn: 9.2447238	total: 742ms	remaining: 9.29s
74:	learn: 9.2347404	total: 753ms	remaining: 9.29s
75:	learn: 9.2272280	total: 765ms	remaining: 9.3s
76:	learn: 9.2162535	total: 777ms	remaining: 9.32s
77:	learn: 9.1988286	total: 790ms	remaining: 9.34s
78:	learn: 9.1919616	total: 802ms	remaining: 9.35s
79:	learn: 9.1775757	total: 813ms	remaining: 9.35s
80:	learn: 9.1671416	total: 824ms	remaining: 9.34s
81:	learn: 9.1554375	total: 839ms	remaining: 9.4s
82:	learn: 9.1435816	total: 881ms	remaining: 9.74s
83:	learn: 9.1290521	total: 904ms	remaining: 9.86s
84:	learn: 9.1143968	total: 922ms	remaining: 9.92s
85:	learn: 9.1011844	total: 932ms	remaining: 9.91s
86:	learn: 9.0805751	total: 948ms	remaining: 9.94s
87:	learn: 9.0687305	total: 959ms	remaining: 9.94s
88:	learn: 9.0576358	total: 971ms	remaining: 9.94s
89:	learn: 9.0457250	total: 986ms	remaining: 9.97s
90:	learn: 9.0326325	total: 998ms	remaining: 9.97s
91:	learn: 9.0264777	total: 1.01s	remaining: 10s
92:	learn: 9.0168316	total: 1.02s	remaining: 10s
93:	learn: 8.9951909	total: 1.04s	remaining: 10s
94:	learn: 8.9869696	total: 1.05s	remaining: 10s
95:	learn: 8.9779588	total: 1.07s	remaining: 10s
96:	learn: 8.9654345	total: 1.08s	remaining: 10.1s
97:	learn: 8.9443895	total: 1.09s	remaining: 10.1s
98:	learn: 8.9376798	total: 1.1s	remaining: 10.1s
99:	learn: 8.9294671	total: 1.12s	remaining: 10s
100:	learn: 8.9184585	total: 1.13s	remaining: 10s
101:	learn: 8.9101000	total: 1.14s	remaining: 10.1s
102:	learn: 8.8972147	total: 1.15s	remaining: 10.1s
103:	learn: 8.8902974	total: 1.17s	remaining: 10s
104:	learn: 8.8772236	total: 1.18s	remaining: 10s
105:	learn: 8.8695681	total: 1.19s	remaining: 10s
106:	learn: 8.8514076	total: 1.2s	remaining: 10s
107:	learn: 8.8390567	total: 1.21s	remaining: 10s
108:	learn: 8.8312544	total: 1.23s	remaining: 10s
109:	learn: 8.8219813	total: 1.24s	remaining: 10s
110:	learn: 8.8172154	total: 1.25s	remaining: 10s
111:	learn: 8.8015284	total: 1.26s	remaining: 10s
112:	learn: 8.7899695	total: 1.28s	remaining: 10s
113:	learn: 8.7828685	total: 1.29s	remaining: 10.1s
114:	learn: 8.7758756	total: 1.31s	remaining: 10.1s
115:	learn: 8.7648238	total: 1.33s	remaining: 10.1s
116:	learn: 8.7508494	total: 1.35s	remaining: 10.2s
117:	learn: 8.7293275	total: 1.36s	remaining: 10.2s
118:	learn: 8.7208811	total: 1.37s	remaining: 10.2s
119:	learn: 8.7100883	total: 1.39s	remaining: 10.2s
120:	learn: 8.7036361	total: 1.4s	remaining: 10.2s
121:	learn: 8.6972203	total: 1.41s	remaining: 10.1s
122:	learn: 8.6872752	total: 1.42s	remaining: 10.1s
123:	learn: 8.6799475	total: 1.43s	remaining: 10.1s
124:	learn: 8.6676969	total: 1.45s	remaining: 10.1s
125:	learn: 8.6632005	total: 1.46s	remaining: 10.1s
126:	learn: 8.6536024	total: 1.48s	remaining: 10.2s
127:	learn: 8.6443962	total: 1.49s	remaining: 10.2s
128:	learn: 8.6400163	total: 1.5s	remaining: 10.2s
129:	learn: 8.6344212	total: 1.52s	remaining: 10.2s
130:	learn: 8.6278282	total: 1.54s	remaining: 10.2s
131:	learn: 8.6109592	total: 1.55s	remaining: 10.2s
132:	learn: 8.6011624	total: 1.56s	remaining: 10.2s
133:	learn: 8.5961432	total: 1.57s	remaining: 10.2s

134:	learn: 8.5795398	total: 1.59s	remaining: 10.2s
135:	learn: 8.5699213	total: 1.6s	remaining: 10.2s
136:	learn: 8.5644904	total: 1.61s	remaining: 10.1s
137:	learn: 8.5546352	total: 1.62s	remaining: 10.1s
138:	learn: 8.5455125	total: 1.63s	remaining: 10.1s
139:	learn: 8.5280208	total: 1.64s	remaining: 10.1s
140:	learn: 8.5199299	total: 1.66s	remaining: 10.1s
141:	learn: 8.5127411	total: 1.67s	remaining: 10.1s
142:	learn: 8.5063651	total: 1.68s	remaining: 10.1s
143:	learn: 8.4958435	total: 1.7s	remaining: 10.1s
144:	learn: 8.4859988	total: 1.71s	remaining: 10.1s
145:	learn: 8.4814551	total: 1.72s	remaining: 10.1s
146:	learn: 8.4743239	total: 1.74s	remaining: 10.1s
147:	learn: 8.4626792	total: 1.75s	remaining: 10.1s
148:	learn: 8.4511546	total: 1.76s	remaining: 10.1s
149:	learn: 8.4426559	total: 1.77s	remaining: 10.1s
150:	learn: 8.4375146	total: 1.79s	remaining: 10.1s
151:	learn: 8.4291565	total: 1.8s	remaining: 10s
152:	learn: 8.4242639	total: 1.82s	remaining: 10.1s
153:	learn: 8.4136295	total: 1.84s	remaining: 10.1s
154:	learn: 8.4042030	total: 1.85s	remaining: 10.1s
155:	learn: 8.3957124	total: 1.87s	remaining: 10.1s
156:	learn: 8.3885655	total: 1.89s	remaining: 10.1s
157:	learn: 8.3798219	total: 1.9s	remaining: 10.1s
158:	learn: 8.3742488	total: 1.92s	remaining: 10.2s
159:	learn: 8.3699896	total: 1.93s	remaining: 10.2s
160:	learn: 8.3661952	total: 1.95s	remaining: 10.2s
161:	learn: 8.3620506	total: 1.97s	remaining: 10.2s
162:	learn: 8.3544217	total: 1.98s	remaining: 10.2s
163:	learn: 8.3420198	total: 2s	remaining: 10.2s
164:	learn: 8.3309531	total: 2.01s	remaining: 10.2s
165:	learn: 8.3222274	total: 2.02s	remaining: 10.2s
166:	learn: 8.3145482	total: 2.04s	remaining: 10.2s
167:	learn: 8.3075824	total: 2.05s	remaining: 10.1s
168:	learn: 8.3021932	total: 2.06s	remaining: 10.1s
169:	learn: 8.2937276	total: 2.07s	remaining: 10.1s
170:	learn: 8.2859803	total: 2.08s	remaining: 10.1s
171:	learn: 8.2791155	total: 2.09s	remaining: 10.1s
172:	learn: 8.2714128	total: 2.11s	remaining: 10.1s
173:	learn: 8.2662876	total: 2.13s	remaining: 10.1s
174:	learn: 8.2551084	total: 2.14s	remaining: 10.1s
175:	learn: 8.2476791	total: 2.16s	remaining: 10.1s
176:	learn: 8.2418726	total: 2.18s	remaining: 10.1s
177:	learn: 8.2321478	total: 2.19s	remaining: 10.1s
178:	learn: 8.2245666	total: 2.2s	remaining: 10.1s
179:	learn: 8.2190253	total: 2.22s	remaining: 10.1s
180:	learn: 8.2138495	total: 2.23s	remaining: 10.1s
181:	learn: 8.2080274	total: 2.25s	remaining: 10.1s
182:	learn: 8.1932697	total: 2.26s	remaining: 10.1s
183:	learn: 8.1847866	total: 2.27s	remaining: 10.1s
184:	learn: 8.1791469	total: 2.29s	remaining: 10.1s
185:	learn: 8.1727049	total: 2.29s	remaining: 10s
186:	learn: 8.1614408	total: 2.31s	remaining: 10s
187:	learn: 8.1551724	total: 2.32s	remaining: 10s
188:	learn: 8.1478958	total: 2.33s	remaining: 10s
189:	learn: 8.1417561	total: 2.35s	remaining: 10s
190:	learn: 8.1376446	total: 2.36s	remaining: 10s
191:	learn: 8.1316178	total: 2.38s	remaining: 10s
192:	learn: 8.1262689	total: 2.39s	remaining: 9.99s
193:	learn: 8.1200661	total: 2.4s	remaining: 9.98s
194:	learn: 8.1158032	total: 2.41s	remaining: 9.97s
195:	learn: 8.1113640	total: 2.43s	remaining: 9.95s
196:	learn: 8.1018398	total: 2.44s	remaining: 9.95s
197:	learn: 8.0962042	total: 2.46s	remaining: 9.94s
198:	learn: 8.0862484	total: 2.47s	remaining: 9.93s
199:	learn: 8.0814693	total: 2.48s	remaining: 9.93s
200:	learn: 8.0735531	total: 2.49s	remaining: 9.91s
201:	learn: 8.0670756	total: 2.51s	remaining: 9.91s
202:	learn: 8.0616051	total: 2.52s	remaining: 9.9s
203:	learn: 8.0532747	total: 2.53s	remaining: 9.88s

204:	learn: 8.0503871	total: 2.54s	remaining: 9.87s
205:	learn: 8.0445950	total: 2.56s	remaining: 9.86s
206:	learn: 8.0412840	total: 2.57s	remaining: 9.85s
207:	learn: 8.0368432	total: 2.58s	remaining: 9.83s
208:	learn: 8.0324652	total: 2.59s	remaining: 9.81s
209:	learn: 8.0244646	total: 2.61s	remaining: 9.8s
210:	learn: 8.0145641	total: 2.62s	remaining: 9.78s
211:	learn: 8.0104663	total: 2.63s	remaining: 9.76s
212:	learn: 8.0032551	total: 2.64s	remaining: 9.75s
213:	learn: 7.9949079	total: 2.65s	remaining: 9.73s
214:	learn: 7.9914949	total: 2.66s	remaining: 9.72s
215:	learn: 7.9869262	total: 2.67s	remaining: 9.71s
216:	learn: 7.9804441	total: 2.68s	remaining: 9.69s
217:	learn: 7.9733004	total: 2.7s	remaining: 9.67s
218:	learn: 7.9679906	total: 2.71s	remaining: 9.66s
219:	learn: 7.9591072	total: 2.72s	remaining: 9.65s
220:	learn: 7.9532790	total: 2.73s	remaining: 9.63s
221:	learn: 7.9478158	total: 2.74s	remaining: 9.62s
222:	learn: 7.9445836	total: 2.75s	remaining: 9.6s
223:	learn: 7.9396821	total: 2.77s	remaining: 9.59s
224:	learn: 7.9336672	total: 2.78s	remaining: 9.58s
225:	learn: 7.9284257	total: 2.79s	remaining: 9.56s
226:	learn: 7.9220080	total: 2.81s	remaining: 9.56s
227:	learn: 7.9151528	total: 2.82s	remaining: 9.54s
228:	learn: 7.9091397	total: 2.83s	remaining: 9.53s
229:	learn: 7.9036178	total: 2.84s	remaining: 9.52s
230:	learn: 7.9005241	total: 2.85s	remaining: 9.5s
231:	learn: 7.8960730	total: 2.87s	remaining: 9.49s
232:	learn: 7.8898189	total: 2.88s	remaining: 9.47s
233:	learn: 7.8841060	total: 2.89s	remaining: 9.46s
234:	learn: 7.8806281	total: 2.9s	remaining: 9.45s
235:	learn: 7.8758297	total: 2.91s	remaining: 9.44s
236:	learn: 7.8730468	total: 2.93s	remaining: 9.42s
237:	learn: 7.8696348	total: 2.94s	remaining: 9.41s
238:	learn: 7.8639450	total: 2.95s	remaining: 9.39s
239:	learn: 7.8588499	total: 2.96s	remaining: 9.38s
240:	learn: 7.8545816	total: 2.98s	remaining: 9.38s
241:	learn: 7.8503204	total: 2.99s	remaining: 9.37s
242:	learn: 7.8463296	total: 3s	remaining: 9.35s
243:	learn: 7.8404459	total: 3.01s	remaining: 9.33s
244:	learn: 7.8355087	total: 3.02s	remaining: 9.32s
245:	learn: 7.8287661	total: 3.04s	remaining: 9.31s
246:	learn: 7.8251961	total: 3.04s	remaining: 9.29s
247:	learn: 7.8202499	total: 3.06s	remaining: 9.27s
248:	learn: 7.8148968	total: 3.07s	remaining: 9.26s
249:	learn: 7.8090100	total: 3.08s	remaining: 9.25s
250:	learn: 7.8051857	total: 3.1s	remaining: 9.24s
251:	learn: 7.8019514	total: 3.11s	remaining: 9.22s
252:	learn: 7.7960351	total: 3.12s	remaining: 9.21s
253:	learn: 7.7921171	total: 3.13s	remaining: 9.2s
254:	learn: 7.7870457	total: 3.14s	remaining: 9.18s
255:	learn: 7.7812569	total: 3.15s	remaining: 9.16s
256:	learn: 7.7758096	total: 3.17s	remaining: 9.15s
257:	learn: 7.7703704	total: 3.18s	remaining: 9.14s
258:	learn: 7.7615355	total: 3.19s	remaining: 9.14s
259:	learn: 7.7574522	total: 3.21s	remaining: 9.12s
260:	learn: 7.7537013	total: 3.22s	remaining: 9.12s
261:	learn: 7.7502201	total: 3.23s	remaining: 9.11s
262:	learn: 7.7462781	total: 3.24s	remaining: 9.09s
263:	learn: 7.7430029	total: 3.26s	remaining: 9.08s
264:	learn: 7.7396375	total: 3.27s	remaining: 9.06s
265:	learn: 7.7339749	total: 3.28s	remaining: 9.05s
266:	learn: 7.7201773	total: 3.29s	remaining: 9.04s
267:	learn: 7.7176523	total: 3.3s	remaining: 9.02s
268:	learn: 7.7137801	total: 3.31s	remaining: 9.01s
269:	learn: 7.7096192	total: 3.33s	remaining: 8.99s
270:	learn: 7.7062676	total: 3.34s	remaining: 8.98s
271:	learn: 7.7016468	total: 3.35s	remaining: 8.96s
272:	learn: 7.6973337	total: 3.36s	remaining: 8.94s
273:	learn: 7.6916898	total: 3.37s	remaining: 8.93s
274:	learn: 7.6874126	total: 3.38s	remaining: 8.92s
275:	learn: 7.6827250	total: 3.4s	remaining: 8.91s

276:	learn: 7.6794680	total: 3.41s	remaining: 8.89s
277:	learn: 7.6761393	total: 3.42s	remaining: 8.88s
278:	learn: 7.6721760	total: 3.43s	remaining: 8.86s
279:	learn: 7.6685991	total: 3.44s	remaining: 8.85s
280:	learn: 7.6655728	total: 3.45s	remaining: 8.83s
281:	learn: 7.6620758	total: 3.46s	remaining: 8.82s
282:	learn: 7.6566046	total: 3.47s	remaining: 8.8s
283:	learn: 7.6535634	total: 3.49s	remaining: 8.79s
284:	learn: 7.6499767	total: 3.5s	remaining: 8.77s
285:	learn: 7.6461032	total: 3.51s	remaining: 8.76s
286:	learn: 7.6422888	total: 3.52s	remaining: 8.74s
287:	learn: 7.6391845	total: 3.53s	remaining: 8.72s
288:	learn: 7.6350236	total: 3.54s	remaining: 8.71s
289:	learn: 7.6316234	total: 3.55s	remaining: 8.69s
290:	learn: 7.6273005	total: 3.56s	remaining: 8.68s
291:	learn: 7.6238033	total: 3.58s	remaining: 8.67s
292:	learn: 7.6203104	total: 3.59s	remaining: 8.66s
293:	learn: 7.6153297	total: 3.6s	remaining: 8.65s
294:	learn: 7.6124228	total: 3.61s	remaining: 8.63s
295:	learn: 7.6083093	total: 3.62s	remaining: 8.62s
296:	learn: 7.6050623	total: 3.63s	remaining: 8.6s
297:	learn: 7.6020977	total: 3.65s	remaining: 8.59s
298:	learn: 7.5978461	total: 3.65s	remaining: 8.57s
299:	learn: 7.5946420	total: 3.67s	remaining: 8.55s
300:	learn: 7.5906689	total: 3.68s	remaining: 8.54s
301:	learn: 7.5893686	total: 3.69s	remaining: 8.52s
302:	learn: 7.5845818	total: 3.7s	remaining: 8.51s
303:	learn: 7.5790595	total: 3.71s	remaining: 8.5s
304:	learn: 7.5682089	total: 3.73s	remaining: 8.49s
305:	learn: 7.5647841	total: 3.74s	remaining: 8.48s
306:	learn: 7.5623014	total: 3.75s	remaining: 8.46s
307:	learn: 7.5596260	total: 3.76s	remaining: 8.45s
308:	learn: 7.5567784	total: 3.77s	remaining: 8.43s
309:	learn: 7.5527894	total: 3.78s	remaining: 8.42s
310:	learn: 7.5480861	total: 3.8s	remaining: 8.41s
311:	learn: 7.5440750	total: 3.81s	remaining: 8.4s
312:	learn: 7.5411266	total: 3.83s	remaining: 8.4s
313:	learn: 7.5373653	total: 3.84s	remaining: 8.39s
314:	learn: 7.5346208	total: 3.85s	remaining: 8.38s
315:	learn: 7.5325064	total: 3.86s	remaining: 8.36s
316:	learn: 7.5288168	total: 3.88s	remaining: 8.35s
317:	learn: 7.5258601	total: 3.89s	remaining: 8.34s
318:	learn: 7.5236330	total: 3.9s	remaining: 8.33s
319:	learn: 7.5198190	total: 3.91s	remaining: 8.31s
320:	learn: 7.5158708	total: 3.92s	remaining: 8.3s
321:	learn: 7.5057465	total: 3.94s	remaining: 8.29s
322:	learn: 7.5012903	total: 3.95s	remaining: 8.27s
323:	learn: 7.4983821	total: 3.96s	remaining: 8.26s
324:	learn: 7.4954298	total: 3.97s	remaining: 8.25s
325:	learn: 7.4912125	total: 3.98s	remaining: 8.24s
326:	learn: 7.4883564	total: 4s	remaining: 8.23s
327:	learn: 7.4819756	total: 4.01s	remaining: 8.22s
328:	learn: 7.4794921	total: 4.03s	remaining: 8.21s
329:	learn: 7.4758762	total: 4.04s	remaining: 8.2s
330:	learn: 7.4724812	total: 4.05s	remaining: 8.19s
331:	learn: 7.4694698	total: 4.07s	remaining: 8.18s
332:	learn: 7.4671374	total: 4.08s	remaining: 8.17s
333:	learn: 7.4642284	total: 4.09s	remaining: 8.16s
334:	learn: 7.4615108	total: 4.1s	remaining: 8.15s
335:	learn: 7.4583575	total: 4.12s	remaining: 8.13s
336:	learn: 7.4559409	total: 4.13s	remaining: 8.12s
337:	learn: 7.4516977	total: 4.14s	remaining: 8.11s
338:	learn: 7.4483152	total: 4.15s	remaining: 8.09s
339:	learn: 7.4452546	total: 4.16s	remaining: 8.08s
340:	learn: 7.4420669	total: 4.18s	remaining: 8.07s
341:	learn: 7.4379106	total: 4.19s	remaining: 8.06s
342:	learn: 7.4356291	total: 4.2s	remaining: 8.04s
343:	learn: 7.4336188	total: 4.21s	remaining: 8.03s
344:	learn: 7.4309019	total: 4.23s	remaining: 8.03s
345:	learn: 7.4282544	total: 4.24s	remaining: 8.02s

346:	learn: 7.4253140	total: 4.25s	remaining: 8.01s
347:	learn: 7.4160543	total: 4.27s	remaining: 8s
348:	learn: 7.4131550	total: 4.28s	remaining: 7.99s
349:	learn: 7.4109476	total: 4.29s	remaining: 7.97s
350:	learn: 7.4092907	total: 4.3s	remaining: 7.96s
351:	learn: 7.4061615	total: 4.31s	remaining: 7.94s
352:	learn: 7.4037254	total: 4.33s	remaining: 7.93s
353:	learn: 7.4017346	total: 4.34s	remaining: 7.91s
354:	learn: 7.3994366	total: 4.35s	remaining: 7.9s
355:	learn: 7.3957102	total: 4.36s	remaining: 7.89s
356:	learn: 7.3940254	total: 4.37s	remaining: 7.87s
357:	learn: 7.3918526	total: 4.38s	remaining: 7.86s
358:	learn: 7.3892715	total: 4.39s	remaining: 7.84s
359:	learn: 7.3861960	total: 4.4s	remaining: 7.83s
360:	learn: 7.3841242	total: 4.41s	remaining: 7.81s
361:	learn: 7.3804014	total: 4.43s	remaining: 7.8s
362:	learn: 7.3772801	total: 4.44s	remaining: 7.79s
363:	learn: 7.3760995	total: 4.45s	remaining: 7.78s
364:	learn: 7.3733928	total: 4.46s	remaining: 7.76s
365:	learn: 7.3703868	total: 4.47s	remaining: 7.75s
366:	learn: 7.3681186	total: 4.49s	remaining: 7.74s
367:	learn: 7.3657745	total: 4.5s	remaining: 7.72s
368:	learn: 7.3636890	total: 4.51s	remaining: 7.71s
369:	learn: 7.3618056	total: 4.52s	remaining: 7.69s
370:	learn: 7.3584506	total: 4.53s	remaining: 7.68s
371:	learn: 7.3559240	total: 4.54s	remaining: 7.67s
372:	learn: 7.3527919	total: 4.55s	remaining: 7.65s
373:	learn: 7.3509562	total: 4.57s	remaining: 7.64s
374:	learn: 7.3485680	total: 4.58s	remaining: 7.63s
375:	learn: 7.3467827	total: 4.59s	remaining: 7.61s
376:	learn: 7.3439476	total: 4.6s	remaining: 7.6s
377:	learn: 7.3403966	total: 4.61s	remaining: 7.58s
378:	learn: 7.3380520	total: 4.62s	remaining: 7.58s
379:	learn: 7.3352420	total: 4.63s	remaining: 7.56s
380:	learn: 7.3284644	total: 4.65s	remaining: 7.55s
381:	learn: 7.3268409	total: 4.66s	remaining: 7.54s
382:	learn: 7.3247826	total: 4.67s	remaining: 7.53s
383:	learn: 7.3222162	total: 4.68s	remaining: 7.52s
384:	learn: 7.3201757	total: 4.7s	remaining: 7.5s
385:	learn: 7.3174297	total: 4.7s	remaining: 7.48s
386:	learn: 7.3156356	total: 4.71s	remaining: 7.47s
387:	learn: 7.3135669	total: 4.73s	remaining: 7.46s
388:	learn: 7.3118793	total: 4.74s	remaining: 7.44s
389:	learn: 7.3077418	total: 4.75s	remaining: 7.43s
390:	learn: 7.3041171	total: 4.76s	remaining: 7.42s
391:	learn: 7.3029850	total: 4.78s	remaining: 7.41s
392:	learn: 7.2945892	total: 4.79s	remaining: 7.39s
393:	learn: 7.2871043	total: 4.8s	remaining: 7.38s
394:	learn: 7.2845111	total: 4.81s	remaining: 7.37s
395:	learn: 7.2811019	total: 4.82s	remaining: 7.35s
396:	learn: 7.2795993	total: 4.83s	remaining: 7.34s
397:	learn: 7.2784906	total: 4.84s	remaining: 7.32s
398:	learn: 7.2763111	total: 4.85s	remaining: 7.31s
399:	learn: 7.2706044	total: 4.87s	remaining: 7.3s
400:	learn: 7.2679005	total: 4.88s	remaining: 7.28s
401:	learn: 7.2657282	total: 4.89s	remaining: 7.27s
402:	learn: 7.2649404	total: 4.9s	remaining: 7.26s
403:	learn: 7.2632505	total: 4.91s	remaining: 7.24s
404:	learn: 7.2614620	total: 4.92s	remaining: 7.23s
405:	learn: 7.2585499	total: 4.93s	remaining: 7.21s
406:	learn: 7.2521109	total: 4.94s	remaining: 7.2s
407:	learn: 7.2467796	total: 4.96s	remaining: 7.19s
408:	learn: 7.2436733	total: 4.97s	remaining: 7.18s
409:	learn: 7.2415773	total: 4.98s	remaining: 7.17s
410:	learn: 7.2398280	total: 5s	remaining: 7.16s
411:	learn: 7.2368991	total: 5.02s	remaining: 7.16s
412:	learn: 7.2346384	total: 5.04s	remaining: 7.16s
413:	learn: 7.2312870	total: 5.06s	remaining: 7.17s
414:	learn: 7.2293893	total: 5.09s	remaining: 7.17s
415:	learn: 7.2266348	total: 5.12s	remaining: 7.18s
416:	learn: 7.2249013	total: 5.14s	remaining: 7.18s
417:	learn: 7.2213000	total: 5.17s	remaining: 7.19s

418:	learn: 7.2194891	total: 5.18s	remaining: 7.19s
419:	learn: 7.2175899	total: 5.2s	remaining: 7.18s
420:	learn: 7.2165571	total: 5.21s	remaining: 7.17s
421:	learn: 7.2121545	total: 5.22s	remaining: 7.16s
422:	learn: 7.2091818	total: 5.24s	remaining: 7.14s
423:	learn: 7.2036011	total: 5.25s	remaining: 7.13s
424:	learn: 7.2010630	total: 5.26s	remaining: 7.12s
425:	learn: 7.1987932	total: 5.28s	remaining: 7.11s
426:	learn: 7.1970304	total: 5.29s	remaining: 7.1s
427:	learn: 7.1956870	total: 5.31s	remaining: 7.09s
428:	learn: 7.1938175	total: 5.32s	remaining: 7.08s
429:	learn: 7.1907775	total: 5.33s	remaining: 7.07s
430:	learn: 7.1871040	total: 5.35s	remaining: 7.06s
431:	learn: 7.1854126	total: 5.36s	remaining: 7.04s
432:	learn: 7.1832782	total: 5.37s	remaining: 7.03s
433:	learn: 7.1812466	total: 5.38s	remaining: 7.02s
434:	learn: 7.1779546	total: 5.4s	remaining: 7.01s
435:	learn: 7.1768430	total: 5.41s	remaining: 7s
436:	learn: 7.1748637	total: 5.43s	remaining: 7s
437:	learn: 7.1726376	total: 5.46s	remaining: 7s
438:	learn: 7.1710771	total: 5.49s	remaining: 7.01s
439:	learn: 7.1687506	total: 5.51s	remaining: 7.01s
440:	learn: 7.1662563	total: 5.53s	remaining: 7.01s
441:	learn: 7.1643036	total: 5.56s	remaining: 7.02s
442:	learn: 7.1623528	total: 5.59s	remaining: 7.03s
443:	learn: 7.1609922	total: 5.61s	remaining: 7.02s
444:	learn: 7.1590228	total: 5.62s	remaining: 7.01s
445:	learn: 7.1578430	total: 5.63s	remaining: 7s
446:	learn: 7.1545560	total: 5.65s	remaining: 6.99s
447:	learn: 7.1521417	total: 5.66s	remaining: 6.98s
448:	learn: 7.1508875	total: 5.68s	remaining: 6.97s
449:	learn: 7.1491602	total: 5.71s	remaining: 6.97s
450:	learn: 7.1472939	total: 5.72s	remaining: 6.97s
451:	learn: 7.1459713	total: 5.74s	remaining: 6.96s
452:	learn: 7.1446824	total: 5.77s	remaining: 6.97s
453:	learn: 7.1420921	total: 5.81s	remaining: 6.99s
454:	learn: 7.1400114	total: 5.83s	remaining: 6.99s
455:	learn: 7.1389536	total: 5.86s	remaining: 6.99s
456:	learn: 7.1369036	total: 5.87s	remaining: 6.98s
457:	learn: 7.1324117	total: 5.89s	remaining: 6.97s
458:	learn: 7.1306807	total: 5.9s	remaining: 6.95s
459:	learn: 7.1287082	total: 5.91s	remaining: 6.94s
460:	learn: 7.1237170	total: 5.92s	remaining: 6.93s
461:	learn: 7.1214397	total: 5.94s	remaining: 6.92s
462:	learn: 7.1194983	total: 5.96s	remaining: 6.91s
463:	learn: 7.1176818	total: 5.97s	remaining: 6.89s
464:	learn: 7.1138069	total: 5.98s	remaining: 6.88s
465:	learn: 7.1120016	total: 5.99s	remaining: 6.86s
466:	learn: 7.1100664	total: 6s	remaining: 6.85s
467:	learn: 7.1074328	total: 6.01s	remaining: 6.83s
468:	learn: 7.1050398	total: 6.03s	remaining: 6.82s
469:	learn: 7.1030588	total: 6.04s	remaining: 6.81s
470:	learn: 7.1004572	total: 6.05s	remaining: 6.79s
471:	learn: 7.0991151	total: 6.06s	remaining: 6.78s
472:	learn: 7.0971158	total: 6.07s	remaining: 6.76s
473:	learn: 7.0956701	total: 6.08s	remaining: 6.75s
474:	learn: 7.0941195	total: 6.09s	remaining: 6.74s
475:	learn: 7.0917219	total: 6.11s	remaining: 6.72s
476:	learn: 7.0901052	total: 6.12s	remaining: 6.71s
477:	learn: 7.0887325	total: 6.13s	remaining: 6.7s
478:	learn: 7.0877452	total: 6.14s	remaining: 6.68s
479:	learn: 7.0864491	total: 6.16s	remaining: 6.67s
480:	learn: 7.0849756	total: 6.17s	remaining: 6.66s
481:	learn: 7.0836634	total: 6.19s	remaining: 6.65s
482:	learn: 7.0804804	total: 6.2s	remaining: 6.63s
483:	learn: 7.0777923	total: 6.21s	remaining: 6.62s
484:	learn: 7.0762348	total: 6.22s	remaining: 6.61s
485:	learn: 7.0749727	total: 6.24s	remaining: 6.59s
486:	learn: 7.0726973	total: 6.25s	remaining: 6.58s
487:	learn: 7.0690735	total: 6.26s	remaining: 6.57s
488:	learn: 7.0673747	total: 6.27s	remaining: 6.56s
489:	learn: 7.0669635	total: 6.28s	remaining: 6.54s

490:	learn: 7.0642645	total: 6.29s	remaining: 6.52s
491:	learn: 7.0629885	total: 6.31s	remaining: 6.51s
492:	learn: 7.0619232	total: 6.32s	remaining: 6.5s
493:	learn: 7.0600449	total: 6.33s	remaining: 6.48s
494:	learn: 7.0576279	total: 6.34s	remaining: 6.47s
495:	learn: 7.0560123	total: 6.36s	remaining: 6.46s
496:	learn: 7.0527922	total: 6.37s	remaining: 6.44s
497:	learn: 7.0493423	total: 6.38s	remaining: 6.43s
498:	learn: 7.0470037	total: 6.39s	remaining: 6.42s
499:	learn: 7.0453093	total: 6.4s	remaining: 6.4s
500:	learn: 7.0433804	total: 6.42s	remaining: 6.39s
501:	learn: 7.0413609	total: 6.43s	remaining: 6.38s
502:	learn: 7.0388879	total: 6.44s	remaining: 6.36s
503:	learn: 7.0363875	total: 6.45s	remaining: 6.35s
504:	learn: 7.0344659	total: 6.46s	remaining: 6.33s
505:	learn: 7.0334525	total: 6.47s	remaining: 6.32s
506:	learn: 7.0307613	total: 6.48s	remaining: 6.3s
507:	learn: 7.0279712	total: 6.5s	remaining: 6.29s
508:	learn: 7.0249245	total: 6.51s	remaining: 6.28s
509:	learn: 7.0227077	total: 6.52s	remaining: 6.26s
510:	learn: 7.0214157	total: 6.53s	remaining: 6.25s
511:	learn: 7.0195863	total: 6.55s	remaining: 6.24s
512:	learn: 7.0179925	total: 6.56s	remaining: 6.23s
513:	learn: 7.0166678	total: 6.58s	remaining: 6.22s
514:	learn: 7.0155778	total: 6.59s	remaining: 6.21s
515:	learn: 7.0145976	total: 6.6s	remaining: 6.2s
516:	learn: 7.0123661	total: 6.62s	remaining: 6.18s
517:	learn: 7.0092064	total: 6.63s	remaining: 6.17s
518:	learn: 7.0073005	total: 6.65s	remaining: 6.16s
519:	learn: 7.0059433	total: 6.66s	remaining: 6.14s
520:	learn: 7.0045195	total: 6.67s	remaining: 6.13s
521:	learn: 7.0018276	total: 6.68s	remaining: 6.12s
522:	learn: 6.9997817	total: 6.69s	remaining: 6.1s
523:	learn: 6.9980179	total: 6.7s	remaining: 6.09s
524:	learn: 6.9971988	total: 6.71s	remaining: 6.07s
525:	learn: 6.9950973	total: 6.72s	remaining: 6.06s
526:	learn: 6.9932400	total: 6.74s	remaining: 6.05s
527:	learn: 6.9915657	total: 6.75s	remaining: 6.03s
528:	learn: 6.9898180	total: 6.76s	remaining: 6.02s
529:	learn: 6.9883382	total: 6.78s	remaining: 6.01s
530:	learn: 6.9862197	total: 6.79s	remaining: 6s
531:	learn: 6.9843764	total: 6.8s	remaining: 5.99s
532:	learn: 6.9829720	total: 6.82s	remaining: 5.97s
533:	learn: 6.9817377	total: 6.83s	remaining: 5.96s
534:	learn: 6.9798981	total: 6.84s	remaining: 5.95s
535:	learn: 6.9786849	total: 6.86s	remaining: 5.93s
536:	learn: 6.9771005	total: 6.87s	remaining: 5.92s
537:	learn: 6.9746298	total: 6.88s	remaining: 5.91s
538:	learn: 6.9734017	total: 6.89s	remaining: 5.89s
539:	learn: 6.9713461	total: 6.9s	remaining: 5.88s
540:	learn: 6.9705782	total: 6.91s	remaining: 5.86s
541:	learn: 6.9696767	total: 6.92s	remaining: 5.85s
542:	learn: 6.9689794	total: 6.93s	remaining: 5.83s
543:	learn: 6.9678000	total: 6.94s	remaining: 5.82s
544:	learn: 6.9669947	total: 6.95s	remaining: 5.8s
545:	learn: 6.9657310	total: 6.97s	remaining: 5.79s
546:	learn: 6.9647389	total: 6.99s	remaining: 5.79s
547:	learn: 6.9632174	total: 7s	remaining: 5.78s
548:	learn: 6.9621611	total: 7.01s	remaining: 5.76s
549:	learn: 6.9595112	total: 7.03s	remaining: 5.75s
550:	learn: 6.9585697	total: 7.04s	remaining: 5.74s
551:	learn: 6.9566114	total: 7.05s	remaining: 5.72s
552:	learn: 6.9545604	total: 7.07s	remaining: 5.71s
553:	learn: 6.9521848	total: 7.08s	remaining: 5.7s
554:	learn: 6.9512015	total: 7.09s	remaining: 5.68s
555:	learn: 6.9497391	total: 7.1s	remaining: 5.67s
556:	learn: 6.9483084	total: 7.11s	remaining: 5.66s
557:	learn: 6.9465850	total: 7.12s	remaining: 5.64s
558:	learn: 6.9451974	total: 7.13s	remaining: 5.63s
559:	learn: 6.9443886	total: 7.14s	remaining: 5.61s
560:	learn: 6.9430229	total: 7.16s	remaining: 5.6s

561:	learn: 6.9421062	total: 7.17s	remaining: 5.59s
562:	learn: 6.9406948	total: 7.18s	remaining: 5.58s
563:	learn: 6.9393511	total: 7.19s	remaining: 5.56s
564:	learn: 6.9384166	total: 7.21s	remaining: 5.55s
565:	learn: 6.9370066	total: 7.22s	remaining: 5.53s
566:	learn: 6.9354098	total: 7.23s	remaining: 5.52s
567:	learn: 6.9338434	total: 7.24s	remaining: 5.5s
568:	learn: 6.9304314	total: 7.25s	remaining: 5.49s
569:	learn: 6.9293616	total: 7.26s	remaining: 5.48s
570:	learn: 6.9275247	total: 7.27s	remaining: 5.46s
571:	learn: 6.9262978	total: 7.28s	remaining: 5.45s
572:	learn: 6.9249034	total: 7.29s	remaining: 5.44s
573:	learn: 6.9222161	total: 7.31s	remaining: 5.42s
574:	learn: 6.9195327	total: 7.32s	remaining: 5.41s
575:	learn: 6.9172108	total: 7.33s	remaining: 5.39s
576:	learn: 6.9158685	total: 7.34s	remaining: 5.38s
577:	learn: 6.9142560	total: 7.36s	remaining: 5.37s
578:	learn: 6.9130420	total: 7.37s	remaining: 5.36s
579:	learn: 6.9119358	total: 7.38s	remaining: 5.35s
580:	learn: 6.9104669	total: 7.39s	remaining: 5.33s
581:	learn: 6.9098080	total: 7.41s	remaining: 5.32s
582:	learn: 6.9078105	total: 7.42s	remaining: 5.31s
583:	learn: 6.9068382	total: 7.43s	remaining: 5.29s
584:	learn: 6.9056695	total: 7.44s	remaining: 5.28s
585:	learn: 6.9015500	total: 7.45s	remaining: 5.26s
586:	learn: 6.8998570	total: 7.46s	remaining: 5.25s
587:	learn: 6.8978698	total: 7.47s	remaining: 5.24s
588:	learn: 6.8968506	total: 7.48s	remaining: 5.22s
589:	learn: 6.8957973	total: 7.5s	remaining: 5.21s
590:	learn: 6.8945903	total: 7.51s	remaining: 5.2s
591:	learn: 6.8932482	total: 7.52s	remaining: 5.18s
592:	learn: 6.8924034	total: 7.53s	remaining: 5.17s
593:	learn: 6.8912898	total: 7.54s	remaining: 5.15s
594:	learn: 6.8897877	total: 7.55s	remaining: 5.14s
595:	learn: 6.8880727	total: 7.56s	remaining: 5.13s
596:	learn: 6.8868535	total: 7.58s	remaining: 5.12s
597:	learn: 6.8844154	total: 7.59s	remaining: 5.1s
598:	learn: 6.8811923	total: 7.61s	remaining: 5.09s
599:	learn: 6.8786868	total: 7.62s	remaining: 5.08s
600:	learn: 6.8762447	total: 7.63s	remaining: 5.06s
601:	learn: 6.8742330	total: 7.64s	remaining: 5.05s
602:	learn: 6.8731593	total: 7.65s	remaining: 5.04s
603:	learn: 6.8706943	total: 7.66s	remaining: 5.02s
604:	learn: 6.8689004	total: 7.68s	remaining: 5.01s
605:	learn: 6.8674483	total: 7.69s	remaining: 5s
606:	learn: 6.8655462	total: 7.7s	remaining: 4.99s
607:	learn: 6.8640770	total: 7.71s	remaining: 4.97s
608:	learn: 6.8625388	total: 7.72s	remaining: 4.96s
609:	learn: 6.8608662	total: 7.73s	remaining: 4.94s
610:	learn: 6.8597242	total: 7.74s	remaining: 4.93s
611:	learn: 6.8587022	total: 7.75s	remaining: 4.92s
612:	learn: 6.8573906	total: 7.77s	remaining: 4.9s
613:	learn: 6.8538039	total: 7.78s	remaining: 4.89s
614:	learn: 6.8521498	total: 7.79s	remaining: 4.88s
615:	learn: 6.8512189	total: 7.8s	remaining: 4.86s
616:	learn: 6.8497606	total: 7.82s	remaining: 4.85s
617:	learn: 6.8468462	total: 7.83s	remaining: 4.84s
618:	learn: 6.8452275	total: 7.84s	remaining: 4.83s
619:	learn: 6.8422786	total: 7.85s	remaining: 4.81s
620:	learn: 6.8409017	total: 7.87s	remaining: 4.8s
621:	learn: 6.8371148	total: 7.88s	remaining: 4.79s
622:	learn: 6.8337767	total: 7.89s	remaining: 4.78s
623:	learn: 6.8322500	total: 7.9s	remaining: 4.76s
624:	learn: 6.8309631	total: 7.91s	remaining: 4.75s
625:	learn: 6.8292899	total: 7.92s	remaining: 4.73s
626:	learn: 6.8271372	total: 7.94s	remaining: 4.72s
627:	learn: 6.8256275	total: 7.95s	remaining: 4.71s
628:	learn: 6.8245895	total: 7.96s	remaining: 4.7s
629:	learn: 6.8234459	total: 7.97s	remaining: 4.68s
630:	learn: 6.8223003	total: 7.98s	remaining: 4.67s
631:	learn: 6.8200334	total: 7.99s	remaining: 4.65s
632:	learn: 6.8188434	total: 8.01s	remaining: 4.64s

633:	learn: 6.8144529	total: 8.02s	remaining: 4.63s
634:	learn: 6.8130768	total: 8.04s	remaining: 4.62s
635:	learn: 6.8122551	total: 8.05s	remaining: 4.61s
636:	learn: 6.8108288	total: 8.06s	remaining: 4.59s
637:	learn: 6.8093335	total: 8.07s	remaining: 4.58s
638:	learn: 6.8080765	total: 8.08s	remaining: 4.57s
639:	learn: 6.8066443	total: 8.1s	remaining: 4.55s
640:	learn: 6.8051683	total: 8.11s	remaining: 4.54s
641:	learn: 6.8043408	total: 8.12s	remaining: 4.53s
642:	learn: 6.8020579	total: 8.13s	remaining: 4.51s
643:	learn: 6.7998239	total: 8.14s	remaining: 4.5s
644:	learn: 6.7984542	total: 8.15s	remaining: 4.49s
645:	learn: 6.7978554	total: 8.16s	remaining: 4.47s
646:	learn: 6.7963542	total: 8.18s	remaining: 4.46s
647:	learn: 6.7955200	total: 8.19s	remaining: 4.45s
648:	learn: 6.7937248	total: 8.2s	remaining: 4.43s
649:	learn: 6.7922493	total: 8.21s	remaining: 4.42s
650:	learn: 6.7898417	total: 8.23s	remaining: 4.41s
651:	learn: 6.7890870	total: 8.25s	remaining: 4.4s
652:	learn: 6.7871250	total: 8.26s	remaining: 4.39s
653:	learn: 6.7854270	total: 8.27s	remaining: 4.38s
654:	learn: 6.7845339	total: 8.29s	remaining: 4.36s
655:	learn: 6.7827294	total: 8.3s	remaining: 4.35s
656:	learn: 6.7797719	total: 8.31s	remaining: 4.34s
657:	learn: 6.7780143	total: 8.32s	remaining: 4.33s
658:	learn: 6.7750185	total: 8.34s	remaining: 4.31s
659:	learn: 6.7738645	total: 8.35s	remaining: 4.3s
660:	learn: 6.7725324	total: 8.36s	remaining: 4.29s
661:	learn: 6.7710346	total: 8.38s	remaining: 4.28s
662:	learn: 6.7699285	total: 8.39s	remaining: 4.26s
663:	learn: 6.7683632	total: 8.4s	remaining: 4.25s
664:	learn: 6.7673715	total: 8.41s	remaining: 4.24s
665:	learn: 6.7639082	total: 8.42s	remaining: 4.22s
666:	learn: 6.7628862	total: 8.44s	remaining: 4.21s
667:	learn: 6.7617915	total: 8.45s	remaining: 4.2s
668:	learn: 6.7604766	total: 8.46s	remaining: 4.19s
669:	learn: 6.7596993	total: 8.47s	remaining: 4.17s
670:	learn: 6.7586222	total: 8.48s	remaining: 4.16s
671:	learn: 6.7572387	total: 8.5s	remaining: 4.15s
672:	learn: 6.7547972	total: 8.51s	remaining: 4.13s
673:	learn: 6.7540695	total: 8.52s	remaining: 4.12s
674:	learn: 6.7525337	total: 8.53s	remaining: 4.11s
675:	learn: 6.7507258	total: 8.54s	remaining: 4.09s
676:	learn: 6.7499715	total: 8.55s	remaining: 4.08s
677:	learn: 6.7486570	total: 8.57s	remaining: 4.07s
678:	learn: 6.7465188	total: 8.58s	remaining: 4.05s
679:	learn: 6.7451859	total: 8.59s	remaining: 4.04s
680:	learn: 6.7439932	total: 8.6s	remaining: 4.03s
681:	learn: 6.7432916	total: 8.61s	remaining: 4.01s
682:	learn: 6.7417538	total: 8.62s	remaining: 4s
683:	learn: 6.7404050	total: 8.63s	remaining: 3.99s
684:	learn: 6.7388118	total: 8.65s	remaining: 3.98s
685:	learn: 6.7377970	total: 8.66s	remaining: 3.96s
686:	learn: 6.7368666	total: 8.67s	remaining: 3.95s
687:	learn: 6.7356843	total: 8.68s	remaining: 3.94s
688:	learn: 6.7348383	total: 8.7s	remaining: 3.92s
689:	learn: 6.7342394	total: 8.71s	remaining: 3.91s
690:	learn: 6.7330720	total: 8.72s	remaining: 3.9s
691:	learn: 6.7323728	total: 8.73s	remaining: 3.89s
692:	learn: 6.7307303	total: 8.74s	remaining: 3.87s
693:	learn: 6.7298297	total: 8.76s	remaining: 3.86s
694:	learn: 6.7285719	total: 8.77s	remaining: 3.85s
695:	learn: 6.7277489	total: 8.78s	remaining: 3.83s
696:	learn: 6.7262782	total: 8.79s	remaining: 3.82s
697:	learn: 6.7249734	total: 8.8s	remaining: 3.81s
698:	learn: 6.7222787	total: 8.81s	remaining: 3.79s
699:	learn: 6.7210824	total: 8.83s	remaining: 3.78s
700:	learn: 6.7199387	total: 8.84s	remaining: 3.77s
701:	learn: 6.7183021	total: 8.85s	remaining: 3.76s
702:	learn: 6.7174933	total: 8.87s	remaining: 3.75s


703:	learn: 6.7167225	total: 8.88s	remaining: 3.73s
704:	learn: 6.7154516	total: 8.89s	remaining: 3.72s
705:	learn: 6.7137377	total: 8.9s	remaining: 3.71s
706:	learn: 6.7122369	total: 8.91s	remaining: 3.69s
707:	learn: 6.7112643	total: 8.93s	remaining: 3.68s
708:	learn: 6.7101968	total: 8.95s	remaining: 3.67s
709:	learn: 6.7090085	total: 8.96s	remaining: 3.66s
710:	learn: 6.7068517	total: 8.97s	remaining: 3.65s
711:	learn: 6.7058721	total: 8.98s	remaining: 3.63s
712:	learn: 6.7050252	total: 8.99s	remaining: 3.62s
713:	learn: 6.7032701	total: 9s	remaining: 3.61s
714:	learn: 6.7022662	total: 9.01s	remaining: 3.59s
715:	learn: 6.7009628	total: 9.03s	remaining: 3.58s
716:	learn: 6.6976495	total: 9.04s	remaining: 3.57s
717:	learn: 6.6965786	total: 9.05s	remaining: 3.56s
718:	learn: 6.6960643	total: 9.06s	remaining: 3.54s
719:	learn: 6.6941530	total: 9.07s	remaining: 3.53s
720:	learn: 6.6932118	total: 9.09s	remaining: 3.52s
721:	learn: 6.6921198	total: 9.1s	remaining: 3.5s
722:	learn: 6.6905301	total: 9.11s	remaining: 3.49s
723:	learn: 6.6898345	total: 9.12s	remaining: 3.48s
724:	learn: 6.6888315	total: 9.13s	remaining: 3.46s
725:	learn: 6.6879157	total: 9.14s	remaining: 3.45s
726:	learn: 6.6857754	total: 9.16s	remaining: 3.44s
727:	learn: 6.6836038	total: 9.17s	remaining: 3.42s
728:	learn: 6.6824184	total: 9.18s	remaining: 3.41s
729:	learn: 6.6810481	total: 9.19s	remaining: 3.4s
730:	learn: 6.6795869	total: 9.21s	remaining: 3.39s
731:	learn: 6.6785547	total: 9.22s	remaining: 3.37s
732:	learn: 6.6770926	total: 9.23s	remaining: 3.36s
733:	learn: 6.6756923	total: 9.25s	remaining: 3.35s
734:	learn: 6.6749163	total: 9.26s	remaining: 3.34s
735:	learn: 6.6742058	total: 9.28s	remaining: 3.33s
736:	learn: 6.6730444	total: 9.29s	remaining: 3.32s
737:	learn: 6.6703616	total: 9.31s	remaining: 3.31s
738:	learn: 6.6683554	total: 9.34s	remaining: 3.3s
739:	learn: 6.6673131	total: 9.35s	remaining: 3.29s
740:	learn: 6.6669410	total: 9.36s	remaining: 3.27s
741:	learn: 6.6660128	total: 9.37s	remaining: 3.26s
742:	learn: 6.6651910	total: 9.39s	remaining: 3.25s
743:	learn: 6.6641094	total: 9.4s	remaining: 3.23s
744:	learn: 6.6632009	total: 9.41s	remaining: 3.22s
745:	learn: 6.6615716	total: 9.43s	remaining: 3.21s
746:	learn: 6.6606240	total: 9.44s	remaining: 3.2s
747:	learn: 6.6595927	total: 9.46s	remaining: 3.19s
748:	learn: 6.6585535	total: 9.47s	remaining: 3.17s
749:	learn: 6.6575019	total: 9.48s	remaining: 3.16s
750:	learn: 6.6555611	total: 9.5s	remaining: 3.15s
751:	learn: 6.6540612	total: 9.52s	remaining: 3.14s
752:	learn: 6.6517838	total: 9.53s	remaining: 3.13s
753:	learn: 6.6511635	total: 9.54s	remaining: 3.11s
754:	learn: 6.6500074	total: 9.55s	remaining: 3.1s
755:	learn: 6.6485941	total: 9.57s	remaining: 3.09s
756:	learn: 6.6475129	total: 9.58s	remaining: 3.08s
757:	learn: 6.6454799	total: 9.59s	remaining: 3.06s
758:	learn: 6.6444820	total: 9.61s	remaining: 3.05s
759:	learn: 6.6435921	total: 9.62s	remaining: 3.04s
760:	learn: 6.6427649	total: 9.63s	remaining: 3.02s
761:	learn: 6.6422710	total: 9.64s	remaining: 3.01s
762:	learn: 6.6410137	total: 9.66s	remaining: 3s
763:	learn: 6.6390039	total: 9.67s	remaining: 2.99s
764:	learn: 6.6377212	total: 9.69s	remaining: 2.98s
765:	learn: 6.6368167	total: 9.7s	remaining: 2.96s
766:	learn: 6.6342083	total: 9.71s	remaining: 2.95s
767:	learn: 6.6326365	total: 9.72s	remaining: 2.94s
768:	learn: 6.6317113	total: 9.74s	remaining: 2.92s
769:	learn: 6.6293041	total: 9.75s	remaining: 2.91s
770:	learn: 6.6277841	total: 9.77s	remaining: 2.9s
771:	learn: 6.6269008	total: 9.78s	remaining: 2.89s
772:	learn: 6.6260874	total: 9.79s	remaining: 2.88s
773:	learn: 6.6246935	total: 9.8s	remaining: 2.86s
774:	learn: 6.6237230	total: 9.81s	remaining: 2.85s

775:	learn: 6.6227341	total: 9.83s	remaining: 2.84s
776:	learn: 6.6216137	total: 9.84s	remaining: 2.82s
777:	learn: 6.6201047	total: 9.85s	remaining: 2.81s
778:	learn: 6.6190241	total: 9.86s	remaining: 2.8s
779:	learn: 6.6170990	total: 9.87s	remaining: 2.78s
780:	learn: 6.6164297	total: 9.89s	remaining: 2.77s
781:	learn: 6.6149993	total: 9.9s	remaining: 2.76s
782:	learn: 6.6133321	total: 9.92s	remaining: 2.75s
783:	learn: 6.6124424	total: 9.93s	remaining: 2.74s
784:	learn: 6.6116690	total: 9.95s	remaining: 2.72s
785:	learn: 6.6099709	total: 9.96s	remaining: 2.71s
786:	learn: 6.6088150	total: 9.97s	remaining: 2.7s
787:	learn: 6.6077534	total: 9.98s	remaining: 2.69s
788:	learn: 6.6068105	total: 10s	remaining: 2.67s
789:	learn: 6.6041010	total: 10s	remaining: 2.66s
790:	learn: 6.6029448	total: 10s	remaining: 2.65s
791:	learn: 6.6020854	total: 10s	remaining: 2.63s
792:	learn: 6.6012492	total: 10s	remaining: 2.62s
793:	learn: 6.6003190	total: 10.1s	remaining: 2.61s
794:	learn: 6.5996565	total: 10.1s	remaining: 2.6s
795:	learn: 6.5982858	total: 10.1s	remaining: 2.58s
796:	learn: 6.5971378	total: 10.1s	remaining: 2.57s
797:	learn: 6.5965077	total: 10.1s	remaining: 2.56s
798:	learn: 6.5947951	total: 10.1s	remaining: 2.55s
799:	learn: 6.5930356	total: 10.1s	remaining: 2.53s
800:	learn: 6.5920579	total: 10.1s	remaining: 2.52s
801:	learn: 6.5914937	total: 10.2s	remaining: 2.51s
802:	learn: 6.5907837	total: 10.2s	remaining: 2.49s
803:	learn: 6.5900058	total: 10.2s	remaining: 2.48s
804:	learn: 6.5873143	total: 10.2s	remaining: 2.47s
805:	learn: 6.5860118	total: 10.2s	remaining: 2.46s
806:	learn: 6.5845124	total: 10.2s	remaining: 2.44s
807:	learn: 6.5834217	total: 10.2s	remaining: 2.43s
808:	learn: 6.5808182	total: 10.2s	remaining: 2.42s
809:	learn: 6.5800757	total: 10.3s	remaining: 2.4s
810:	learn: 6.5782670	total: 10.3s	remaining: 2.39s
811:	learn: 6.5777787	total: 10.3s	remaining: 2.38s
812:	learn: 6.5773498	total: 10.3s	remaining: 2.37s
813:	learn: 6.5761653	total: 10.3s	remaining: 2.35s
814:	learn: 6.5740700	total: 10.3s	remaining: 2.34s
815:	learn: 6.5719263	total: 10.3s	remaining: 2.33s
816:	learn: 6.5709974	total: 10.4s	remaining: 2.33s
817:	learn: 6.5699800	total: 10.4s	remaining: 2.31s
818:	learn: 6.5692411	total: 10.4s	remaining: 2.3s
819:	learn: 6.5679285	total: 10.4s	remaining: 2.29s
820:	learn: 6.5662381	total: 10.4s	remaining: 2.28s
821:	learn: 6.5655037	total: 10.5s	remaining: 2.27s
822:	learn: 6.5647558	total: 10.5s	remaining: 2.25s
823:	learn: 6.5634622	total: 10.5s	remaining: 2.24s
824:	learn: 6.5621098	total: 10.5s	remaining: 2.23s
825:	learn: 6.5608245	total: 10.5s	remaining: 2.21s
826:	learn: 6.5600339	total: 10.5s	remaining: 2.2s
827:	learn: 6.5589243	total: 10.5s	remaining: 2.19s
828:	learn: 6.5581021	total: 10.6s	remaining: 2.18s
829:	learn: 6.5570737	total: 10.6s	remaining: 2.17s
830:	learn: 6.5554424	total: 10.6s	remaining: 2.16s
831:	learn: 6.5542939	total: 10.6s	remaining: 2.15s
832:	learn: 6.5529540	total: 10.6s	remaining: 2.13s
833:	learn: 6.5518938	total: 10.7s	remaining: 2.12s
834:	learn: 6.5510835	total: 10.7s	remaining: 2.11s
835:	learn: 6.5504608	total: 10.7s	remaining: 2.1s
836:	learn: 6.5497010	total: 10.7s	remaining: 2.08s
837:	learn: 6.5483246	total: 10.7s	remaining: 2.07s
838:	learn: 6.5462598	total: 10.7s	remaining: 2.06s
839:	learn: 6.5456481	total: 10.8s	remaining: 2.05s
840:	learn: 6.5450679	total: 10.8s	remaining: 2.04s
841:	learn: 6.5444838	total: 10.8s	remaining: 2.02s
842:	learn: 6.5436059	total: 10.8s	remaining: 2.01s
843:	learn: 6.5419852	total: 10.8s	remaining: 2s
844:	learn: 6.5409005	total: 10.8s	remaining: 1.99s
845:	learn: 6.5402439	total: 10.8s	remaining: 1.97s
846:	learn: 6.5390864	total: 10.9s	remaining: 1.96s

847:	learn: 6.5382959	total: 10.9s	remaining: 1.95s
848:	learn: 6.5375191	total: 10.9s	remaining: 1.93s
849:	learn: 6.5360328	total: 10.9s	remaining: 1.92s
850:	learn: 6.5352750	total: 10.9s	remaining: 1.91s
851:	learn: 6.5342810	total: 10.9s	remaining: 1.9s
852:	learn: 6.5335201	total: 10.9s	remaining: 1.88s
853:	learn: 6.5329271	total: 10.9s	remaining: 1.87s
854:	learn: 6.5315683	total: 10.9s	remaining: 1.86s
855:	learn: 6.5284103	total: 11s	remaining: 1.84s
856:	learn: 6.5275922	total: 11s	remaining: 1.83s
857:	learn: 6.5271992	total: 11s	remaining: 1.82s
858:	learn: 6.5262488	total: 11s	remaining: 1.81s
859:	learn: 6.5253094	total: 11s	remaining: 1.79s
860:	learn: 6.5233048	total: 11s	remaining: 1.78s
861:	learn: 6.5224556	total: 11.1s	remaining: 1.77s
862:	learn: 6.5215930	total: 11.1s	remaining: 1.76s
863:	learn: 6.5200889	total: 11.1s	remaining: 1.74s
864:	learn: 6.5192699	total: 11.1s	remaining: 1.73s
865:	learn: 6.5181257	total: 11.1s	remaining: 1.72s
866:	learn: 6.5175439	total: 11.1s	remaining: 1.7s
867:	learn: 6.5165082	total: 11.1s	remaining: 1.69s
868:	learn: 6.5159863	total: 11.1s	remaining: 1.68s
869:	learn: 6.5152907	total: 11.1s	remaining: 1.67s
870:	learn: 6.5130755	total: 11.2s	remaining: 1.65s
871:	learn: 6.5117639	total: 11.2s	remaining: 1.64s
872:	learn: 6.5110102	total: 11.2s	remaining: 1.63s
873:	learn: 6.5101321	total: 11.2s	remaining: 1.61s
874:	learn: 6.5095518	total: 11.2s	remaining: 1.6s
875:	learn: 6.5089483	total: 11.2s	remaining: 1.59s
876:	learn: 6.5072077	total: 11.2s	remaining: 1.57s
877:	learn: 6.5064982	total: 11.2s	remaining: 1.56s
878:	learn: 6.5053823	total: 11.3s	remaining: 1.55s
879:	learn: 6.5046294	total: 11.3s	remaining: 1.54s
880:	learn: 6.5038911	total: 11.3s	remaining: 1.52s
881:	learn: 6.5032594	total: 11.3s	remaining: 1.51s
882:	learn: 6.5022585	total: 11.3s	remaining: 1.5s
883:	learn: 6.5016507	total: 11.3s	remaining: 1.48s
884:	learn: 6.5011657	total: 11.3s	remaining: 1.47s
885:	learn: 6.4993473	total: 11.3s	remaining: 1.46s
886:	learn: 6.4975641	total: 11.3s	remaining: 1.45s
887:	learn: 6.4973060	total: 11.4s	remaining: 1.43s
888:	learn: 6.4967557	total: 11.4s	remaining: 1.42s
889:	learn: 6.4960516	total: 11.4s	remaining: 1.41s
890:	learn: 6.4954614	total: 11.4s	remaining: 1.39s
891:	learn: 6.4943057	total: 11.4s	remaining: 1.38s
892:	learn: 6.4927329	total: 11.4s	remaining: 1.37s
893:	learn: 6.4922505	total: 11.4s	remaining: 1.35s
894:	learn: 6.4915282	total: 11.4s	remaining: 1.34s
895:	learn: 6.4908335	total: 11.4s	remaining: 1.33s
896:	learn: 6.4898427	total: 11.5s	remaining: 1.32s
897:	learn: 6.4894291	total: 11.5s	remaining: 1.3s
898:	learn: 6.4887406	total: 11.5s	remaining: 1.29s
899:	learn: 6.4875373	total: 11.5s	remaining: 1.28s
900:	learn: 6.4866793	total: 11.5s	remaining: 1.26s
901:	learn: 6.4860328	total: 11.5s	remaining: 1.25s
902:	learn: 6.4855187	total: 11.5s	remaining: 1.24s
903:	learn: 6.4846079	total: 11.5s	remaining: 1.23s
904:	learn: 6.4840070	total: 11.6s	remaining: 1.21s
905:	learn: 6.4798732	total: 11.6s	remaining: 1.2s
906:	learn: 6.4788074	total: 11.6s	remaining: 1.19s
907:	learn: 6.4779071	total: 11.6s	remaining: 1.18s
908:	learn: 6.4768558	total: 11.6s	remaining: 1.16s
909:	learn: 6.4763432	total: 11.6s	remaining: 1.15s
910:	learn: 6.4754472	total: 11.6s	remaining: 1.14s
911:	learn: 6.4747881	total: 11.7s	remaining: 1.12s
912:	learn: 6.4740815	total: 11.7s	remaining: 1.11s
913:	learn: 6.4730238	total: 11.7s	remaining: 1.1s
914:	learn: 6.4720797	total: 11.7s	remaining: 1.08s
915:	learn: 6.4702701	total: 11.7s	remaining: 1.07s
916:	learn: 6.4695009	total: 11.7s	remaining: 1.06s

917:	learn: 6.4687806	total: 11.7s	remaining: 1.05s
918:	learn: 6.4669592	total: 11.7s	remaining: 1.03s
919:	learn: 6.4664531	total: 11.7s	remaining: 1.02s
920:	learn: 6.4646754	total: 11.8s	remaining: 1.01s
921:	learn: 6.4639831	total: 11.8s	remaining: 996ms
922:	learn: 6.4634806	total: 11.8s	remaining: 983ms
923:	learn: 6.4627316	total: 11.8s	remaining: 970ms
924:	learn: 6.4615214	total: 11.8s	remaining: 957ms
925:	learn: 6.4606039	total: 11.8s	remaining: 944ms
926:	learn: 6.4592724	total: 11.8s	remaining: 932ms
927:	learn: 6.4586757	total: 11.8s	remaining: 919ms
928:	learn: 6.4581189	total: 11.9s	remaining: 906ms
929:	learn: 6.4572468	total: 11.9s	remaining: 893ms
930:	learn: 6.4565089	total: 11.9s	remaining: 881ms
931:	learn: 6.4558344	total: 11.9s	remaining: 868ms
932:	learn: 6.4553817	total: 11.9s	remaining: 855ms
933:	learn: 6.4543820	total: 11.9s	remaining: 842ms
934:	learn: 6.4535355	total: 11.9s	remaining: 829ms
935:	learn: 6.4527903	total: 11.9s	remaining: 817ms
936:	learn: 6.4519589	total: 12s	remaining: 804ms
937:	learn: 6.4510412	total: 12s	remaining: 791ms
938:	learn: 6.4505814	total: 12s	remaining: 778ms
939:	learn: 6.4503223	total: 12s	remaining: 765ms
940:	learn: 6.4492663	total: 12s	remaining: 752ms
941:	learn: 6.4487879	total: 12s	remaining: 740ms
942:	learn: 6.4481829	total: 12s	remaining: 727ms
943:	learn: 6.4474712	total: 12s	remaining: 714ms
944:	learn: 6.4465652	total: 12.1s	remaining: 701ms
945:	learn: 6.4456340	total: 12.1s	remaining: 689ms
946:	learn: 6.4441869	total: 12.1s	remaining: 676ms
947:	learn: 6.4433687	total: 12.1s	remaining: 663ms
948:	learn: 6.4418863	total: 12.1s	remaining: 650ms
949:	learn: 6.4411833	total: 12.1s	remaining: 638ms
950:	learn: 6.4402624	total: 12.1s	remaining: 625ms
951:	learn: 6.4397364	total: 12.1s	remaining: 612ms
952:	learn: 6.4390244	total: 12.2s	remaining: 599ms
953:	learn: 6.4383388	total: 12.2s	remaining: 586ms
954:	learn: 6.4381345	total: 12.2s	remaining: 574ms
955:	learn: 6.4377149	total: 12.2s	remaining: 561ms
956:	learn: 6.4368500	total: 12.2s	remaining: 548ms
957:	learn: 6.4362876	total: 12.2s	remaining: 535ms
958:	learn: 6.4344227	total: 12.2s	remaining: 523ms
959:	learn: 6.4338397	total: 12.2s	remaining: 510ms
960:	learn: 6.4330197	total: 12.3s	remaining: 498ms
961:	learn: 6.4324259	total: 12.3s	remaining: 485ms
962:	learn: 6.4319156	total: 12.3s	remaining: 472ms
963:	learn: 6.4314515	total: 12.3s	remaining: 459ms
964:	learn: 6.4300187	total: 12.3s	remaining: 447ms
965:	learn: 6.4289082	total: 12.3s	remaining: 434ms
966:	learn: 6.4276789	total: 12.3s	remaining: 421ms
967:	learn: 6.4260895	total: 12.4s	remaining: 409ms
968:	learn: 6.4254796	total: 12.4s	remaining: 396ms
969:	learn: 6.4249882	total: 12.4s	remaining: 383ms
970:	learn: 6.4224100	total: 12.4s	remaining: 370ms
971:	learn: 6.4209155	total: 12.4s	remaining: 357ms
972:	learn: 6.4193901	total: 12.4s	remaining: 345ms
973:	learn: 6.4180678	total: 12.4s	remaining: 332ms
974:	learn: 6.4178004	total: 12.4s	remaining: 319ms
975:	learn: 6.4164048	total: 12.5s	remaining: 306ms
976:	learn: 6.4156429	total: 12.5s	remaining: 294ms
977:	learn: 6.4142197	total: 12.5s	remaining: 281ms
978:	learn: 6.4137441	total: 12.5s	remaining: 269ms
979:	learn: 6.4128889	total: 12.6s	remaining: 256ms
980:	learn: 6.4112160	total: 12.6s	remaining: 243ms
981:	learn: 6.4102515	total: 12.6s	remaining: 231ms
982:	learn: 6.4093749	total: 12.6s	remaining: 218ms
983:	learn: 6.4082841	total: 12.6s	remaining: 205ms
984:	learn: 6.4074492	total: 12.6s	remaining: 192ms
985:	learn: 6.4062929	total: 12.6s	remaining: 179ms
986:	learn: 6.4052590	total: 12.6s	remaining: 166ms
987:	learn: 6.4048855	total: 12.6s	remaining: 154ms
988:	learn: 6.4040208	total: 12.7s	remaining: 141ms

989:	learn: 6.4020855	total: 12.7s	remaining: 128ms
990:	learn: 6.4004342	total: 12.7s	remaining: 115ms
991:	learn: 6.3997814	total: 12.7s	remaining: 102ms
992:	learn: 6.3995105	total: 12.7s	remaining: 89.6ms
993:	learn: 6.3979065	total: 12.7s	remaining: 76.8ms
994:	learn: 6.3975184	total: 12.7s	remaining: 64ms
995:	learn: 6.3969236	total: 12.7s	remaining: 51.2ms
996:	learn: 6.3956576	total: 12.8s	remaining: 38.4ms
997:	learn: 6.3947241	total: 12.8s	remaining: 25.6ms
998:	learn: 6.3943471	total: 12.8s	remaining: 12.8ms
999:	learn: 6.3940836	total: 12.8s	remaining: 0us

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
warnings.warn(


Learning rate set to 0.07344

0:	learn: 13.1885101	total: 9.79ms	remaining: 9.78s
1:	learn: 12.9503884	total: 21.2ms	remaining: 10.6s
2:	learn: 12.7492475	total: 30.3ms	remaining: 10.1s
3:	learn: 12.5677804	total: 40.1ms	remaining: 9.99s
4:	learn: 12.4015409	total: 51.3ms	remaining: 10.2s
5:	learn: 12.2378153	total: 59.9ms	remaining: 9.92s
6:	learn: 12.1110177	total: 69.8ms	remaining: 9.89s
7:	learn: 11.9857785	total: 80.9ms	remaining: 10s
8:	learn: 11.8545248	total: 89.7ms	remaining: 9.87s
9:	learn: 11.7301891	total: 101ms	remaining: 9.97s
10:	learn: 11.6255163	total: 112ms	remaining: 10.1s
11:	learn: 11.5325486	total: 121ms	remaining: 10s
12:	learn: 11.4378033	total: 132ms	remaining: 10s
13:	learn: 11.3512205	total: 142ms	remaining: 9.98s
14:	learn: 11.2690365	total: 151ms	remaining: 9.92s
15:	learn: 11.1998530	total: 160ms	remaining: 9.85s
16:	learn: 11.1229754	total: 171ms	remaining: 9.89s
17:	learn: 11.0428541	total: 183ms	remaining: 10s
18:	learn: 10.9789305	total: 191ms	remaining: 9.88s
19:	learn: 10.9168075	total: 206ms	remaining: 10.1s
20:	learn: 10.8642345	total: 220ms	remaining: 10.3s
21:	learn: 10.8117536	total: 230ms	remaining: 10.2s
22:	learn: 10.7408988	total: 243ms	remaining: 10.3s
23:	learn: 10.6876704	total: 254ms	remaining: 10.3s
24:	learn: 10.6290733	total: 266ms	remaining: 10.4s
25:	learn: 10.5849301	total: 276ms	remaining: 10.3s
26:	learn: 10.5408899	total: 287ms	remaining: 10.4s
27:	learn: 10.5044963	total: 297ms	remaining: 10.3s
28:	learn: 10.4324784	total: 307ms	remaining: 10.3s
29:	learn: 10.3987904	total: 317ms	remaining: 10.2s
30:	learn: 10.3653135	total: 325ms	remaining: 10.2s
31:	learn: 10.3226839	total: 334ms	remaining: 10.1s
32:	learn: 10.2960526	total: 344ms	remaining: 10.1s
33:	learn: 10.2595105	total: 353ms	remaining: 10s
34:	learn: 10.2364267	total: 362ms	remaining: 9.98s
35:	learn: 10.1888518	total: 372ms	remaining: 9.97s
36:	learn: 10.1601338	total: 382ms	remaining: 9.93s
37:	learn: 10.1267027	total: 390ms	remaining: 9.88s
38:	learn: 10.1042888	total: 400ms	remaining: 9.86s
39:	learn: 10.0857972	total: 412ms	remaining: 9.89s
40:	learn: 10.0579585	total: 422ms	remaining: 9.86s
41:	learn: 10.0349843	total: 431ms	remaining: 9.83s
42:	learn: 10.0015945	total: 442ms	remaining: 9.84s
43:	learn: 9.9846971	total: 451ms	remaining: 9.79s
44:	learn: 9.9523149	total: 460ms	remaining: 9.76s
45:	learn: 9.9322353	total: 471ms	remaining: 9.76s
46:	learn: 9.9028335	total: 479ms	remaining: 9.72s
47:	learn: 9.8888212	total: 488ms	remaining: 9.68s
48:	learn: 9.8675941	total: 498ms	remaining: 9.66s
49:	learn: 9.8397903	total: 507ms	remaining: 9.64s
50:	learn: 9.8207371	total: 516ms	remaining: 9.6s
51:	learn: 9.7996559	total: 525ms	remaining: 9.57s
52:	learn: 9.7829452	total: 534ms	remaining: 9.55s
53:	learn: 9.7669767	total: 543ms	remaining: 9.51s

54:	learn: 9.7443338	total: 552ms	remaining: 9.49s
55:	learn: 9.7301275	total: 562ms	remaining: 9.47s
56:	learn: 9.7119120	total: 572ms	remaining: 9.46s
57:	learn: 9.6934731	total: 582ms	remaining: 9.46s
58:	learn: 9.6770333	total: 590ms	remaining: 9.42s
59:	learn: 9.6621654	total: 601ms	remaining: 9.41s
60:	learn: 9.6419694	total: 613ms	remaining: 9.44s
61:	learn: 9.6149180	total: 626ms	remaining: 9.47s
62:	learn: 9.6039778	total: 637ms	remaining: 9.48s
63:	learn: 9.5868276	total: 647ms	remaining: 9.46s
64:	learn: 9.5679315	total: 657ms	remaining: 9.45s
65:	learn: 9.5429851	total: 667ms	remaining: 9.44s
66:	learn: 9.5299426	total: 676ms	remaining: 9.41s
67:	learn: 9.5121903	total: 686ms	remaining: 9.4s
68:	learn: 9.5025371	total: 695ms	remaining: 9.38s
69:	learn: 9.4713050	total: 706ms	remaining: 9.38s
70:	learn: 9.4514809	total: 717ms	remaining: 9.38s
71:	learn: 9.4390705	total: 726ms	remaining: 9.36s
72:	learn: 9.4201717	total: 740ms	remaining: 9.39s
73:	learn: 9.4065970	total: 749ms	remaining: 9.38s
74:	learn: 9.3959535	total: 759ms	remaining: 9.36s
75:	learn: 9.3724850	total: 769ms	remaining: 9.34s
76:	learn: 9.3637979	total: 779ms	remaining: 9.33s
77:	learn: 9.3391601	total: 788ms	remaining: 9.32s
78:	learn: 9.3319244	total: 800ms	remaining: 9.32s
79:	learn: 9.3078548	total: 810ms	remaining: 9.31s
80:	learn: 9.2987880	total: 821ms	remaining: 9.32s
81:	learn: 9.2881138	total: 836ms	remaining: 9.36s
82:	learn: 9.2779683	total: 848ms	remaining: 9.36s
83:	learn: 9.2570841	total: 860ms	remaining: 9.37s
84:	learn: 9.2396396	total: 870ms	remaining: 9.36s
85:	learn: 9.2285323	total: 879ms	remaining: 9.35s
86:	learn: 9.2046093	total: 890ms	remaining: 9.34s
87:	learn: 9.1929147	total: 900ms	remaining: 9.32s
88:	learn: 9.1761895	total: 909ms	remaining: 9.3s
89:	learn: 9.1676477	total: 920ms	remaining: 9.3s
90:	learn: 9.1551742	total: 930ms	remaining: 9.29s
91:	learn: 9.1445786	total: 940ms	remaining: 9.27s
92:	learn: 9.1343937	total: 949ms	remaining: 9.26s
93:	learn: 9.1231730	total: 959ms	remaining: 9.24s
94:	learn: 9.1102484	total: 970ms	remaining: 9.24s
95:	learn: 9.1004309	total: 979ms	remaining: 9.22s
96:	learn: 9.0801910	total: 989ms	remaining: 9.21s
97:	learn: 9.0705592	total: 999ms	remaining: 9.19s
98:	learn: 9.0483795	total: 1.01s	remaining: 9.18s
99:	learn: 9.0356303	total: 1.02s	remaining: 9.15s
100:	learn: 9.0276018	total: 1.03s	remaining: 9.15s
101:	learn: 9.0175483	total: 1.04s	remaining: 9.16s
102:	learn: 9.0047774	total: 1.05s	remaining: 9.16s
103:	learn: 8.9965774	total: 1.06s	remaining: 9.16s
104:	learn: 8.9848520	total: 1.07s	remaining: 9.16s
105:	learn: 8.9738177	total: 1.08s	remaining: 9.14s
106:	learn: 8.9649252	total: 1.09s	remaining: 9.14s
107:	learn: 8.9454843	total: 1.1s	remaining: 9.13s
108:	learn: 8.9364978	total: 1.12s	remaining: 9.13s
109:	learn: 8.9236603	total: 1.13s	remaining: 9.13s
110:	learn: 8.9165900	total: 1.14s	remaining: 9.11s
111:	learn: 8.9031536	total: 1.15s	remaining: 9.1s
112:	learn: 8.8918280	total: 1.16s	remaining: 9.1s
113:	learn: 8.8865805	total: 1.17s	remaining: 9.08s
114:	learn: 8.8794335	total: 1.18s	remaining: 9.06s
115:	learn: 8.8691872	total: 1.19s	remaining: 9.06s
116:	learn: 8.8511839	total: 1.2s	remaining: 9.05s
117:	learn: 8.8442316	total: 1.21s	remaining: 9.04s
118:	learn: 8.8350041	total: 1.22s	remaining: 9.04s
119:	learn: 8.8269603	total: 1.23s	remaining: 9.02s
120:	learn: 8.8196050	total: 1.24s	remaining: 9.01s
121:	learn: 8.8099270	total: 1.25s	remaining: 9.02s
122:	learn: 8.8020523	total: 1.27s	remaining: 9.03s
123:	learn: 8.7868015	total: 1.28s	remaining: 9.03s
124:	learn: 8.7777826	total: 1.29s	remaining: 9.02s
125:	learn: 8.7679170	total: 1.3s	remaining: 9.01s

126:	learn: 8.7496552	total: 1.31s	remaining: 9.01s
127:	learn: 8.7303312	total: 1.32s	remaining: 9s
128:	learn: 8.7083796	total: 1.33s	remaining: 8.99s
129:	learn: 8.6996760	total: 1.34s	remaining: 8.97s
130:	learn: 8.6901555	total: 1.35s	remaining: 8.97s
131:	learn: 8.6821561	total: 1.36s	remaining: 8.97s
132:	learn: 8.6750452	total: 1.37s	remaining: 8.95s
133:	learn: 8.6681786	total: 1.38s	remaining: 8.94s
134:	learn: 8.6607488	total: 1.39s	remaining: 8.93s
135:	learn: 8.6415095	total: 1.4s	remaining: 8.92s
136:	learn: 8.6361761	total: 1.41s	remaining: 8.91s
137:	learn: 8.6274377	total: 1.42s	remaining: 8.9s
138:	learn: 8.6184159	total: 1.43s	remaining: 8.89s
139:	learn: 8.6044923	total: 1.45s	remaining: 8.88s
140:	learn: 8.5973294	total: 1.46s	remaining: 8.88s
141:	learn: 8.5902923	total: 1.47s	remaining: 8.88s
142:	learn: 8.5799608	total: 1.48s	remaining: 8.89s
143:	learn: 8.5729081	total: 1.49s	remaining: 8.88s
144:	learn: 8.5665747	total: 1.5s	remaining: 8.87s
145:	learn: 8.5515716	total: 1.52s	remaining: 8.87s
146:	learn: 8.5420527	total: 1.53s	remaining: 8.86s
147:	learn: 8.5338712	total: 1.53s	remaining: 8.84s
148:	learn: 8.5231333	total: 1.55s	remaining: 8.84s
149:	learn: 8.5160805	total: 1.56s	remaining: 8.82s
150:	learn: 8.5088073	total: 1.57s	remaining: 8.81s
151:	learn: 8.5023607	total: 1.58s	remaining: 8.8s
152:	learn: 8.4950266	total: 1.59s	remaining: 8.79s
153:	learn: 8.4888779	total: 1.6s	remaining: 8.77s
154:	learn: 8.4822626	total: 1.61s	remaining: 8.77s
155:	learn: 8.4666899	total: 1.62s	remaining: 8.76s
156:	learn: 8.4591125	total: 1.63s	remaining: 8.75s
157:	learn: 8.4526716	total: 1.64s	remaining: 8.75s
158:	learn: 8.4475367	total: 1.65s	remaining: 8.74s
159:	learn: 8.4406386	total: 1.66s	remaining: 8.73s
160:	learn: 8.4335427	total: 1.68s	remaining: 8.74s
161:	learn: 8.4244305	total: 1.69s	remaining: 8.74s
162:	learn: 8.4172657	total: 1.7s	remaining: 8.73s
163:	learn: 8.4108373	total: 1.71s	remaining: 8.73s
164:	learn: 8.4042672	total: 1.72s	remaining: 8.73s
165:	learn: 8.3959774	total: 1.73s	remaining: 8.71s
166:	learn: 8.3879959	total: 1.75s	remaining: 8.71s
167:	learn: 8.3759919	total: 1.76s	remaining: 8.71s
168:	learn: 8.3673352	total: 1.77s	remaining: 8.69s
169:	learn: 8.3586730	total: 1.78s	remaining: 8.69s
170:	learn: 8.3513731	total: 1.79s	remaining: 8.67s
171:	learn: 8.3440289	total: 1.8s	remaining: 8.66s
172:	learn: 8.3299188	total: 1.81s	remaining: 8.67s
173:	learn: 8.3220374	total: 1.82s	remaining: 8.66s
174:	learn: 8.3161754	total: 1.83s	remaining: 8.65s
175:	learn: 8.3040249	total: 1.85s	remaining: 8.65s
176:	learn: 8.2984264	total: 1.86s	remaining: 8.64s
177:	learn: 8.2924999	total: 1.87s	remaining: 8.63s
178:	learn: 8.2870529	total: 1.88s	remaining: 8.63s
179:	learn: 8.2811809	total: 1.89s	remaining: 8.63s
180:	learn: 8.2732533	total: 1.9s	remaining: 8.62s
181:	learn: 8.2651305	total: 1.91s	remaining: 8.61s
182:	learn: 8.2582285	total: 1.93s	remaining: 8.6s
183:	learn: 8.2489786	total: 1.94s	remaining: 8.59s
184:	learn: 8.2437607	total: 1.95s	remaining: 8.58s
185:	learn: 8.2339406	total: 1.96s	remaining: 8.56s
186:	learn: 8.2251930	total: 1.97s	remaining: 8.56s
187:	learn: 8.2189908	total: 1.98s	remaining: 8.54s
188:	learn: 8.2140045	total: 1.99s	remaining: 8.52s
189:	learn: 8.2099103	total: 2s	remaining: 8.52s
190:	learn: 8.2062637	total: 2.01s	remaining: 8.5s
191:	learn: 8.1992128	total: 2.02s	remaining: 8.5s
192:	learn: 8.1887270	total: 2.03s	remaining: 8.5s
193:	learn: 8.1818259	total: 2.04s	remaining: 8.49s
194:	learn: 8.1750505	total: 2.06s	remaining: 8.49s
195:	learn: 8.1641505	total: 2.07s	remaining: 8.48s

196:	learn: 8.1570049	total: 2.08s	remaining: 8.48s
197:	learn: 8.1491787	total: 2.1s	remaining: 8.49s
198:	learn: 8.1372831	total: 2.11s	remaining: 8.48s
199:	learn: 8.1284228	total: 2.12s	remaining: 8.47s
200:	learn: 8.1227471	total: 2.13s	remaining: 8.46s
201:	learn: 8.1173846	total: 2.14s	remaining: 8.45s
202:	learn: 8.1098780	total: 2.15s	remaining: 8.44s
203:	learn: 8.1039939	total: 2.16s	remaining: 8.43s
204:	learn: 8.0978290	total: 2.17s	remaining: 8.43s
205:	learn: 8.0949461	total: 2.18s	remaining: 8.41s
206:	learn: 8.0882294	total: 2.19s	remaining: 8.39s
207:	learn: 8.0788661	total: 2.2s	remaining: 8.38s
208:	learn: 8.0719500	total: 2.21s	remaining: 8.37s
209:	learn: 8.0675686	total: 2.22s	remaining: 8.36s
210:	learn: 8.0629387	total: 2.23s	remaining: 8.35s
211:	learn: 8.0539119	total: 2.24s	remaining: 8.33s
212:	learn: 8.0491959	total: 2.25s	remaining: 8.32s
213:	learn: 8.0417425	total: 2.26s	remaining: 8.31s
214:	learn: 8.0335691	total: 2.27s	remaining: 8.3s
215:	learn: 8.0293537	total: 2.28s	remaining: 8.29s
216:	learn: 8.0209330	total: 2.3s	remaining: 8.3s
217:	learn: 8.0145366	total: 2.31s	remaining: 8.29s
218:	learn: 8.0093094	total: 2.32s	remaining: 8.27s
219:	learn: 8.0027743	total: 2.33s	remaining: 8.26s
220:	learn: 7.9957373	total: 2.34s	remaining: 8.25s
221:	learn: 7.9902877	total: 2.35s	remaining: 8.24s
222:	learn: 7.9825283	total: 2.36s	remaining: 8.23s
223:	learn: 7.9756587	total: 2.37s	remaining: 8.21s
224:	learn: 7.9709450	total: 2.38s	remaining: 8.2s
225:	learn: 7.9637822	total: 2.39s	remaining: 8.2s
226:	learn: 7.9572897	total: 2.4s	remaining: 8.19s
227:	learn: 7.9501619	total: 2.41s	remaining: 8.17s
228:	learn: 7.9436727	total: 2.42s	remaining: 8.16s
229:	learn: 7.9392463	total: 2.43s	remaining: 8.15s
230:	learn: 7.9346880	total: 2.44s	remaining: 8.14s
231:	learn: 7.9299598	total: 2.45s	remaining: 8.12s
232:	learn: 7.9258000	total: 2.46s	remaining: 8.12s
233:	learn: 7.9210351	total: 2.48s	remaining: 8.1s
234:	learn: 7.9135254	total: 2.48s	remaining: 8.09s
235:	learn: 7.9087206	total: 2.5s	remaining: 8.08s
236:	learn: 7.9032705	total: 2.51s	remaining: 8.08s
237:	learn: 7.8990181	total: 2.52s	remaining: 8.07s
238:	learn: 7.8924107	total: 2.53s	remaining: 8.06s
239:	learn: 7.8845359	total: 2.54s	remaining: 8.05s
240:	learn: 7.8798506	total: 2.55s	remaining: 8.04s
241:	learn: 7.8765075	total: 2.56s	remaining: 8.03s
242:	learn: 7.8716603	total: 2.57s	remaining: 8.01s
243:	learn: 7.8669477	total: 2.58s	remaining: 8s
244:	learn: 7.8615996	total: 2.59s	remaining: 7.99s
245:	learn: 7.8564766	total: 2.6s	remaining: 7.97s
246:	learn: 7.8511001	total: 2.61s	remaining: 7.96s
247:	learn: 7.8467006	total: 2.62s	remaining: 7.95s
248:	learn: 7.8407692	total: 2.63s	remaining: 7.94s
249:	learn: 7.8363090	total: 2.64s	remaining: 7.93s
250:	learn: 7.8294786	total: 2.65s	remaining: 7.92s
251:	learn: 7.8244857	total: 2.67s	remaining: 7.91s
252:	learn: 7.8200730	total: 2.68s	remaining: 7.9s
253:	learn: 7.8155349	total: 2.69s	remaining: 7.89s
254:	learn: 7.8122862	total: 2.7s	remaining: 7.88s
255:	learn: 7.8060301	total: 2.71s	remaining: 7.87s
256:	learn: 7.8018927	total: 2.72s	remaining: 7.87s
257:	learn: 7.7953370	total: 2.73s	remaining: 7.86s
258:	learn: 7.7895868	total: 2.74s	remaining: 7.85s
259:	learn: 7.7840852	total: 2.75s	remaining: 7.84s
260:	learn: 7.7805153	total: 2.76s	remaining: 7.83s
261:	learn: 7.7769650	total: 2.77s	remaining: 7.82s
262:	learn: 7.7739247	total: 2.78s	remaining: 7.8s
263:	learn: 7.7702562	total: 2.79s	remaining: 7.79s
264:	learn: 7.7669684	total: 2.8s	remaining: 7.78s
265:	learn: 7.7614052	total: 2.81s	remaining: 7.77s
266:	learn: 7.7580957	total: 2.83s	remaining: 7.75s
267:	learn: 7.7486327	total: 2.83s	remaining: 7.74s

268:	learn: 7.7448464	total: 2.84s	remaining: 7.73s
269:	learn: 7.7424379	total: 2.86s	remaining: 7.72s
270:	learn: 7.7387733	total: 2.87s	remaining: 7.71s
271:	learn: 7.7335813	total: 2.88s	remaining: 7.7s
272:	learn: 7.7289480	total: 2.89s	remaining: 7.69s
273:	learn: 7.7254356	total: 2.9s	remaining: 7.68s
274:	learn: 7.7220699	total: 2.91s	remaining: 7.68s
275:	learn: 7.7154606	total: 2.93s	remaining: 7.69s
276:	learn: 7.7119958	total: 2.95s	remaining: 7.69s
277:	learn: 7.7087221	total: 2.96s	remaining: 7.68s
278:	learn: 7.7048213	total: 2.97s	remaining: 7.68s
279:	learn: 7.7020293	total: 2.98s	remaining: 7.67s
280:	learn: 7.6980249	total: 3s	remaining: 7.67s
281:	learn: 7.6931144	total: 3.01s	remaining: 7.67s
282:	learn: 7.6880113	total: 3.02s	remaining: 7.66s
283:	learn: 7.6839733	total: 3.04s	remaining: 7.66s
284:	learn: 7.6811802	total: 3.05s	remaining: 7.66s
285:	learn: 7.6783809	total: 3.06s	remaining: 7.65s
286:	learn: 7.6742304	total: 3.08s	remaining: 7.65s
287:	learn: 7.6696739	total: 3.09s	remaining: 7.64s
288:	learn: 7.6574283	total: 3.1s	remaining: 7.63s
289:	learn: 7.6545349	total: 3.11s	remaining: 7.62s
290:	learn: 7.6482968	total: 3.12s	remaining: 7.61s
291:	learn: 7.6447590	total: 3.14s	remaining: 7.61s
292:	learn: 7.6422537	total: 3.15s	remaining: 7.6s
293:	learn: 7.6386978	total: 3.16s	remaining: 7.59s
294:	learn: 7.6336468	total: 3.18s	remaining: 7.6s
295:	learn: 7.6314231	total: 3.19s	remaining: 7.59s
296:	learn: 7.6250771	total: 3.2s	remaining: 7.58s
297:	learn: 7.6187368	total: 3.22s	remaining: 7.58s
298:	learn: 7.6162657	total: 3.23s	remaining: 7.57s
299:	learn: 7.6110643	total: 3.24s	remaining: 7.57s
300:	learn: 7.6086538	total: 3.25s	remaining: 7.56s
301:	learn: 7.6047277	total: 3.27s	remaining: 7.55s
302:	learn: 7.6012129	total: 3.28s	remaining: 7.54s
303:	learn: 7.5993978	total: 3.29s	remaining: 7.53s
304:	learn: 7.5956925	total: 3.31s	remaining: 7.53s
305:	learn: 7.5927420	total: 3.32s	remaining: 7.53s
306:	learn: 7.5874003	total: 3.33s	remaining: 7.52s
307:	learn: 7.5844639	total: 3.35s	remaining: 7.52s
308:	learn: 7.5811668	total: 3.36s	remaining: 7.52s
309:	learn: 7.5757313	total: 3.38s	remaining: 7.51s
310:	learn: 7.5661449	total: 3.39s	remaining: 7.51s
311:	learn: 7.5639630	total: 3.4s	remaining: 7.51s
312:	learn: 7.5613380	total: 3.42s	remaining: 7.5s
313:	learn: 7.5593215	total: 3.43s	remaining: 7.49s
314:	learn: 7.5567648	total: 3.44s	remaining: 7.48s
315:	learn: 7.5519375	total: 3.45s	remaining: 7.47s
316:	learn: 7.5486402	total: 3.46s	remaining: 7.46s
317:	learn: 7.5449109	total: 3.47s	remaining: 7.45s
318:	learn: 7.5428470	total: 3.48s	remaining: 7.44s
319:	learn: 7.5398029	total: 3.5s	remaining: 7.43s
320:	learn: 7.5367478	total: 3.51s	remaining: 7.42s
321:	learn: 7.5323510	total: 3.52s	remaining: 7.41s
322:	learn: 7.5287511	total: 3.53s	remaining: 7.4s
323:	learn: 7.5242509	total: 3.55s	remaining: 7.4s
324:	learn: 7.5221972	total: 3.56s	remaining: 7.4s
325:	learn: 7.5189954	total: 3.58s	remaining: 7.4s
326:	learn: 7.5151568	total: 3.59s	remaining: 7.39s
327:	learn: 7.5057651	total: 3.6s	remaining: 7.38s
328:	learn: 7.5005250	total: 3.61s	remaining: 7.37s
329:	learn: 7.4978459	total: 3.62s	remaining: 7.36s
330:	learn: 7.4936621	total: 3.64s	remaining: 7.35s
331:	learn: 7.4898216	total: 3.65s	remaining: 7.34s
332:	learn: 7.4865971	total: 3.66s	remaining: 7.32s
333:	learn: 7.4838159	total: 3.67s	remaining: 7.31s
334:	learn: 7.4805240	total: 3.68s	remaining: 7.3s
335:	learn: 7.4776533	total: 3.69s	remaining: 7.29s
336:	learn: 7.4736685	total: 3.7s	remaining: 7.28s
337:	learn: 7.4700045	total: 3.71s	remaining: 7.27s

338:	learn: 7.4677825	total: 3.72s	remaining: 7.25s
339:	learn: 7.4631888	total: 3.73s	remaining: 7.24s
340:	learn: 7.4588650	total: 3.74s	remaining: 7.23s
341:	learn: 7.4573557	total: 3.75s	remaining: 7.22s
342:	learn: 7.4538430	total: 3.77s	remaining: 7.21s
343:	learn: 7.4505326	total: 3.78s	remaining: 7.2s
344:	learn: 7.4464243	total: 3.79s	remaining: 7.2s
345:	learn: 7.4422601	total: 3.8s	remaining: 7.18s
346:	learn: 7.4389700	total: 3.81s	remaining: 7.17s
347:	learn: 7.4355360	total: 3.82s	remaining: 7.16s
348:	learn: 7.4318373	total: 3.83s	remaining: 7.15s
349:	learn: 7.4280038	total: 3.84s	remaining: 7.13s
350:	learn: 7.4232841	total: 3.85s	remaining: 7.12s
351:	learn: 7.4201846	total: 3.86s	remaining: 7.11s
352:	learn: 7.4172906	total: 3.87s	remaining: 7.1s
353:	learn: 7.4129727	total: 3.88s	remaining: 7.08s
354:	learn: 7.4092364	total: 3.89s	remaining: 7.07s
355:	learn: 7.4059397	total: 3.9s	remaining: 7.06s
356:	learn: 7.4032632	total: 3.91s	remaining: 7.05s
357:	learn: 7.4000421	total: 3.92s	remaining: 7.04s
358:	learn: 7.3972586	total: 3.94s	remaining: 7.03s
359:	learn: 7.3924059	total: 3.94s	remaining: 7.01s
360:	learn: 7.3899913	total: 3.96s	remaining: 7s
361:	learn: 7.3877946	total: 3.97s	remaining: 7s
362:	learn: 7.3852241	total: 3.98s	remaining: 6.99s
363:	learn: 7.3821677	total: 4s	remaining: 6.98s
364:	learn: 7.3783825	total: 4s	remaining: 6.97s
365:	learn: 7.3753570	total: 4.01s	remaining: 6.96s
366:	learn: 7.3723083	total: 4.03s	remaining: 6.95s
367:	learn: 7.3704756	total: 4.04s	remaining: 6.93s
368:	learn: 7.3681312	total: 4.05s	remaining: 6.92s
369:	learn: 7.3655350	total: 4.06s	remaining: 6.91s
370:	learn: 7.3630015	total: 4.07s	remaining: 6.9s
371:	learn: 7.3596580	total: 4.08s	remaining: 6.89s
372:	learn: 7.3570325	total: 4.09s	remaining: 6.88s
373:	learn: 7.3529814	total: 4.1s	remaining: 6.87s
374:	learn: 7.3505358	total: 4.11s	remaining: 6.86s
375:	learn: 7.3457399	total: 4.12s	remaining: 6.84s
376:	learn: 7.3425200	total: 4.13s	remaining: 6.83s
377:	learn: 7.3392241	total: 4.14s	remaining: 6.82s
378:	learn: 7.3354723	total: 4.15s	remaining: 6.81s
379:	learn: 7.3336857	total: 4.16s	remaining: 6.79s
380:	learn: 7.3302495	total: 4.17s	remaining: 6.78s
381:	learn: 7.3268980	total: 4.19s	remaining: 6.77s
382:	learn: 7.3252661	total: 4.2s	remaining: 6.76s
383:	learn: 7.3226384	total: 4.21s	remaining: 6.75s
384:	learn: 7.3210400	total: 4.22s	remaining: 6.74s
385:	learn: 7.3195523	total: 4.23s	remaining: 6.73s
386:	learn: 7.3179606	total: 4.24s	remaining: 6.72s
387:	learn: 7.3160669	total: 4.25s	remaining: 6.71s
388:	learn: 7.3140656	total: 4.26s	remaining: 6.7s
389:	learn: 7.3095501	total: 4.27s	remaining: 6.68s
390:	learn: 7.3044205	total: 4.28s	remaining: 6.67s
391:	learn: 7.3028223	total: 4.29s	remaining: 6.66s
392:	learn: 7.2992977	total: 4.3s	remaining: 6.65s
393:	learn: 7.2966030	total: 4.32s	remaining: 6.64s
394:	learn: 7.2933573	total: 4.33s	remaining: 6.63s
395:	learn: 7.2915025	total: 4.34s	remaining: 6.62s
396:	learn: 7.2883816	total: 4.35s	remaining: 6.6s
397:	learn: 7.2849123	total: 4.36s	remaining: 6.59s
398:	learn: 7.2832867	total: 4.37s	remaining: 6.58s
399:	learn: 7.2795515	total: 4.38s	remaining: 6.56s
400:	learn: 7.2773895	total: 4.39s	remaining: 6.55s
401:	learn: 7.2749796	total: 4.4s	remaining: 6.54s
402:	learn: 7.2736367	total: 4.41s	remaining: 6.53s
403:	learn: 7.2722531	total: 4.42s	remaining: 6.52s
404:	learn: 7.2652723	total: 4.43s	remaining: 6.51s
405:	learn: 7.2632048	total: 4.44s	remaining: 6.5s
406:	learn: 7.2610700	total: 4.45s	remaining: 6.49s
407:	learn: 7.2596799	total: 4.46s	remaining: 6.47s
408:	learn: 7.2568831	total: 4.48s	remaining: 6.47s
409:	learn: 7.2548168	total: 4.49s	remaining: 6.46s

410:	learn: 7.2513199	total: 4.5s	remaining: 6.44s
411:	learn: 7.2490096	total: 4.51s	remaining: 6.43s
412:	learn: 7.2473519	total: 4.52s	remaining: 6.42s
413:	learn: 7.2444842	total: 4.53s	remaining: 6.41s
414:	learn: 7.2422297	total: 4.54s	remaining: 6.4s
415:	learn: 7.2394974	total: 4.55s	remaining: 6.39s
416:	learn: 7.2367566	total: 4.56s	remaining: 6.37s
417:	learn: 7.2338556	total: 4.57s	remaining: 6.36s
418:	learn: 7.2309171	total: 4.58s	remaining: 6.35s
419:	learn: 7.2284728	total: 4.59s	remaining: 6.34s
420:	learn: 7.2263045	total: 4.6s	remaining: 6.33s
421:	learn: 7.2245028	total: 4.61s	remaining: 6.32s
422:	learn: 7.2210997	total: 4.62s	remaining: 6.31s
423:	learn: 7.2190315	total: 4.64s	remaining: 6.3s
424:	learn: 7.2172638	total: 4.65s	remaining: 6.29s
425:	learn: 7.2135834	total: 4.66s	remaining: 6.28s
426:	learn: 7.2111644	total: 4.67s	remaining: 6.26s
427:	learn: 7.2082592	total: 4.68s	remaining: 6.25s
428:	learn: 7.2058076	total: 4.69s	remaining: 6.24s
429:	learn: 7.2031439	total: 4.7s	remaining: 6.22s
430:	learn: 7.2004274	total: 4.71s	remaining: 6.21s
431:	learn: 7.1992625	total: 4.72s	remaining: 6.21s
432:	learn: 7.1972635	total: 4.73s	remaining: 6.19s
433:	learn: 7.1950026	total: 4.74s	remaining: 6.18s
434:	learn: 7.1922406	total: 4.75s	remaining: 6.17s
435:	learn: 7.1906690	total: 4.76s	remaining: 6.16s
436:	learn: 7.1884708	total: 4.77s	remaining: 6.15s
437:	learn: 7.1862091	total: 4.78s	remaining: 6.14s
438:	learn: 7.1842090	total: 4.79s	remaining: 6.13s
439:	learn: 7.1824258	total: 4.8s	remaining: 6.12s
440:	learn: 7.1791650	total: 4.82s	remaining: 6.11s
441:	learn: 7.1757407	total: 4.83s	remaining: 6.09s
442:	learn: 7.1734351	total: 4.84s	remaining: 6.09s
443:	learn: 7.1709225	total: 4.85s	remaining: 6.07s
444:	learn: 7.1682876	total: 4.86s	remaining: 6.06s
445:	learn: 7.1666943	total: 4.87s	remaining: 6.05s
446:	learn: 7.1644605	total: 4.88s	remaining: 6.04s
447:	learn: 7.1610269	total: 4.89s	remaining: 6.03s
448:	learn: 7.1594138	total: 4.9s	remaining: 6.02s
449:	learn: 7.1573055	total: 4.91s	remaining: 6.01s
450:	learn: 7.1544317	total: 4.92s	remaining: 6s
451:	learn: 7.1530456	total: 4.94s	remaining: 5.99s
452:	learn: 7.1513908	total: 4.95s	remaining: 5.97s
453:	learn: 7.1490865	total: 4.96s	remaining: 5.96s
454:	learn: 7.1469905	total: 4.97s	remaining: 5.95s
455:	learn: 7.1447595	total: 4.98s	remaining: 5.94s
456:	learn: 7.1428788	total: 4.99s	remaining: 5.93s
457:	learn: 7.1410908	total: 5s	remaining: 5.92s
458:	learn: 7.1384966	total: 5.02s	remaining: 5.91s
459:	learn: 7.1362126	total: 5.03s	remaining: 5.9s
460:	learn: 7.1344247	total: 5.04s	remaining: 5.89s
461:	learn: 7.1325619	total: 5.08s	remaining: 5.91s
462:	learn: 7.1277825	total: 5.1s	remaining: 5.91s
463:	learn: 7.1261963	total: 5.11s	remaining: 5.9s
464:	learn: 7.1241085	total: 5.12s	remaining: 5.89s
465:	learn: 7.1223783	total: 5.13s	remaining: 5.88s
466:	learn: 7.1210924	total: 5.14s	remaining: 5.87s
467:	learn: 7.1190599	total: 5.15s	remaining: 5.86s
468:	learn: 7.1159640	total: 5.16s	remaining: 5.84s
469:	learn: 7.1145121	total: 5.17s	remaining: 5.83s
470:	learn: 7.1126259	total: 5.18s	remaining: 5.82s
471:	learn: 7.1102328	total: 5.19s	remaining: 5.81s
472:	learn: 7.1076490	total: 5.2s	remaining: 5.8s
473:	learn: 7.1041149	total: 5.21s	remaining: 5.78s
474:	learn: 7.1011446	total: 5.22s	remaining: 5.77s
475:	learn: 7.1005491	total: 5.23s	remaining: 5.76s
476:	learn: 7.0989388	total: 5.24s	remaining: 5.75s
477:	learn: 7.0974296	total: 5.26s	remaining: 5.74s
478:	learn: 7.0948919	total: 5.27s	remaining: 5.73s
479:	learn: 7.0921542	total: 5.28s	remaining: 5.72s
480:	learn: 7.0907952	total: 5.3s	remaining: 5.72s
481:	learn: 7.0892941	total: 5.32s	remaining: 5.72s

482:	learn: 7.0873918	total: 5.34s	remaining: 5.72s
483:	learn: 7.0852780	total: 5.36s	remaining: 5.71s
484:	learn: 7.0830740	total: 5.38s	remaining: 5.71s
485:	learn: 7.0812181	total: 5.39s	remaining: 5.7s
486:	learn: 7.0793767	total: 5.41s	remaining: 5.69s
487:	learn: 7.0779388	total: 5.42s	remaining: 5.69s
488:	learn: 7.0749946	total: 5.44s	remaining: 5.68s
489:	learn: 7.0733992	total: 5.47s	remaining: 5.69s
490:	learn: 7.0714436	total: 5.49s	remaining: 5.69s
491:	learn: 7.0692063	total: 5.5s	remaining: 5.68s
492:	learn: 7.0677829	total: 5.51s	remaining: 5.67s
493:	learn: 7.0663430	total: 5.53s	remaining: 5.66s
494:	learn: 7.0638643	total: 5.54s	remaining: 5.65s
495:	learn: 7.0620297	total: 5.55s	remaining: 5.64s
496:	learn: 7.0604997	total: 5.57s	remaining: 5.63s
497:	learn: 7.0570790	total: 5.58s	remaining: 5.62s
498:	learn: 7.0559362	total: 5.59s	remaining: 5.61s
499:	learn: 7.0546734	total: 5.6s	remaining: 5.6s
500:	learn: 7.0528209	total: 5.61s	remaining: 5.59s
501:	learn: 7.0509427	total: 5.63s	remaining: 5.58s
502:	learn: 7.0489955	total: 5.64s	remaining: 5.57s
503:	learn: 7.0485004	total: 5.64s	remaining: 5.55s
504:	learn: 7.0466779	total: 5.66s	remaining: 5.55s
505:	learn: 7.0450172	total: 5.67s	remaining: 5.54s
506:	learn: 7.0432348	total: 5.69s	remaining: 5.53s
507:	learn: 7.0381098	total: 5.7s	remaining: 5.52s
508:	learn: 7.0367405	total: 5.71s	remaining: 5.51s
509:	learn: 7.0352938	total: 5.72s	remaining: 5.5s
510:	learn: 7.0334281	total: 5.73s	remaining: 5.49s
511:	learn: 7.0322285	total: 5.74s	remaining: 5.47s
512:	learn: 7.0291606	total: 5.75s	remaining: 5.46s
513:	learn: 7.0274714	total: 5.77s	remaining: 5.45s
514:	learn: 7.0254802	total: 5.78s	remaining: 5.44s
515:	learn: 7.0234882	total: 5.79s	remaining: 5.43s
516:	learn: 7.0227860	total: 5.8s	remaining: 5.42s
517:	learn: 7.0208005	total: 5.81s	remaining: 5.41s
518:	learn: 7.0188748	total: 5.82s	remaining: 5.4s
519:	learn: 7.0170524	total: 5.83s	remaining: 5.38s
520:	learn: 7.0138535	total: 5.84s	remaining: 5.37s
521:	learn: 7.0113818	total: 5.86s	remaining: 5.36s
522:	learn: 7.0101134	total: 5.87s	remaining: 5.35s
523:	learn: 7.0058807	total: 5.88s	remaining: 5.34s
524:	learn: 7.0048070	total: 5.89s	remaining: 5.33s
525:	learn: 7.0026100	total: 5.91s	remaining: 5.32s
526:	learn: 7.0009748	total: 5.92s	remaining: 5.31s
527:	learn: 6.9994065	total: 5.93s	remaining: 5.3s
528:	learn: 6.9959272	total: 5.94s	remaining: 5.29s
529:	learn: 6.9914716	total: 5.95s	remaining: 5.28s
530:	learn: 6.9894767	total: 5.96s	remaining: 5.27s
531:	learn: 6.9876060	total: 5.97s	remaining: 5.26s
532:	learn: 6.9864370	total: 5.99s	remaining: 5.24s
533:	learn: 6.9855758	total: 6s	remaining: 5.23s
534:	learn: 6.9836880	total: 6.01s	remaining: 5.22s
535:	learn: 6.9823684	total: 6.02s	remaining: 5.21s
536:	learn: 6.9809500	total: 6.03s	remaining: 5.2s
537:	learn: 6.9796081	total: 6.04s	remaining: 5.19s
538:	learn: 6.9777507	total: 6.05s	remaining: 5.18s
539:	learn: 6.9761220	total: 6.07s	remaining: 5.17s
540:	learn: 6.9737752	total: 6.09s	remaining: 5.17s
541:	learn: 6.9726509	total: 6.1s	remaining: 5.16s
542:	learn: 6.9712917	total: 6.11s	remaining: 5.14s
543:	learn: 6.9669378	total: 6.13s	remaining: 5.13s
544:	learn: 6.9653016	total: 6.14s	remaining: 5.12s
545:	learn: 6.9632201	total: 6.15s	remaining: 5.11s
546:	learn: 6.9605910	total: 6.16s	remaining: 5.1s
547:	learn: 6.9579780	total: 6.17s	remaining: 5.09s
548:	learn: 6.9557547	total: 6.18s	remaining: 5.08s
549:	learn: 6.9533415	total: 6.2s	remaining: 5.07s
550:	learn: 6.9511853	total: 6.21s	remaining: 5.06s
551:	learn: 6.9492652	total: 6.22s	remaining: 5.05s
552:	learn: 6.9479620	total: 6.23s	remaining: 5.04s

553:	learn: 6.9442414	total: 6.25s	remaining: 5.03s
554:	learn: 6.9427082	total: 6.26s	remaining: 5.02s
555:	learn: 6.9415330	total: 6.27s	remaining: 5.01s
556:	learn: 6.9401645	total: 6.29s	remaining: 5s
557:	learn: 6.9380879	total: 6.31s	remaining: 5s
558:	learn: 6.9361268	total: 6.33s	remaining: 4.99s
559:	learn: 6.9340171	total: 6.34s	remaining: 4.99s
560:	learn: 6.9318057	total: 6.35s	remaining: 4.97s
561:	learn: 6.9298514	total: 6.37s	remaining: 4.96s
562:	learn: 6.9280387	total: 6.38s	remaining: 4.95s
563:	learn: 6.9264497	total: 6.39s	remaining: 4.94s
564:	learn: 6.9248577	total: 6.4s	remaining: 4.92s
565:	learn: 6.9216547	total: 6.41s	remaining: 4.91s
566:	learn: 6.9200128	total: 6.42s	remaining: 4.9s
567:	learn: 6.9186573	total: 6.43s	remaining: 4.89s
568:	learn: 6.9169807	total: 6.45s	remaining: 4.88s
569:	learn: 6.9149245	total: 6.46s	remaining: 4.87s
570:	learn: 6.9127088	total: 6.47s	remaining: 4.86s
571:	learn: 6.9115734	total: 6.48s	remaining: 4.85s
572:	learn: 6.9087950	total: 6.49s	remaining: 4.84s
573:	learn: 6.9068391	total: 6.51s	remaining: 4.83s
574:	learn: 6.9046174	total: 6.52s	remaining: 4.82s
575:	learn: 6.9017889	total: 6.54s	remaining: 4.81s
576:	learn: 6.9000945	total: 6.55s	remaining: 4.8s
577:	learn: 6.8992652	total: 6.56s	remaining: 4.79s
578:	learn: 6.8978855	total: 6.58s	remaining: 4.78s
579:	learn: 6.8969232	total: 6.59s	remaining: 4.77s
580:	learn: 6.8960164	total: 6.6s	remaining: 4.76s
581:	learn: 6.8944838	total: 6.62s	remaining: 4.75s
582:	learn: 6.8937682	total: 6.63s	remaining: 4.74s
583:	learn: 6.8929123	total: 6.64s	remaining: 4.73s
584:	learn: 6.8918224	total: 6.65s	remaining: 4.71s
585:	learn: 6.8900583	total: 6.66s	remaining: 4.71s
586:	learn: 6.8877903	total: 6.67s	remaining: 4.7s
587:	learn: 6.8865877	total: 6.69s	remaining: 4.69s
588:	learn: 6.8855361	total: 6.72s	remaining: 4.69s
589:	learn: 6.8845400	total: 6.74s	remaining: 4.68s
590:	learn: 6.8821358	total: 6.75s	remaining: 4.67s
591:	learn: 6.8804473	total: 6.76s	remaining: 4.66s
592:	learn: 6.8793555	total: 6.78s	remaining: 4.65s
593:	learn: 6.8773658	total: 6.79s	remaining: 4.64s
594:	learn: 6.8750308	total: 6.8s	remaining: 4.63s
595:	learn: 6.8742738	total: 6.81s	remaining: 4.62s
596:	learn: 6.8724736	total: 6.82s	remaining: 4.6s
597:	learn: 6.8702185	total: 6.83s	remaining: 4.59s
598:	learn: 6.8682207	total: 6.84s	remaining: 4.58s
599:	learn: 6.8672809	total: 6.86s	remaining: 4.57s
600:	learn: 6.8658986	total: 6.87s	remaining: 4.56s
601:	learn: 6.8639389	total: 6.88s	remaining: 4.55s
602:	learn: 6.8622992	total: 6.9s	remaining: 4.54s
603:	learn: 6.8608664	total: 6.91s	remaining: 4.53s
604:	learn: 6.8579122	total: 6.92s	remaining: 4.52s
605:	learn: 6.8563649	total: 6.93s	remaining: 4.51s
606:	learn: 6.8550828	total: 6.95s	remaining: 4.5s
607:	learn: 6.8532417	total: 6.96s	remaining: 4.49s
608:	learn: 6.8519315	total: 6.98s	remaining: 4.48s
609:	learn: 6.8509442	total: 6.99s	remaining: 4.47s
610:	learn: 6.8495743	total: 7.01s	remaining: 4.46s
611:	learn: 6.8481338	total: 7.02s	remaining: 4.45s
612:	learn: 6.8473611	total: 7.03s	remaining: 4.44s
613:	learn: 6.8464368	total: 7.05s	remaining: 4.43s
614:	learn: 6.8451899	total: 7.06s	remaining: 4.42s
615:	learn: 6.8440067	total: 7.08s	remaining: 4.41s
616:	learn: 6.8432223	total: 7.09s	remaining: 4.4s
617:	learn: 6.8423735	total: 7.1s	remaining: 4.39s
618:	learn: 6.8402088	total: 7.11s	remaining: 4.38s
619:	learn: 6.8388033	total: 7.13s	remaining: 4.37s
620:	learn: 6.8353032	total: 7.14s	remaining: 4.36s
621:	learn: 6.8335446	total: 7.16s	remaining: 4.35s
622:	learn: 6.8303173	total: 7.18s	remaining: 4.34s
623:	learn: 6.8288032	total: 7.2s	remaining: 4.33s
624:	learn: 6.8269573	total: 7.21s	remaining: 4.33s

625:	learn: 6.8244870	total: 7.22s	remaining: 4.31s
626:	learn: 6.8229478	total: 7.24s	remaining: 4.3s
627:	learn: 6.8218489	total: 7.25s	remaining: 4.29s
628:	learn: 6.8200733	total: 7.27s	remaining: 4.29s
629:	learn: 6.8168228	total: 7.28s	remaining: 4.28s
630:	learn: 6.8134192	total: 7.29s	remaining: 4.26s
631:	learn: 6.8118620	total: 7.31s	remaining: 4.26s
632:	learn: 6.8105812	total: 7.33s	remaining: 4.25s
633:	learn: 6.8096644	total: 7.34s	remaining: 4.24s
634:	learn: 6.8076736	total: 7.35s	remaining: 4.22s
635:	learn: 6.8065824	total: 7.36s	remaining: 4.21s
636:	learn: 6.8053214	total: 7.38s	remaining: 4.2s
637:	learn: 6.8045054	total: 7.39s	remaining: 4.2s
638:	learn: 6.8032813	total: 7.41s	remaining: 4.19s
639:	learn: 6.8017858	total: 7.42s	remaining: 4.18s
640:	learn: 6.7988833	total: 7.43s	remaining: 4.16s
641:	learn: 6.7973853	total: 7.45s	remaining: 4.15s
642:	learn: 6.7955361	total: 7.46s	remaining: 4.14s
643:	learn: 6.7943993	total: 7.47s	remaining: 4.13s
644:	learn: 6.7933732	total: 7.48s	remaining: 4.12s
645:	learn: 6.7915617	total: 7.5s	remaining: 4.11s
646:	learn: 6.7890952	total: 7.51s	remaining: 4.1s
647:	learn: 6.7873743	total: 7.52s	remaining: 4.08s
648:	learn: 6.7858185	total: 7.53s	remaining: 4.07s
649:	learn: 6.7846102	total: 7.55s	remaining: 4.06s
650:	learn: 6.7829091	total: 7.56s	remaining: 4.05s
651:	learn: 6.7806625	total: 7.57s	remaining: 4.04s
652:	learn: 6.7794905	total: 7.59s	remaining: 4.03s
653:	learn: 6.7784603	total: 7.6s	remaining: 4.02s
654:	learn: 6.7772779	total: 7.62s	remaining: 4.01s
655:	learn: 6.7756502	total: 7.63s	remaining: 4s
656:	learn: 6.7745490	total: 7.64s	remaining: 3.99s
657:	learn: 6.7727784	total: 7.66s	remaining: 3.98s
658:	learn: 6.7717781	total: 7.67s	remaining: 3.97s
659:	learn: 6.7708186	total: 7.68s	remaining: 3.96s
660:	learn: 6.7695338	total: 7.69s	remaining: 3.94s
661:	learn: 6.7679203	total: 7.71s	remaining: 3.93s
662:	learn: 6.7669488	total: 7.72s	remaining: 3.92s
663:	learn: 6.7650986	total: 7.73s	remaining: 3.91s
664:	learn: 6.7644940	total: 7.75s	remaining: 3.9s
665:	learn: 6.7624674	total: 7.76s	remaining: 3.89s
666:	learn: 6.7602988	total: 7.77s	remaining: 3.88s
667:	learn: 6.7554465	total: 7.78s	remaining: 3.87s
668:	learn: 6.7542354	total: 7.8s	remaining: 3.86s
669:	learn: 6.7533786	total: 7.81s	remaining: 3.85s
670:	learn: 6.7510964	total: 7.83s	remaining: 3.84s
671:	learn: 6.7492331	total: 7.84s	remaining: 3.83s
672:	learn: 6.7483251	total: 7.85s	remaining: 3.81s
673:	learn: 6.7474983	total: 7.86s	remaining: 3.8s
674:	learn: 6.7458006	total: 7.87s	remaining: 3.79s
675:	learn: 6.7443047	total: 7.88s	remaining: 3.78s
676:	learn: 6.7417831	total: 7.89s	remaining: 3.77s
677:	learn: 6.7403676	total: 7.91s	remaining: 3.75s
678:	learn: 6.7377319	total: 7.92s	remaining: 3.74s
679:	learn: 6.7366262	total: 7.92s	remaining: 3.73s
680:	learn: 6.7355867	total: 7.93s	remaining: 3.72s
681:	learn: 6.7347734	total: 7.95s	remaining: 3.71s
682:	learn: 6.7332125	total: 7.96s	remaining: 3.69s
683:	learn: 6.7317584	total: 7.97s	remaining: 3.68s
684:	learn: 6.7310355	total: 7.98s	remaining: 3.67s
685:	learn: 6.7297238	total: 7.99s	remaining: 3.66s
686:	learn: 6.7261029	total: 8s	remaining: 3.64s
687:	learn: 6.7249298	total: 8.01s	remaining: 3.63s
688:	learn: 6.7237268	total: 8.02s	remaining: 3.62s
689:	learn: 6.7221976	total: 8.03s	remaining: 3.61s
690:	learn: 6.7209120	total: 8.05s	remaining: 3.6s
691:	learn: 6.7190434	total: 8.06s	remaining: 3.58s
692:	learn: 6.7170508	total: 8.07s	remaining: 3.57s
693:	learn: 6.7157440	total: 8.08s	remaining: 3.56s
694:	learn: 6.7146293	total: 8.09s	remaining: 3.55s

695:	learn: 6.7136427	total: 8.1s	remaining: 3.54s
696:	learn: 6.7115100	total: 8.11s	remaining: 3.52s
697:	learn: 6.7110362	total: 8.12s	remaining: 3.51s
698:	learn: 6.7097209	total: 8.13s	remaining: 3.5s
699:	learn: 6.7088463	total: 8.14s	remaining: 3.49s
700:	learn: 6.7077383	total: 8.15s	remaining: 3.48s
701:	learn: 6.7063232	total: 8.16s	remaining: 3.46s
702:	learn: 6.7052437	total: 8.18s	remaining: 3.45s
703:	learn: 6.7039730	total: 8.19s	remaining: 3.44s
704:	learn: 6.7029604	total: 8.2s	remaining: 3.43s
705:	learn: 6.7020505	total: 8.21s	remaining: 3.42s
706:	learn: 6.6985458	total: 8.22s	remaining: 3.41s
707:	learn: 6.6969985	total: 8.23s	remaining: 3.4s
708:	learn: 6.6957921	total: 8.24s	remaining: 3.38s
709:	learn: 6.6948458	total: 8.26s	remaining: 3.37s
710:	learn: 6.6930538	total: 8.27s	remaining: 3.36s
711:	learn: 6.6923057	total: 8.28s	remaining: 3.35s
712:	learn: 6.6910862	total: 8.29s	remaining: 3.33s
713:	learn: 6.6896500	total: 8.3s	remaining: 3.32s
714:	learn: 6.6889766	total: 8.31s	remaining: 3.31s
715:	learn: 6.6872719	total: 8.32s	remaining: 3.3s
716:	learn: 6.6861173	total: 8.33s	remaining: 3.29s
717:	learn: 6.6845722	total: 8.34s	remaining: 3.28s
718:	learn: 6.6823043	total: 8.35s	remaining: 3.26s
719:	learn: 6.6816780	total: 8.36s	remaining: 3.25s
720:	learn: 6.6805365	total: 8.37s	remaining: 3.24s
721:	learn: 6.6796818	total: 8.38s	remaining: 3.23s
722:	learn: 6.6787651	total: 8.39s	remaining: 3.21s
723:	learn: 6.6775973	total: 8.4s	remaining: 3.2s
724:	learn: 6.6764661	total: 8.41s	remaining: 3.19s
725:	learn: 6.6754246	total: 8.42s	remaining: 3.18s
726:	learn: 6.6742814	total: 8.44s	remaining: 3.17s
727:	learn: 6.6728615	total: 8.45s	remaining: 3.15s
728:	learn: 6.6705403	total: 8.46s	remaining: 3.14s
729:	learn: 6.6695616	total: 8.47s	remaining: 3.13s
730:	learn: 6.6670234	total: 8.48s	remaining: 3.12s
731:	learn: 6.6654402	total: 8.49s	remaining: 3.11s
732:	learn: 6.6645528	total: 8.5s	remaining: 3.1s
733:	learn: 6.6631178	total: 8.51s	remaining: 3.08s
734:	learn: 6.6618574	total: 8.53s	remaining: 3.07s
735:	learn: 6.6607575	total: 8.54s	remaining: 3.06s
736:	learn: 6.6599826	total: 8.55s	remaining: 3.05s
737:	learn: 6.6590655	total: 8.56s	remaining: 3.04s
738:	learn: 6.6574489	total: 8.57s	remaining: 3.02s
739:	learn: 6.6555550	total: 8.58s	remaining: 3.01s
740:	learn: 6.6523668	total: 8.59s	remaining: 3s
741:	learn: 6.6512284	total: 8.6s	remaining: 2.99s
742:	learn: 6.6498651	total: 8.61s	remaining: 2.98s
743:	learn: 6.6490571	total: 8.62s	remaining: 2.96s
744:	learn: 6.6478794	total: 8.63s	remaining: 2.95s
745:	learn: 6.6469805	total: 8.64s	remaining: 2.94s
746:	learn: 6.6462046	total: 8.66s	remaining: 2.93s
747:	learn: 6.6437720	total: 8.67s	remaining: 2.92s
748:	learn: 6.6428209	total: 8.68s	remaining: 2.91s
749:	learn: 6.6411940	total: 8.69s	remaining: 2.9s
750:	learn: 6.6403751	total: 8.7s	remaining: 2.88s
751:	learn: 6.6370810	total: 8.71s	remaining: 2.87s
752:	learn: 6.6350200	total: 8.72s	remaining: 2.86s
753:	learn: 6.6342653	total: 8.73s	remaining: 2.85s
754:	learn: 6.6329580	total: 8.74s	remaining: 2.84s
755:	learn: 6.6318461	total: 8.75s	remaining: 2.83s
756:	learn: 6.6307091	total: 8.76s	remaining: 2.81s
757:	learn: 6.6294537	total: 8.77s	remaining: 2.8s
758:	learn: 6.6284076	total: 8.79s	remaining: 2.79s
759:	learn: 6.6271389	total: 8.8s	remaining: 2.78s
760:	learn: 6.6266091	total: 8.81s	remaining: 2.77s
761:	learn: 6.6247601	total: 8.82s	remaining: 2.75s
762:	learn: 6.6220071	total: 8.83s	remaining: 2.74s
763:	learn: 6.6211556	total: 8.84s	remaining: 2.73s
764:	learn: 6.6183705	total: 8.86s	remaining: 2.72s
765:	learn: 6.6169776	total: 8.87s	remaining: 2.71s
766:	learn: 6.6163249	total: 8.88s	remaining: 2.7s

767:	learn: 6.6151006	total: 8.89s	remaining: 2.69s
768:	learn: 6.6135825	total: 8.9s	remaining: 2.67s
769:	learn: 6.6126357	total: 8.91s	remaining: 2.66s
770:	learn: 6.6113316	total: 8.92s	remaining: 2.65s
771:	learn: 6.6099381	total: 8.93s	remaining: 2.64s
772:	learn: 6.6093460	total: 8.94s	remaining: 2.63s
773:	learn: 6.6078259	total: 8.95s	remaining: 2.61s
774:	learn: 6.6063498	total: 8.96s	remaining: 2.6s
775:	learn: 6.6054265	total: 8.98s	remaining: 2.59s
776:	learn: 6.6037154	total: 8.99s	remaining: 2.58s
777:	learn: 6.6026427	total: 8.99s	remaining: 2.57s
778:	learn: 6.6018682	total: 9.01s	remaining: 2.56s
779:	learn: 6.6000000	total: 9.02s	remaining: 2.54s
780:	learn: 6.5994512	total: 9.03s	remaining: 2.53s
781:	learn: 6.5986369	total: 9.04s	remaining: 2.52s
782:	learn: 6.5974728	total: 9.05s	remaining: 2.51s
783:	learn: 6.5968784	total: 9.06s	remaining: 2.5s
784:	learn: 6.5953975	total: 9.08s	remaining: 2.49s
785:	learn: 6.5944934	total: 9.09s	remaining: 2.47s
786:	learn: 6.5934210	total: 9.1s	remaining: 2.46s
787:	learn: 6.5926773	total: 9.11s	remaining: 2.45s
788:	learn: 6.5919606	total: 9.13s	remaining: 2.44s
789:	learn: 6.5908051	total: 9.14s	remaining: 2.43s
790:	learn: 6.5898737	total: 9.15s	remaining: 2.42s
791:	learn: 6.5889944	total: 9.15s	remaining: 2.4s
792:	learn: 6.5855935	total: 9.16s	remaining: 2.39s
793:	learn: 6.5848424	total: 9.18s	remaining: 2.38s
794:	learn: 6.5833479	total: 9.19s	remaining: 2.37s
795:	learn: 6.5824006	total: 9.2s	remaining: 2.36s
796:	learn: 6.5813117	total: 9.21s	remaining: 2.34s
797:	learn: 6.5802270	total: 9.22s	remaining: 2.33s
798:	learn: 6.5793417	total: 9.23s	remaining: 2.32s
799:	learn: 6.5782499	total: 9.24s	remaining: 2.31s
800:	learn: 6.5773478	total: 9.25s	remaining: 2.3s
801:	learn: 6.5749547	total: 9.26s	remaining: 2.29s
802:	learn: 6.5731188	total: 9.28s	remaining: 2.27s
803:	learn: 6.5723781	total: 9.29s	remaining: 2.26s
804:	learn: 6.5700148	total: 9.3s	remaining: 2.25s
805:	learn: 6.5686366	total: 9.31s	remaining: 2.24s
806:	learn: 6.5677168	total: 9.32s	remaining: 2.23s
807:	learn: 6.5674222	total: 9.33s	remaining: 2.22s
808:	learn: 6.5645199	total: 9.34s	remaining: 2.2s
809:	learn: 6.5636949	total: 9.35s	remaining: 2.19s
810:	learn: 6.5627268	total: 9.37s	remaining: 2.18s
811:	learn: 6.5619450	total: 9.38s	remaining: 2.17s
812:	learn: 6.5613119	total: 9.38s	remaining: 2.16s
813:	learn: 6.5608112	total: 9.39s	remaining: 2.15s
814:	learn: 6.5600591	total: 9.4s	remaining: 2.13s
815:	learn: 6.5590725	total: 9.42s	remaining: 2.12s
816:	learn: 6.5579191	total: 9.43s	remaining: 2.11s
817:	learn: 6.5570253	total: 9.44s	remaining: 2.1s
818:	learn: 6.5556597	total: 9.45s	remaining: 2.09s
819:	learn: 6.5547889	total: 9.46s	remaining: 2.08s
820:	learn: 6.5533293	total: 9.47s	remaining: 2.06s
821:	learn: 6.5525923	total: 9.48s	remaining: 2.05s
822:	learn: 6.5522312	total: 9.5s	remaining: 2.04s
823:	learn: 6.5507295	total: 9.52s	remaining: 2.03s
824:	learn: 6.5497429	total: 9.53s	remaining: 2.02s
825:	learn: 6.5483443	total: 9.55s	remaining: 2.01s
826:	learn: 6.5469825	total: 9.56s	remaining: 2s
827:	learn: 6.5458496	total: 9.58s	remaining: 1.99s
828:	learn: 6.5447196	total: 9.59s	remaining: 1.98s
829:	learn: 6.5435789	total: 9.61s	remaining: 1.97s
830:	learn: 6.5414731	total: 9.62s	remaining: 1.96s
831:	learn: 6.5407999	total: 9.63s	remaining: 1.94s
832:	learn: 6.5402922	total: 9.64s	remaining: 1.93s
833:	learn: 6.5383556	total: 9.65s	remaining: 1.92s
834:	learn: 6.5371380	total: 9.66s	remaining: 1.91s
835:	learn: 6.5363523	total: 9.67s	remaining: 1.9s
836:	learn: 6.5352005	total: 9.69s	remaining: 1.89s

837:	learn: 6.5333254	total: 9.7s	remaining: 1.88s
838:	learn: 6.5320032	total: 9.71s	remaining: 1.86s
839:	learn: 6.5314216	total: 9.72s	remaining: 1.85s
840:	learn: 6.5297295	total: 9.73s	remaining: 1.84s
841:	learn: 6.5289383	total: 9.74s	remaining: 1.83s
842:	learn: 6.5281843	total: 9.75s	remaining: 1.82s
843:	learn: 6.5263748	total: 9.76s	remaining: 1.8s
844:	learn: 6.5256539	total: 9.77s	remaining: 1.79s
845:	learn: 6.5247102	total: 9.78s	remaining: 1.78s
846:	learn: 6.5238197	total: 9.79s	remaining: 1.77s
847:	learn: 6.5229758	total: 9.8s	remaining: 1.76s
848:	learn: 6.5219729	total: 9.82s	remaining: 1.75s
849:	learn: 6.5209759	total: 9.83s	remaining: 1.73s
850:	learn: 6.5203095	total: 9.84s	remaining: 1.72s
851:	learn: 6.5196507	total: 9.85s	remaining: 1.71s
852:	learn: 6.5190729	total: 9.86s	remaining: 1.7s
853:	learn: 6.5175114	total: 9.88s	remaining: 1.69s
854:	learn: 6.5158717	total: 9.88s	remaining: 1.68s
855:	learn: 6.5150765	total: 9.9s	remaining: 1.67s
856:	learn: 6.5147296	total: 9.91s	remaining: 1.65s
857:	learn: 6.5140041	total: 9.92s	remaining: 1.64s
858:	learn: 6.5133866	total: 9.93s	remaining: 1.63s
859:	learn: 6.5119122	total: 9.94s	remaining: 1.62s
860:	learn: 6.5099803	total: 9.95s	remaining: 1.61s
861:	learn: 6.5090472	total: 9.96s	remaining: 1.59s
862:	learn: 6.5082448	total: 9.97s	remaining: 1.58s
863:	learn: 6.5077441	total: 9.99s	remaining: 1.57s
864:	learn: 6.5068881	total: 9.99s	remaining: 1.56s
865:	learn: 6.5061200	total: 10s	remaining: 1.55s
866:	learn: 6.5051460	total: 10s	remaining: 1.54s
867:	learn: 6.5044065	total: 10s	remaining: 1.52s
868:	learn: 6.5035864	total: 10s	remaining: 1.51s
869:	learn: 6.5032481	total: 10s	remaining: 1.5s
870:	learn: 6.5027448	total: 10.1s	remaining: 1.49s
871:	learn: 6.5018908	total: 10.1s	remaining: 1.48s
872:	learn: 6.4991668	total: 10.1s	remaining: 1.47s
873:	learn: 6.4986553	total: 10.1s	remaining: 1.45s
874:	learn: 6.4981364	total: 10.1s	remaining: 1.44s
875:	learn: 6.4972532	total: 10.1s	remaining: 1.43s
876:	learn: 6.4964017	total: 10.1s	remaining: 1.42s
877:	learn: 6.4936198	total: 10.1s	remaining: 1.41s
878:	learn: 6.4926257	total: 10.1s	remaining: 1.4s
879:	learn: 6.4918383	total: 10.2s	remaining: 1.39s
880:	learn: 6.4906064	total: 10.2s	remaining: 1.37s
881:	learn: 6.4900074	total: 10.2s	remaining: 1.36s
882:	learn: 6.4887186	total: 10.2s	remaining: 1.35s
883:	learn: 6.4880989	total: 10.2s	remaining: 1.34s
884:	learn: 6.4872708	total: 10.2s	remaining: 1.33s
885:	learn: 6.4851217	total: 10.2s	remaining: 1.31s
886:	learn: 6.4842473	total: 10.2s	remaining: 1.3s
887:	learn: 6.4835478	total: 10.2s	remaining: 1.29s
888:	learn: 6.4829278	total: 10.3s	remaining: 1.28s
889:	learn: 6.4824145	total: 10.3s	remaining: 1.27s
890:	learn: 6.4814090	total: 10.3s	remaining: 1.26s
891:	learn: 6.4809450	total: 10.3s	remaining: 1.25s
892:	learn: 6.4802685	total: 10.3s	remaining: 1.23s
893:	learn: 6.4791673	total: 10.3s	remaining: 1.22s
894:	learn: 6.4781319	total: 10.3s	remaining: 1.21s
895:	learn: 6.4773238	total: 10.3s	remaining: 1.2s
896:	learn: 6.4768551	total: 10.3s	remaining: 1.19s
897:	learn: 6.4757240	total: 10.4s	remaining: 1.18s
898:	learn: 6.4743166	total: 10.4s	remaining: 1.16s
899:	learn: 6.4729434	total: 10.4s	remaining: 1.15s
900:	learn: 6.4721714	total: 10.4s	remaining: 1.14s
901:	learn: 6.4716293	total: 10.4s	remaining: 1.13s
902:	learn: 6.4710174	total: 10.4s	remaining: 1.12s
903:	learn: 6.4697263	total: 10.4s	remaining: 1.11s
904:	learn: 6.4686424	total: 10.4s	remaining: 1.09s
905:	learn: 6.4676989	total: 10.4s	remaining: 1.08s
906:	learn: 6.4659645	total: 10.5s	remaining: 1.07s
907:	learn: 6.4644884	total: 10.5s	remaining: 1.06s
908:	learn: 6.4638293	total: 10.5s	remaining: 1.05s

909:	learn: 6.4629947	total: 10.5s	remaining: 1.04s
910:	learn: 6.4623806	total: 10.5s	remaining: 1.02s
911:	learn: 6.4614089	total: 10.5s	remaining: 1.01s
912:	learn: 6.4609021	total: 10.5s	remaining: 1s
913:	learn: 6.4593894	total: 10.5s	remaining: 990ms
914:	learn: 6.4579903	total: 10.5s	remaining: 979ms
915:	learn: 6.4566295	total: 10.5s	remaining: 967ms
916:	learn: 6.4558081	total: 10.6s	remaining: 956ms
917:	learn: 6.4544130	total: 10.6s	remaining: 944ms
918:	learn: 6.4537771	total: 10.6s	remaining: 933ms
919:	learn: 6.4531010	total: 10.6s	remaining: 921ms
920:	learn: 6.4520348	total: 10.6s	remaining: 909ms
921:	learn: 6.4511491	total: 10.6s	remaining: 898ms
922:	learn: 6.4503228	total: 10.6s	remaining: 886ms
923:	learn: 6.4494497	total: 10.6s	remaining: 874ms
924:	learn: 6.4473737	total: 10.6s	remaining: 863ms
925:	learn: 6.4466798	total: 10.7s	remaining: 851ms
926:	learn: 6.4461766	total: 10.7s	remaining: 840ms
927:	learn: 6.4451875	total: 10.7s	remaining: 828ms
928:	learn: 6.4447273	total: 10.7s	remaining: 816ms
929:	learn: 6.4427885	total: 10.7s	remaining: 805ms
930:	learn: 6.4416883	total: 10.7s	remaining: 793ms
931:	learn: 6.4409432	total: 10.7s	remaining: 781ms
932:	learn: 6.4395760	total: 10.7s	remaining: 770ms
933:	learn: 6.4381486	total: 10.7s	remaining: 758ms
934:	learn: 6.4373524	total: 10.7s	remaining: 747ms
935:	learn: 6.4368078	total: 10.8s	remaining: 735ms
936:	learn: 6.4356535	total: 10.8s	remaining: 724ms
937:	learn: 6.4352591	total: 10.8s	remaining: 712ms
938:	learn: 6.4340890	total: 10.8s	remaining: 700ms
939:	learn: 6.4323396	total: 10.8s	remaining: 689ms
940:	learn: 6.4312081	total: 10.8s	remaining: 677ms
941:	learn: 6.4303087	total: 10.8s	remaining: 666ms
942:	learn: 6.4297127	total: 10.8s	remaining: 654ms
943:	learn: 6.4286649	total: 10.8s	remaining: 643ms
944:	learn: 6.4261380	total: 10.8s	remaining: 631ms
945:	learn: 6.4246890	total: 10.9s	remaining: 620ms
946:	learn: 6.4234633	total: 10.9s	remaining: 608ms
947:	learn: 6.4220360	total: 10.9s	remaining: 596ms
948:	learn: 6.4213243	total: 10.9s	remaining: 585ms
949:	learn: 6.4208084	total: 10.9s	remaining: 573ms
950:	learn: 6.4200710	total: 10.9s	remaining: 562ms
951:	learn: 6.4193370	total: 10.9s	remaining: 550ms
952:	learn: 6.4185361	total: 10.9s	remaining: 539ms
953:	learn: 6.4179443	total: 10.9s	remaining: 527ms
954:	learn: 6.4172323	total: 10.9s	remaining: 516ms
955:	learn: 6.4157266	total: 11s	remaining: 504ms
956:	learn: 6.4150756	total: 11s	remaining: 493ms
957:	learn: 6.4143445	total: 11s	remaining: 482ms
958:	learn: 6.4138284	total: 11s	remaining: 470ms
959:	learn: 6.4133355	total: 11s	remaining: 458ms
960:	learn: 6.4125660	total: 11s	remaining: 447ms
961:	learn: 6.4096625	total: 11s	remaining: 435ms
962:	learn: 6.4086793	total: 11s	remaining: 424ms
963:	learn: 6.4061394	total: 11s	remaining: 412ms
964:	learn: 6.4048649	total: 11.1s	remaining: 401ms
965:	learn: 6.4041879	total: 11.1s	remaining: 389ms
966:	learn: 6.4033394	total: 11.1s	remaining: 378ms
967:	learn: 6.4028764	total: 11.1s	remaining: 366ms
968:	learn: 6.4023584	total: 11.1s	remaining: 355ms
969:	learn: 6.4009963	total: 11.1s	remaining: 343ms
970:	learn: 6.4004884	total: 11.1s	remaining: 332ms
971:	learn: 6.3987891	total: 11.1s	remaining: 321ms
972:	learn: 6.3971591	total: 11.1s	remaining: 309ms
973:	learn: 6.3964510	total: 11.1s	remaining: 298ms
974:	learn: 6.3960278	total: 11.2s	remaining: 286ms
975:	learn: 6.3944869	total: 11.2s	remaining: 275ms
976:	learn: 6.3924068	total: 11.2s	remaining: 263ms
977:	learn: 6.3912357	total: 11.2s	remaining: 252ms
978:	learn: 6.3889852	total: 11.2s	remaining: 240ms
979:	learn: 6.3878232	total: 11.2s	remaining: 229ms
980:	learn: 6.3869584	total: 11.2s	remaining: 217ms

981:	learn: 6.3862290	total: 11.2s	remaining: 206ms
982:	learn: 6.3852821	total: 11.3s	remaining: 195ms
983:	learn: 6.3826024	total: 11.3s	remaining: 183ms
984:	learn: 6.3820464	total: 11.3s	remaining: 172ms
985:	learn: 6.3810889	total: 11.3s	remaining: 160ms
986:	learn: 6.3803997	total: 11.3s	remaining: 149ms
987:	learn: 6.3798123	total: 11.3s	remaining: 137ms
988:	learn: 6.3785952	total: 11.3s	remaining: 126ms
989:	learn: 6.3782576	total: 11.3s	remaining: 114ms
990:	learn: 6.3774939	total: 11.3s	remaining: 103ms
991:	learn: 6.3764745	total: 11.3s	remaining: 91.5ms
992:	learn: 6.3753084	total: 11.4s	remaining: 80.1ms
993:	learn: 6.3745892	total: 11.4s	remaining: 68.6ms
994:	learn: 6.3729764	total: 11.4s	remaining: 57.2ms
995:	learn: 6.3725928	total: 11.4s	remaining: 45.7ms
996:	learn: 6.3718238	total: 11.4s	remaining: 34.3ms
997:	learn: 6.3711491	total: 11.4s	remaining: 22.9ms
998:	learn: 6.3703313	total: 11.4s	remaining: 11.4ms
999:	learn: 6.3698704	total: 11.4s	remaining: 0us

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
 warnings.warn(

Learning rate set to 0.07344

0:	learn: 11.8849562	total: 6.08ms	remaining: 6.08s
1:	learn: 11.6153978	total: 11.5ms	remaining: 5.75s
2:	learn: 11.3866090	total: 17.2ms	remaining: 5.7s
3:	learn: 11.1782712	total: 23ms	remaining: 5.72s
4:	learn: 11.0050471	total: 28.4ms	remaining: 5.65s
5:	learn: 10.8160548	total: 35.4ms	remaining: 5.86s
6:	learn: 10.6550714	total: 43ms	remaining: 6.1s
7:	learn: 10.5254399	total: 49.6ms	remaining: 6.15s
8:	learn: 10.4046865	total: 55.7ms	remaining: 6.14s
9:	learn: 10.2872455	total: 62.1ms	remaining: 6.14s
10:	learn: 10.1822177	total: 68.2ms	remaining: 6.13s
11:	learn: 10.0898845	total: 77.6ms	remaining: 6.39s
12:	learn: 9.9861000	total: 84.2ms	remaining: 6.39s
13:	learn: 9.9033650	total: 90.2ms	remaining: 6.35s
14:	learn: 9.8288882	total: 97.1ms	remaining: 6.38s
15:	learn: 9.7628268	total: 105ms	remaining: 6.47s
16:	learn: 9.6954245	total: 112ms	remaining: 6.46s
17:	learn: 9.6244323	total: 118ms	remaining: 6.45s
18:	learn: 9.5475866	total: 124ms	remaining: 6.4s
19:	learn: 9.4969697	total: 133ms	remaining: 6.53s
20:	learn: 9.4385038	total: 140ms	remaining: 6.51s
21:	learn: 9.3889324	total: 146ms	remaining: 6.47s
22:	learn: 9.3274559	total: 152ms	remaining: 6.47s
23:	learn: 9.2804410	total: 159ms	remaining: 6.47s
24:	learn: 9.2401158	total: 168ms	remaining: 6.57s
25:	learn: 9.1941927	total: 175ms	remaining: 6.55s
26:	learn: 9.1518898	total: 181ms	remaining: 6.52s
27:	learn: 9.1155899	total: 187ms	remaining: 6.51s
28:	learn: 9.0624620	total: 200ms	remaining: 6.7s
29:	learn: 9.0244903	total: 209ms	remaining: 6.76s
30:	learn: 8.9903459	total: 216ms	remaining: 6.75s
31:	learn: 8.9587770	total: 223ms	remaining: 6.74s
32:	learn: 8.9237171	total: 235ms	remaining: 6.89s
33:	learn: 8.8867087	total: 242ms	remaining: 6.89s
34:	learn: 8.8486808	total: 251ms	remaining: 6.93s
35:	learn: 8.8201066	total: 259ms	remaining: 6.94s
36:	learn: 8.7896616	total: 270ms	remaining: 7.01s
37:	learn: 8.7566197	total: 277ms	remaining: 7.01s
38:	learn: 8.7218148	total: 284ms	remaining: 7.01s
39:	learn: 8.6823814	total: 293ms	remaining: 7.02s
40:	learn: 8.6615451	total: 302ms	remaining: 7.05s
41:	learn: 8.6411216	total: 309ms	remaining: 7.04s
42:	learn: 8.6179964	total: 316ms	remaining: 7.04s
43:	learn: 8.5986859	total: 326ms	remaining: 7.08s
44:	learn: 8.5776173	total: 334ms	remaining: 7.08s

45:	learn: 8.5547272	total: 341ms	remaining: 7.06s
46:	learn: 8.5362564	total: 348ms	remaining: 7.05s
47:	learn: 8.5231783	total: 355ms	remaining: 7.04s
48:	learn: 8.5073390	total: 363ms	remaining: 7.04s
49:	learn: 8.4832736	total: 369ms	remaining: 7.01s
50:	learn: 8.4677534	total: 376ms	remaining: 7s
51:	learn: 8.4505129	total: 384ms	remaining: 7s
52:	learn: 8.4367952	total: 393ms	remaining: 7.03s
53:	learn: 8.4188906	total: 403ms	remaining: 7.07s
54:	learn: 8.3939961	total: 412ms	remaining: 7.08s
55:	learn: 8.3757599	total: 423ms	remaining: 7.13s
56:	learn: 8.3413588	total: 432ms	remaining: 7.14s
57:	learn: 8.3066851	total: 439ms	remaining: 7.14s
58:	learn: 8.2921764	total: 446ms	remaining: 7.12s
59:	learn: 8.2725483	total: 454ms	remaining: 7.12s
60:	learn: 8.2518761	total: 464ms	remaining: 7.15s
61:	learn: 8.2349190	total: 472ms	remaining: 7.14s
62:	learn: 8.2187208	total: 479ms	remaining: 7.13s
63:	learn: 8.1906753	total: 488ms	remaining: 7.14s
64:	learn: 8.1725940	total: 498ms	remaining: 7.16s
65:	learn: 8.1626834	total: 505ms	remaining: 7.14s
66:	learn: 8.1380435	total: 512ms	remaining: 7.13s
67:	learn: 8.1180957	total: 524ms	remaining: 7.17s
68:	learn: 8.1091617	total: 531ms	remaining: 7.17s
69:	learn: 8.0910952	total: 539ms	remaining: 7.17s
70:	learn: 8.0756432	total: 547ms	remaining: 7.16s
71:	learn: 8.0655028	total: 560ms	remaining: 7.22s
72:	learn: 8.0379196	total: 569ms	remaining: 7.22s
73:	learn: 8.0206319	total: 577ms	remaining: 7.22s
74:	learn: 8.0112420	total: 588ms	remaining: 7.25s
75:	learn: 7.9956366	total: 596ms	remaining: 7.25s
76:	learn: 7.9849977	total: 604ms	remaining: 7.24s
77:	learn: 7.9638301	total: 612ms	remaining: 7.23s
78:	learn: 7.9532140	total: 624ms	remaining: 7.27s
79:	learn: 7.9319107	total: 633ms	remaining: 7.27s
80:	learn: 7.9162938	total: 640ms	remaining: 7.26s
81:	learn: 7.9014893	total: 650ms	remaining: 7.27s
82:	learn: 7.8831235	total: 660ms	remaining: 7.29s
83:	learn: 7.8755790	total: 668ms	remaining: 7.28s
84:	learn: 7.8672261	total: 675ms	remaining: 7.27s
85:	learn: 7.8541200	total: 686ms	remaining: 7.29s
86:	learn: 7.8327144	total: 695ms	remaining: 7.29s
87:	learn: 7.8191774	total: 703ms	remaining: 7.29s
88:	learn: 7.8086172	total: 712ms	remaining: 7.28s
89:	learn: 7.7897483	total: 722ms	remaining: 7.3s
90:	learn: 7.7777536	total: 730ms	remaining: 7.29s
91:	learn: 7.7646109	total: 738ms	remaining: 7.28s
92:	learn: 7.7559298	total: 746ms	remaining: 7.28s
93:	learn: 7.7483753	total: 755ms	remaining: 7.28s
94:	learn: 7.7403759	total: 765ms	remaining: 7.28s
95:	learn: 7.7317276	total: 773ms	remaining: 7.28s
96:	learn: 7.7182363	total: 781ms	remaining: 7.27s
97:	learn: 7.6927553	total: 792ms	remaining: 7.29s
98:	learn: 7.6792529	total: 800ms	remaining: 7.29s
99:	learn: 7.6706008	total: 808ms	remaining: 7.28s
100:	learn: 7.6618190	total: 818ms	remaining: 7.28s
101:	learn: 7.6492661	total: 829ms	remaining: 7.3s
102:	learn: 7.6400223	total: 840ms	remaining: 7.31s
103:	learn: 7.6343927	total: 851ms	remaining: 7.33s
104:	learn: 7.6236748	total: 859ms	remaining: 7.32s
105:	learn: 7.6164071	total: 867ms	remaining: 7.31s
106:	learn: 7.6021593	total: 875ms	remaining: 7.3s
107:	learn: 7.5880620	total: 886ms	remaining: 7.32s
108:	learn: 7.5796020	total: 894ms	remaining: 7.3s
109:	learn: 7.5685904	total: 902ms	remaining: 7.29s
110:	learn: 7.5618697	total: 910ms	remaining: 7.29s
111:	learn: 7.5507591	total: 921ms	remaining: 7.3s
112:	learn: 7.5393865	total: 930ms	remaining: 7.3s
113:	learn: 7.5295811	total: 937ms	remaining: 7.29s
114:	learn: 7.5156529	total: 949ms	remaining: 7.3s
115:	learn: 7.5041932	total: 958ms	remaining: 7.3s
116:	learn: 7.4947617	total: 966ms	remaining: 7.29s

117:	learn: 7.4864708	total: 976ms	remaining: 7.29s
118:	learn: 7.4801339	total: 985ms	remaining: 7.29s
119:	learn: 7.4689509	total: 993ms	remaining: 7.29s
120:	learn: 7.4628663	total: 1s	remaining: 7.28s
121:	learn: 7.4520610	total: 1.01s	remaining: 7.28s
122:	learn: 7.4402817	total: 1.02s	remaining: 7.28s
123:	learn: 7.4251223	total: 1.03s	remaining: 7.26s
124:	learn: 7.4165641	total: 1.04s	remaining: 7.29s
125:	learn: 7.4114885	total: 1.05s	remaining: 7.3s
126:	learn: 7.4038469	total: 1.06s	remaining: 7.3s
127:	learn: 7.3967204	total: 1.07s	remaining: 7.3s
128:	learn: 7.3850116	total: 1.08s	remaining: 7.31s
129:	learn: 7.3792625	total: 1.09s	remaining: 7.31s
130:	learn: 7.3739153	total: 1.1s	remaining: 7.31s
131:	learn: 7.3624795	total: 1.11s	remaining: 7.3s
132:	learn: 7.3454388	total: 1.12s	remaining: 7.31s
133:	learn: 7.3370381	total: 1.13s	remaining: 7.3s
134:	learn: 7.3303386	total: 1.14s	remaining: 7.3s
135:	learn: 7.3087116	total: 1.15s	remaining: 7.31s
136:	learn: 7.2954167	total: 1.16s	remaining: 7.31s
137:	learn: 7.2880878	total: 1.17s	remaining: 7.3s
138:	learn: 7.2756285	total: 1.18s	remaining: 7.32s
139:	learn: 7.2676890	total: 1.19s	remaining: 7.32s
140:	learn: 7.2561688	total: 1.21s	remaining: 7.35s
141:	learn: 7.2482803	total: 1.22s	remaining: 7.36s
142:	learn: 7.2334787	total: 1.23s	remaining: 7.36s
143:	learn: 7.2266036	total: 1.24s	remaining: 7.36s
144:	learn: 7.2095969	total: 1.25s	remaining: 7.38s
145:	learn: 7.2024053	total: 1.26s	remaining: 7.37s
146:	learn: 7.1934557	total: 1.27s	remaining: 7.38s
147:	learn: 7.1868123	total: 1.28s	remaining: 7.38s
148:	learn: 7.1782329	total: 1.29s	remaining: 7.37s
149:	learn: 7.1733060	total: 1.3s	remaining: 7.37s
150:	learn: 7.1695783	total: 1.31s	remaining: 7.37s
151:	learn: 7.1634806	total: 1.32s	remaining: 7.36s
152:	learn: 7.1534586	total: 1.33s	remaining: 7.35s
153:	learn: 7.1445811	total: 1.34s	remaining: 7.35s
154:	learn: 7.1379501	total: 1.35s	remaining: 7.35s
155:	learn: 7.1277659	total: 1.36s	remaining: 7.34s
156:	learn: 7.1194429	total: 1.37s	remaining: 7.34s
157:	learn: 7.1137421	total: 1.38s	remaining: 7.33s
158:	learn: 7.1011649	total: 1.38s	remaining: 7.33s
159:	learn: 7.0942952	total: 1.39s	remaining: 7.32s
160:	learn: 7.0859580	total: 1.4s	remaining: 7.31s
161:	learn: 7.0809453	total: 1.41s	remaining: 7.31s
162:	learn: 7.0699367	total: 1.42s	remaining: 7.3s
163:	learn: 7.0613060	total: 1.43s	remaining: 7.29s
164:	learn: 7.0527223	total: 1.44s	remaining: 7.29s
165:	learn: 7.0427365	total: 1.45s	remaining: 7.28s
166:	learn: 7.0364492	total: 1.46s	remaining: 7.28s
167:	learn: 7.0295285	total: 1.47s	remaining: 7.27s
168:	learn: 7.0219503	total: 1.48s	remaining: 7.28s
169:	learn: 7.0087530	total: 1.49s	remaining: 7.27s
170:	learn: 7.0031693	total: 1.5s	remaining: 7.26s
171:	learn: 6.9962966	total: 1.51s	remaining: 7.27s
172:	learn: 6.9895663	total: 1.52s	remaining: 7.26s
173:	learn: 6.9800334	total: 1.53s	remaining: 7.25s
174:	learn: 6.9742780	total: 1.54s	remaining: 7.26s
175:	learn: 6.9604582	total: 1.55s	remaining: 7.25s
176:	learn: 6.9543313	total: 1.56s	remaining: 7.24s
177:	learn: 6.9488452	total: 1.57s	remaining: 7.24s
178:	learn: 6.9421246	total: 1.58s	remaining: 7.24s
179:	learn: 6.9341551	total: 1.59s	remaining: 7.23s
180:	learn: 6.9285061	total: 1.59s	remaining: 7.22s
181:	learn: 6.9157182	total: 1.6s	remaining: 7.21s
182:	learn: 6.9083967	total: 1.61s	remaining: 7.2s
183:	learn: 6.9011250	total: 1.62s	remaining: 7.19s
184:	learn: 6.8932064	total: 1.63s	remaining: 7.19s
185:	learn: 6.8853675	total: 1.64s	remaining: 7.18s
186:	learn: 6.8712910	total: 1.65s	remaining: 7.17s

187:	learn: 6.8642876	total: 1.66s	remaining: 7.17s
188:	learn: 6.8600103	total: 1.67s	remaining: 7.17s
189:	learn: 6.8555159	total: 1.68s	remaining: 7.17s
190:	learn: 6.8514845	total: 1.69s	remaining: 7.17s
191:	learn: 6.8451676	total: 1.7s	remaining: 7.17s
192:	learn: 6.8373447	total: 1.71s	remaining: 7.16s
193:	learn: 6.8324470	total: 1.72s	remaining: 7.16s
194:	learn: 6.8265029	total: 1.73s	remaining: 7.15s
195:	learn: 6.8219656	total: 1.74s	remaining: 7.15s
196:	learn: 6.8155402	total: 1.75s	remaining: 7.14s
197:	learn: 6.8100113	total: 1.76s	remaining: 7.13s
198:	learn: 6.8015650	total: 1.77s	remaining: 7.13s
199:	learn: 6.7978575	total: 1.78s	remaining: 7.12s
200:	learn: 6.7916726	total: 1.79s	remaining: 7.11s
201:	learn: 6.7856586	total: 1.8s	remaining: 7.1s
202:	learn: 6.7791841	total: 1.81s	remaining: 7.1s
203:	learn: 6.7730166	total: 1.82s	remaining: 7.09s
204:	learn: 6.7667636	total: 1.83s	remaining: 7.08s
205:	learn: 6.7613864	total: 1.84s	remaining: 7.08s
206:	learn: 6.7550357	total: 1.84s	remaining: 7.07s
207:	learn: 6.7514665	total: 1.85s	remaining: 7.06s
208:	learn: 6.7463251	total: 1.86s	remaining: 7.05s
209:	learn: 6.7410615	total: 1.87s	remaining: 7.05s
210:	learn: 6.7348883	total: 1.88s	remaining: 7.05s
211:	learn: 6.7254477	total: 1.9s	remaining: 7.05s
212:	learn: 6.7210053	total: 1.91s	remaining: 7.05s
213:	learn: 6.7137217	total: 1.92s	remaining: 7.04s
214:	learn: 6.7093370	total: 1.93s	remaining: 7.04s
215:	learn: 6.7027830	total: 1.94s	remaining: 7.03s
216:	learn: 6.6989341	total: 1.95s	remaining: 7.02s
217:	learn: 6.6905434	total: 1.95s	remaining: 7.01s
218:	learn: 6.6852391	total: 1.96s	remaining: 7s
219:	learn: 6.6800028	total: 1.97s	remaining: 6.99s
220:	learn: 6.6743891	total: 1.98s	remaining: 6.98s
221:	learn: 6.6707120	total: 1.99s	remaining: 6.97s
222:	learn: 6.6636835	total: 2s	remaining: 6.97s
223:	learn: 6.6519642	total: 2.01s	remaining: 6.96s
224:	learn: 6.6453439	total: 2.02s	remaining: 6.96s
225:	learn: 6.6408832	total: 2.03s	remaining: 6.95s
226:	learn: 6.6359083	total: 2.04s	remaining: 6.95s
227:	learn: 6.6281236	total: 2.05s	remaining: 6.94s
228:	learn: 6.6249500	total: 2.06s	remaining: 6.93s
229:	learn: 6.6202096	total: 2.07s	remaining: 6.93s
230:	learn: 6.6185068	total: 2.08s	remaining: 6.91s
231:	learn: 6.6137644	total: 2.09s	remaining: 6.91s
232:	learn: 6.6091304	total: 2.1s	remaining: 6.9s
233:	learn: 6.6047169	total: 2.13s	remaining: 6.96s
234:	learn: 6.5975501	total: 2.14s	remaining: 6.96s
235:	learn: 6.5862107	total: 2.15s	remaining: 6.95s
236:	learn: 6.5816523	total: 2.15s	remaining: 6.94s
237:	learn: 6.5744550	total: 2.16s	remaining: 6.93s
238:	learn: 6.5705067	total: 2.17s	remaining: 6.92s
239:	learn: 6.5638172	total: 2.18s	remaining: 6.91s
240:	learn: 6.5587704	total: 2.19s	remaining: 6.9s
241:	learn: 6.5545361	total: 2.2s	remaining: 6.89s
242:	learn: 6.5514721	total: 2.21s	remaining: 6.88s
243:	learn: 6.5452656	total: 2.22s	remaining: 6.88s
244:	learn: 6.5398287	total: 2.23s	remaining: 6.87s
245:	learn: 6.5359460	total: 2.24s	remaining: 6.86s
246:	learn: 6.5308810	total: 2.25s	remaining: 6.85s
247:	learn: 6.5232356	total: 2.26s	remaining: 6.84s
248:	learn: 6.5149862	total: 2.27s	remaining: 6.83s
249:	learn: 6.5111181	total: 2.27s	remaining: 6.83s
250:	learn: 6.5078742	total: 2.29s	remaining: 6.82s
251:	learn: 6.5036868	total: 2.29s	remaining: 6.81s
252:	learn: 6.4999796	total: 2.3s	remaining: 6.8s
253:	learn: 6.4939172	total: 2.31s	remaining: 6.8s
254:	learn: 6.4901412	total: 2.32s	remaining: 6.79s
255:	learn: 6.4865844	total: 2.33s	remaining: 6.78s
256:	learn: 6.4824497	total: 2.34s	remaining: 6.77s
257:	learn: 6.4792915	total: 2.35s	remaining: 6.76s
258:	learn: 6.4747566	total: 2.36s	remaining: 6.75s

259:	learn: 6.4698861	total: 2.37s	remaining: 6.75s
260:	learn: 6.4654494	total: 2.38s	remaining: 6.74s
261:	learn: 6.4625078	total: 2.39s	remaining: 6.72s
262:	learn: 6.4577064	total: 2.4s	remaining: 6.72s
263:	learn: 6.4510245	total: 2.41s	remaining: 6.71s
264:	learn: 6.4439479	total: 2.42s	remaining: 6.7s
265:	learn: 6.4362362	total: 2.42s	remaining: 6.69s
266:	learn: 6.4303712	total: 2.43s	remaining: 6.68s
267:	learn: 6.4258865	total: 2.44s	remaining: 6.67s
268:	learn: 6.4225821	total: 2.45s	remaining: 6.66s
269:	learn: 6.4179908	total: 2.46s	remaining: 6.65s
270:	learn: 6.4147542	total: 2.47s	remaining: 6.65s
271:	learn: 6.4098764	total: 2.48s	remaining: 6.64s
272:	learn: 6.4052007	total: 2.49s	remaining: 6.63s
273:	learn: 6.3992150	total: 2.5s	remaining: 6.63s
274:	learn: 6.3953655	total: 2.51s	remaining: 6.62s
275:	learn: 6.3906542	total: 2.52s	remaining: 6.61s
276:	learn: 6.3853208	total: 2.53s	remaining: 6.61s
277:	learn: 6.3793521	total: 2.54s	remaining: 6.6s
278:	learn: 6.3739179	total: 2.55s	remaining: 6.59s
279:	learn: 6.3690364	total: 2.56s	remaining: 6.59s
280:	learn: 6.3635874	total: 2.57s	remaining: 6.58s
281:	learn: 6.3586369	total: 2.58s	remaining: 6.57s
282:	learn: 6.3547495	total: 2.59s	remaining: 6.55s
283:	learn: 6.3504766	total: 2.6s	remaining: 6.54s
284:	learn: 6.3445678	total: 2.61s	remaining: 6.54s
285:	learn: 6.3409518	total: 2.62s	remaining: 6.53s
286:	learn: 6.3370111	total: 2.63s	remaining: 6.52s
287:	learn: 6.3330218	total: 2.63s	remaining: 6.51s
288:	learn: 6.3304369	total: 2.64s	remaining: 6.5s
289:	learn: 6.3234297	total: 2.65s	remaining: 6.49s
290:	learn: 6.3201248	total: 2.66s	remaining: 6.48s
291:	learn: 6.3169799	total: 2.67s	remaining: 6.47s
292:	learn: 6.3121380	total: 2.68s	remaining: 6.47s
293:	learn: 6.3079183	total: 2.69s	remaining: 6.46s
294:	learn: 6.3017258	total: 2.7s	remaining: 6.45s
295:	learn: 6.2964746	total: 2.73s	remaining: 6.49s
296:	learn: 6.2928124	total: 2.74s	remaining: 6.48s
297:	learn: 6.2864512	total: 2.74s	remaining: 6.47s
298:	learn: 6.2831411	total: 2.75s	remaining: 6.46s
299:	learn: 6.2785182	total: 2.76s	remaining: 6.45s
300:	learn: 6.2746399	total: 2.77s	remaining: 6.44s
301:	learn: 6.2699853	total: 2.78s	remaining: 6.43s
302:	learn: 6.2676946	total: 2.79s	remaining: 6.42s
303:	learn: 6.2634054	total: 2.8s	remaining: 6.41s
304:	learn: 6.2576706	total: 2.81s	remaining: 6.4s
305:	learn: 6.2534695	total: 2.82s	remaining: 6.39s
306:	learn: 6.2504670	total: 2.83s	remaining: 6.39s
307:	learn: 6.2458554	total: 2.84s	remaining: 6.37s
308:	learn: 6.2435184	total: 2.84s	remaining: 6.36s
309:	learn: 6.2394379	total: 2.85s	remaining: 6.35s
310:	learn: 6.2353630	total: 2.86s	remaining: 6.34s
311:	learn: 6.2323990	total: 2.87s	remaining: 6.33s
312:	learn: 6.2276169	total: 2.88s	remaining: 6.32s
313:	learn: 6.2246245	total: 2.89s	remaining: 6.32s
314:	learn: 6.2210405	total: 2.9s	remaining: 6.31s
315:	learn: 6.2153723	total: 2.91s	remaining: 6.3s
316:	learn: 6.2110640	total: 2.92s	remaining: 6.29s
317:	learn: 6.2068893	total: 2.93s	remaining: 6.29s
318:	learn: 6.2048473	total: 2.94s	remaining: 6.28s
319:	learn: 6.2016198	total: 2.95s	remaining: 6.27s
320:	learn: 6.1981181	total: 2.96s	remaining: 6.26s
321:	learn: 6.1957349	total: 2.97s	remaining: 6.25s
322:	learn: 6.1931366	total: 2.98s	remaining: 6.24s
323:	learn: 6.1894195	total: 2.99s	remaining: 6.23s
324:	learn: 6.1851775	total: 3s	remaining: 6.23s
325:	learn: 6.1821193	total: 3.01s	remaining: 6.22s
326:	learn: 6.1778852	total: 3.02s	remaining: 6.21s
327:	learn: 6.1740742	total: 3.03s	remaining: 6.2s
328:	learn: 6.1716109	total: 3.04s	remaining: 6.19s
329:	learn: 6.1656804	total: 3.04s	remaining: 6.18s
330:	learn: 6.1616226	total: 3.05s	remaining: 6.17s

331:	learn: 6.1594336	total: 3.06s	remaining: 6.16s
332:	learn: 6.1549358	total: 3.07s	remaining: 6.15s
333:	learn: 6.1522141	total: 3.08s	remaining: 6.14s
334:	learn: 6.1442661	total: 3.09s	remaining: 6.13s
335:	learn: 6.1400422	total: 3.1s	remaining: 6.12s
336:	learn: 6.1363741	total: 3.11s	remaining: 6.11s
337:	learn: 6.1322296	total: 3.12s	remaining: 6.11s
338:	learn: 6.1287985	total: 3.13s	remaining: 6.11s
339:	learn: 6.1254641	total: 3.14s	remaining: 6.1s
340:	learn: 6.1227810	total: 3.15s	remaining: 6.1s
341:	learn: 6.1172584	total: 3.18s	remaining: 6.12s
342:	learn: 6.1127852	total: 3.19s	remaining: 6.12s
343:	learn: 6.1093395	total: 3.2s	remaining: 6.11s
344:	learn: 6.1051039	total: 3.21s	remaining: 6.1s
345:	learn: 6.1004194	total: 3.22s	remaining: 6.09s
346:	learn: 6.0977201	total: 3.23s	remaining: 6.08s
347:	learn: 6.0940956	total: 3.24s	remaining: 6.07s
348:	learn: 6.0910645	total: 3.25s	remaining: 6.07s
349:	learn: 6.0869350	total: 3.26s	remaining: 6.06s
350:	learn: 6.0814588	total: 3.27s	remaining: 6.05s
351:	learn: 6.0781035	total: 3.28s	remaining: 6.04s
352:	learn: 6.0733429	total: 3.29s	remaining: 6.04s
353:	learn: 6.0700850	total: 3.3s	remaining: 6.03s
354:	learn: 6.0645852	total: 3.31s	remaining: 6.02s
355:	learn: 6.0613314	total: 3.32s	remaining: 6.01s
356:	learn: 6.0566348	total: 3.33s	remaining: 6s
357:	learn: 6.0536264	total: 3.34s	remaining: 5.99s
358:	learn: 6.0496351	total: 3.36s	remaining: 5.99s
359:	learn: 6.0467199	total: 3.37s	remaining: 5.99s
360:	learn: 6.0443252	total: 3.38s	remaining: 5.97s
361:	learn: 6.0423969	total: 3.39s	remaining: 5.97s
362:	learn: 6.0395637	total: 3.4s	remaining: 5.96s
363:	learn: 6.0375314	total: 3.4s	remaining: 5.95s
364:	learn: 6.0336718	total: 3.41s	remaining: 5.94s
365:	learn: 6.0306626	total: 3.42s	remaining: 5.93s
366:	learn: 6.0268465	total: 3.43s	remaining: 5.92s
367:	learn: 6.0236085	total: 3.44s	remaining: 5.91s
368:	learn: 6.0202436	total: 3.45s	remaining: 5.91s
369:	learn: 6.0158588	total: 3.46s	remaining: 5.9s
370:	learn: 6.0134519	total: 3.47s	remaining: 5.89s
371:	learn: 6.0106148	total: 3.48s	remaining: 5.88s
372:	learn: 6.0080959	total: 3.49s	remaining: 5.87s
373:	learn: 6.0059006	total: 3.5s	remaining: 5.86s
374:	learn: 6.0029152	total: 3.51s	remaining: 5.85s
375:	learn: 5.9975730	total: 3.52s	remaining: 5.84s
376:	learn: 5.9928543	total: 3.53s	remaining: 5.83s
377:	learn: 5.9897908	total: 3.54s	remaining: 5.82s
378:	learn: 5.9851517	total: 3.55s	remaining: 5.81s
379:	learn: 5.9819896	total: 3.56s	remaining: 5.81s
380:	learn: 5.9794811	total: 3.57s	remaining: 5.8s
381:	learn: 5.9778212	total: 3.58s	remaining: 5.79s
382:	learn: 5.9710947	total: 3.59s	remaining: 5.78s
383:	learn: 5.9671735	total: 3.6s	remaining: 5.77s
384:	learn: 5.9647994	total: 3.61s	remaining: 5.76s
385:	learn: 5.9614948	total: 3.62s	remaining: 5.75s
386:	learn: 5.9587345	total: 3.63s	remaining: 5.74s
387:	learn: 5.9554969	total: 3.63s	remaining: 5.73s
388:	learn: 5.9521434	total: 3.64s	remaining: 5.72s
389:	learn: 5.9482652	total: 3.65s	remaining: 5.71s
390:	learn: 5.9462179	total: 3.66s	remaining: 5.7s
391:	learn: 5.9444644	total: 3.67s	remaining: 5.69s
392:	learn: 5.9424174	total: 3.68s	remaining: 5.68s
393:	learn: 5.9396250	total: 3.69s	remaining: 5.67s
394:	learn: 5.9364335	total: 3.7s	remaining: 5.66s
395:	learn: 5.9340808	total: 3.71s	remaining: 5.65s
396:	learn: 5.9311779	total: 3.72s	remaining: 5.65s
397:	learn: 5.9292105	total: 3.73s	remaining: 5.63s
398:	learn: 5.9272690	total: 3.73s	remaining: 5.63s
399:	learn: 5.9252922	total: 3.75s	remaining: 5.62s
400:	learn: 5.9229642	total: 3.75s	remaining: 5.61s
401:	learn: 5.9208791	total: 3.77s	remaining: 5.6s

402:	learn: 5.9179594	total: 3.78s	remaining: 5.6s
403:	learn: 5.9155016	total: 3.79s	remaining: 5.59s
404:	learn: 5.9130291	total: 3.8s	remaining: 5.58s
405:	learn: 5.9103136	total: 3.81s	remaining: 5.57s
406:	learn: 5.9070827	total: 3.81s	remaining: 5.56s
407:	learn: 5.9042880	total: 3.82s	remaining: 5.55s
408:	learn: 5.9011850	total: 3.83s	remaining: 5.54s
409:	learn: 5.8979708	total: 3.84s	remaining: 5.53s
410:	learn: 5.8941754	total: 3.85s	remaining: 5.52s
411:	learn: 5.8910196	total: 3.86s	remaining: 5.51s
412:	learn: 5.8885293	total: 3.87s	remaining: 5.5s
413:	learn: 5.8842964	total: 3.88s	remaining: 5.49s
414:	learn: 5.8827024	total: 3.89s	remaining: 5.48s
415:	learn: 5.8786139	total: 3.9s	remaining: 5.47s
416:	learn: 5.8765124	total: 3.9s	remaining: 5.46s
417:	learn: 5.8737982	total: 3.91s	remaining: 5.45s
418:	learn: 5.8720667	total: 3.92s	remaining: 5.44s
419:	learn: 5.8705867	total: 3.93s	remaining: 5.43s
420:	learn: 5.8650537	total: 3.94s	remaining: 5.42s
421:	learn: 5.8632817	total: 3.95s	remaining: 5.41s
422:	learn: 5.8595882	total: 3.96s	remaining: 5.4s
423:	learn: 5.8569815	total: 3.97s	remaining: 5.39s
424:	learn: 5.8543235	total: 3.98s	remaining: 5.39s
425:	learn: 5.8510711	total: 3.99s	remaining: 5.38s
426:	learn: 5.8479788	total: 4s	remaining: 5.37s
427:	learn: 5.8442791	total: 4.01s	remaining: 5.36s
428:	learn: 5.8389693	total: 4.02s	remaining: 5.35s
429:	learn: 5.8343129	total: 4.03s	remaining: 5.34s
430:	learn: 5.8316576	total: 4.04s	remaining: 5.33s
431:	learn: 5.8293370	total: 4.05s	remaining: 5.32s
432:	learn: 5.8248617	total: 4.06s	remaining: 5.31s
433:	learn: 5.8215420	total: 4.07s	remaining: 5.3s
434:	learn: 5.8195809	total: 4.08s	remaining: 5.29s
435:	learn: 5.8163000	total: 4.08s	remaining: 5.29s
436:	learn: 5.8131723	total: 4.09s	remaining: 5.27s
437:	learn: 5.8090458	total: 4.1s	remaining: 5.26s
438:	learn: 5.8060447	total: 4.11s	remaining: 5.25s
439:	learn: 5.8026085	total: 4.12s	remaining: 5.25s
440:	learn: 5.7993471	total: 4.13s	remaining: 5.24s
441:	learn: 5.7965354	total: 4.14s	remaining: 5.23s
442:	learn: 5.7943272	total: 4.15s	remaining: 5.22s
443:	learn: 5.7918273	total: 4.16s	remaining: 5.21s
444:	learn: 5.7896312	total: 4.17s	remaining: 5.2s
445:	learn: 5.7869368	total: 4.18s	remaining: 5.2s
446:	learn: 5.7841329	total: 4.19s	remaining: 5.19s
447:	learn: 5.7816784	total: 4.2s	remaining: 5.18s
448:	learn: 5.7780745	total: 4.21s	remaining: 5.17s
449:	learn: 5.7751868	total: 4.22s	remaining: 5.16s
450:	learn: 5.7722130	total: 4.23s	remaining: 5.15s
451:	learn: 5.7705391	total: 4.24s	remaining: 5.14s
452:	learn: 5.7685800	total: 4.25s	remaining: 5.13s
453:	learn: 5.7659745	total: 4.26s	remaining: 5.13s
454:	learn: 5.7636880	total: 4.27s	remaining: 5.12s
455:	learn: 5.7620703	total: 4.28s	remaining: 5.11s
456:	learn: 5.7607254	total: 4.29s	remaining: 5.1s
457:	learn: 5.7584995	total: 4.3s	remaining: 5.09s
458:	learn: 5.7559123	total: 4.31s	remaining: 5.08s
459:	learn: 5.7531594	total: 4.32s	remaining: 5.07s
460:	learn: 5.7515031	total: 4.33s	remaining: 5.06s
461:	learn: 5.7482716	total: 4.34s	remaining: 5.05s
462:	learn: 5.7465097	total: 4.35s	remaining: 5.04s
463:	learn: 5.7440059	total: 4.36s	remaining: 5.03s
464:	learn: 5.7399365	total: 4.37s	remaining: 5.02s
465:	learn: 5.7381009	total: 4.38s	remaining: 5.02s
466:	learn: 5.7362611	total: 4.39s	remaining: 5.01s
467:	learn: 5.7342540	total: 4.4s	remaining: 5s
468:	learn: 5.7307264	total: 4.41s	remaining: 4.99s
469:	learn: 5.7262846	total: 4.42s	remaining: 4.98s
470:	learn: 5.7232456	total: 4.43s	remaining: 4.97s
471:	learn: 5.7211182	total: 4.44s	remaining: 4.96s
472:	learn: 5.7191259	total: 4.45s	remaining: 4.96s
473:	learn: 5.7162197	total: 4.46s	remaining: 4.95s

474:	learn: 5.7143482	total: 4.47s	remaining: 4.94s
475:	learn: 5.7129787	total: 4.48s	remaining: 4.93s
476:	learn: 5.7115878	total: 4.49s	remaining: 4.92s
477:	learn: 5.7095433	total: 4.5s	remaining: 4.91s
478:	learn: 5.7087273	total: 4.5s	remaining: 4.89s
479:	learn: 5.7061159	total: 4.51s	remaining: 4.89s
480:	learn: 5.7036998	total: 4.52s	remaining: 4.88s
481:	learn: 5.7016919	total: 4.53s	remaining: 4.87s
482:	learn: 5.6993388	total: 4.54s	remaining: 4.86s
483:	learn: 5.6969504	total: 4.55s	remaining: 4.85s
484:	learn: 5.6950115	total: 4.56s	remaining: 4.84s
485:	learn: 5.6929658	total: 4.57s	remaining: 4.83s
486:	learn: 5.6904542	total: 4.58s	remaining: 4.82s
487:	learn: 5.6878401	total: 4.58s	remaining: 4.81s
488:	learn: 5.6851105	total: 4.59s	remaining: 4.8s
489:	learn: 5.6817573	total: 4.61s	remaining: 4.79s
490:	learn: 5.6788315	total: 4.62s	remaining: 4.79s
491:	learn: 5.6769040	total: 4.63s	remaining: 4.78s
492:	learn: 5.6737116	total: 4.64s	remaining: 4.77s
493:	learn: 5.6716765	total: 4.65s	remaining: 4.76s
494:	learn: 5.6690691	total: 4.66s	remaining: 4.75s
495:	learn: 5.6678210	total: 4.67s	remaining: 4.74s
496:	learn: 5.6663076	total: 4.68s	remaining: 4.74s
497:	learn: 5.6620550	total: 4.69s	remaining: 4.72s
498:	learn: 5.6606977	total: 4.7s	remaining: 4.72s
499:	learn: 5.6587965	total: 4.71s	remaining: 4.71s
500:	learn: 5.6573027	total: 4.71s	remaining: 4.7s
501:	learn: 5.6548535	total: 4.72s	remaining: 4.69s
502:	learn: 5.6528215	total: 4.73s	remaining: 4.68s
503:	learn: 5.6512880	total: 4.74s	remaining: 4.67s
504:	learn: 5.6490388	total: 4.75s	remaining: 4.66s
505:	learn: 5.6468595	total: 4.76s	remaining: 4.65s
506:	learn: 5.6449003	total: 4.77s	remaining: 4.64s
507:	learn: 5.6435706	total: 4.78s	remaining: 4.63s
508:	learn: 5.6414339	total: 4.79s	remaining: 4.62s
509:	learn: 5.6395802	total: 4.8s	remaining: 4.61s
510:	learn: 5.6359001	total: 4.81s	remaining: 4.6s
511:	learn: 5.6335163	total: 4.82s	remaining: 4.59s
512:	learn: 5.6302607	total: 4.83s	remaining: 4.58s
513:	learn: 5.6285998	total: 4.84s	remaining: 4.58s
514:	learn: 5.6267226	total: 4.85s	remaining: 4.57s
515:	learn: 5.6246845	total: 4.86s	remaining: 4.56s
516:	learn: 5.6216156	total: 4.87s	remaining: 4.55s
517:	learn: 5.6178415	total: 4.88s	remaining: 4.54s
518:	learn: 5.6155568	total: 4.89s	remaining: 4.53s
519:	learn: 5.6136289	total: 4.9s	remaining: 4.52s
520:	learn: 5.6022632	total: 4.91s	remaining: 4.51s
521:	learn: 5.6011807	total: 4.91s	remaining: 4.5s
522:	learn: 5.5992432	total: 4.92s	remaining: 4.49s
523:	learn: 5.5971035	total: 4.93s	remaining: 4.48s
524:	learn: 5.5949950	total: 4.94s	remaining: 4.47s
525:	learn: 5.5923134	total: 4.95s	remaining: 4.46s
526:	learn: 5.5908550	total: 4.96s	remaining: 4.45s
527:	learn: 5.5845203	total: 4.97s	remaining: 4.44s
528:	learn: 5.5828866	total: 4.98s	remaining: 4.43s
529:	learn: 5.5794071	total: 4.99s	remaining: 4.42s
530:	learn: 5.5773297	total: 5s	remaining: 4.41s
531:	learn: 5.5761924	total: 5.01s	remaining: 4.41s
532:	learn: 5.5739519	total: 5.02s	remaining: 4.39s
533:	learn: 5.5722527	total: 5.03s	remaining: 4.38s
534:	learn: 5.5704708	total: 5.04s	remaining: 4.38s
535:	learn: 5.5685707	total: 5.05s	remaining: 4.37s
536:	learn: 5.5669451	total: 5.06s	remaining: 4.36s
537:	learn: 5.5655965	total: 5.07s	remaining: 4.35s
538:	learn: 5.5630449	total: 5.08s	remaining: 4.34s
539:	learn: 5.5601564	total: 5.09s	remaining: 4.33s
540:	learn: 5.5588122	total: 5.1s	remaining: 4.33s
541:	learn: 5.5559897	total: 5.11s	remaining: 4.32s
542:	learn: 5.5543249	total: 5.12s	remaining: 4.31s
543:	learn: 5.5514752	total: 5.13s	remaining: 4.3s

544:	learn: 5.5487775	total: 5.14s	remaining: 4.29s
545:	learn: 5.5460270	total: 5.15s	remaining: 4.28s
546:	learn: 5.5437549	total: 5.16s	remaining: 4.27s
547:	learn: 5.5405039	total: 5.17s	remaining: 4.26s
548:	learn: 5.5388899	total: 5.18s	remaining: 4.26s
549:	learn: 5.5369336	total: 5.19s	remaining: 4.25s
550:	learn: 5.5349885	total: 5.21s	remaining: 4.24s
551:	learn: 5.5332687	total: 5.22s	remaining: 4.23s
552:	learn: 5.5268162	total: 5.23s	remaining: 4.22s
553:	learn: 5.5251165	total: 5.24s	remaining: 4.22s
554:	learn: 5.5236306	total: 5.25s	remaining: 4.21s
555:	learn: 5.5217690	total: 5.26s	remaining: 4.2s
556:	learn: 5.5188975	total: 5.27s	remaining: 4.19s
557:	learn: 5.5161579	total: 5.28s	remaining: 4.18s
558:	learn: 5.5099766	total: 5.29s	remaining: 4.17s
559:	learn: 5.5082242	total: 5.3s	remaining: 4.17s
560:	learn: 5.5051957	total: 5.31s	remaining: 4.16s
561:	learn: 5.5028399	total: 5.32s	remaining: 4.15s
562:	learn: 5.5015704	total: 5.33s	remaining: 4.14s
563:	learn: 5.4993096	total: 5.34s	remaining: 4.13s
564:	learn: 5.4978066	total: 5.35s	remaining: 4.12s
565:	learn: 5.4960312	total: 5.36s	remaining: 4.11s
566:	learn: 5.4915672	total: 5.37s	remaining: 4.1s
567:	learn: 5.4894913	total: 5.38s	remaining: 4.09s
568:	learn: 5.4878203	total: 5.39s	remaining: 4.08s
569:	learn: 5.4815786	total: 5.4s	remaining: 4.07s
570:	learn: 5.4803571	total: 5.41s	remaining: 4.06s
571:	learn: 5.4792044	total: 5.42s	remaining: 4.06s
572:	learn: 5.4776067	total: 5.43s	remaining: 4.05s
573:	learn: 5.4758823	total: 5.44s	remaining: 4.04s
574:	learn: 5.4737567	total: 5.45s	remaining: 4.03s
575:	learn: 5.4708665	total: 5.46s	remaining: 4.02s
576:	learn: 5.4684888	total: 5.47s	remaining: 4.01s
577:	learn: 5.4663671	total: 5.48s	remaining: 4s
578:	learn: 5.4609434	total: 5.5s	remaining: 4s
579:	learn: 5.4581287	total: 5.5s	remaining: 3.98s
580:	learn: 5.4560736	total: 5.51s	remaining: 3.98s
581:	learn: 5.4542490	total: 5.52s	remaining: 3.97s
582:	learn: 5.4531779	total: 5.53s	remaining: 3.96s
583:	learn: 5.4505209	total: 5.54s	remaining: 3.95s
584:	learn: 5.4480641	total: 5.55s	remaining: 3.94s
585:	learn: 5.4460651	total: 5.56s	remaining: 3.93s
586:	learn: 5.4438906	total: 5.57s	remaining: 3.92s
587:	learn: 5.4408527	total: 5.58s	remaining: 3.91s
588:	learn: 5.4393772	total: 5.59s	remaining: 3.9s
589:	learn: 5.4377426	total: 5.6s	remaining: 3.89s
590:	learn: 5.4350523	total: 5.61s	remaining: 3.88s
591:	learn: 5.4344452	total: 5.62s	remaining: 3.87s
592:	learn: 5.4318347	total: 5.63s	remaining: 3.86s
593:	learn: 5.4291282	total: 5.64s	remaining: 3.85s
594:	learn: 5.4273402	total: 5.64s	remaining: 3.84s
595:	learn: 5.4251430	total: 5.65s	remaining: 3.83s
596:	learn: 5.4233373	total: 5.66s	remaining: 3.82s
597:	learn: 5.4215466	total: 5.67s	remaining: 3.81s
598:	learn: 5.4196795	total: 5.69s	remaining: 3.81s
599:	learn: 5.4179832	total: 5.7s	remaining: 3.8s
600:	learn: 5.4158254	total: 5.71s	remaining: 3.79s
601:	learn: 5.4139988	total: 5.72s	remaining: 3.78s
602:	learn: 5.4071937	total: 5.73s	remaining: 3.77s
603:	learn: 5.4058205	total: 5.74s	remaining: 3.76s
604:	learn: 5.4033354	total: 5.75s	remaining: 3.75s
605:	learn: 5.4004737	total: 5.75s	remaining: 3.74s
606:	learn: 5.3984109	total: 5.76s	remaining: 3.73s
607:	learn: 5.3971891	total: 5.77s	remaining: 3.72s
608:	learn: 5.3963324	total: 5.78s	remaining: 3.71s
609:	learn: 5.3947971	total: 5.79s	remaining: 3.7s
610:	learn: 5.3935859	total: 5.8s	remaining: 3.69s
611:	learn: 5.3915568	total: 5.81s	remaining: 3.68s
612:	learn: 5.3899952	total: 5.82s	remaining: 3.67s
613:	learn: 5.3883646	total: 5.83s	remaining: 3.66s
614:	learn: 5.3862665	total: 5.84s	remaining: 3.65s
615:	learn: 5.3849957	total: 5.84s	remaining: 3.64s

616:	learn: 5.3829893	total: 5.86s	remaining: 3.63s
617:	learn: 5.3807805	total: 5.87s	remaining: 3.63s
618:	learn: 5.3773182	total: 5.87s	remaining: 3.62s
619:	learn: 5.3755893	total: 5.89s	remaining: 3.61s
620:	learn: 5.3746865	total: 5.9s	remaining: 3.6s
621:	learn: 5.3735035	total: 5.91s	remaining: 3.59s
622:	learn: 5.3685769	total: 5.92s	remaining: 3.58s
623:	learn: 5.3673467	total: 5.92s	remaining: 3.57s
624:	learn: 5.3653230	total: 5.93s	remaining: 3.56s
625:	learn: 5.3636589	total: 5.94s	remaining: 3.55s
626:	learn: 5.3603618	total: 5.95s	remaining: 3.54s
627:	learn: 5.3590541	total: 5.96s	remaining: 3.53s
628:	learn: 5.3566509	total: 5.97s	remaining: 3.52s
629:	learn: 5.3536284	total: 5.98s	remaining: 3.51s
630:	learn: 5.3500348	total: 5.99s	remaining: 3.5s
631:	learn: 5.3481590	total: 6s	remaining: 3.49s
632:	learn: 5.3467087	total: 6.01s	remaining: 3.48s
633:	learn: 5.3450433	total: 6.02s	remaining: 3.47s
634:	learn: 5.3436232	total: 6.03s	remaining: 3.46s
635:	learn: 5.3431023	total: 6.03s	remaining: 3.45s
636:	learn: 5.3412401	total: 6.04s	remaining: 3.44s
637:	learn: 5.3395750	total: 6.05s	remaining: 3.43s
638:	learn: 5.3376339	total: 6.06s	remaining: 3.42s
639:	learn: 5.3358317	total: 6.07s	remaining: 3.41s
640:	learn: 5.3333001	total: 6.08s	remaining: 3.4s
641:	learn: 5.3315296	total: 6.09s	remaining: 3.4s
642:	learn: 5.3299647	total: 6.1s	remaining: 3.39s
643:	learn: 5.3279214	total: 6.11s	remaining: 3.38s
644:	learn: 5.3270090	total: 6.12s	remaining: 3.37s
645:	learn: 5.3231815	total: 6.13s	remaining: 3.36s
646:	learn: 5.3188930	total: 6.14s	remaining: 3.35s
647:	learn: 5.3172858	total: 6.15s	remaining: 3.34s
648:	learn: 5.3158538	total: 6.16s	remaining: 3.33s
649:	learn: 5.3123811	total: 6.17s	remaining: 3.32s
650:	learn: 5.3106267	total: 6.18s	remaining: 3.31s
651:	learn: 5.3089374	total: 6.19s	remaining: 3.3s
652:	learn: 5.3061555	total: 6.2s	remaining: 3.29s
653:	learn: 5.3039679	total: 6.21s	remaining: 3.29s
654:	learn: 5.3025530	total: 6.22s	remaining: 3.27s
655:	learn: 5.3015802	total: 6.23s	remaining: 3.27s
656:	learn: 5.3004381	total: 6.24s	remaining: 3.25s
657:	learn: 5.2986555	total: 6.25s	remaining: 3.25s
658:	learn: 5.2969947	total: 6.26s	remaining: 3.24s
659:	learn: 5.2952543	total: 6.26s	remaining: 3.23s
660:	learn: 5.2945641	total: 6.27s	remaining: 3.22s
661:	learn: 5.2936018	total: 6.28s	remaining: 3.21s
662:	learn: 5.2920183	total: 6.29s	remaining: 3.2s
663:	learn: 5.2894139	total: 6.3s	remaining: 3.19s
664:	learn: 5.2865401	total: 6.32s	remaining: 3.18s
665:	learn: 5.2848932	total: 6.33s	remaining: 3.17s
666:	learn: 5.2839001	total: 6.34s	remaining: 3.16s
667:	learn: 5.2826945	total: 6.35s	remaining: 3.15s
668:	learn: 5.2810560	total: 6.36s	remaining: 3.14s
669:	learn: 5.2792056	total: 6.36s	remaining: 3.13s
670:	learn: 5.2760535	total: 6.38s	remaining: 3.13s
671:	learn: 5.2746084	total: 6.38s	remaining: 3.12s
672:	learn: 5.2716574	total: 6.39s	remaining: 3.11s
673:	learn: 5.2693481	total: 6.41s	remaining: 3.1s
674:	learn: 5.2683420	total: 6.42s	remaining: 3.09s
675:	learn: 5.2671026	total: 6.43s	remaining: 3.08s
676:	learn: 5.2658596	total: 6.44s	remaining: 3.07s
677:	learn: 5.2641443	total: 6.45s	remaining: 3.06s
678:	learn: 5.2629117	total: 6.46s	remaining: 3.05s
679:	learn: 5.2615858	total: 6.47s	remaining: 3.04s
680:	learn: 5.2604076	total: 6.48s	remaining: 3.03s
681:	learn: 5.2590097	total: 6.49s	remaining: 3.02s
682:	learn: 5.2574657	total: 6.5s	remaining: 3.01s
683:	learn: 5.2561877	total: 6.51s	remaining: 3s
684:	learn: 5.2543941	total: 6.52s	remaining: 3s
685:	learn: 5.2521510	total: 6.53s	remaining: 2.99s
686:	learn: 5.2498481	total: 6.54s	remaining: 2.98s

687:	learn: 5.2474626	total: 6.55s	remaining: 2.97s
688:	learn: 5.2460155	total: 6.56s	remaining: 2.96s
689:	learn: 5.2447605	total: 6.57s	remaining: 2.95s
690:	learn: 5.2433206	total: 6.58s	remaining: 2.94s
691:	learn: 5.2409233	total: 6.58s	remaining: 2.93s
692:	learn: 5.2396507	total: 6.59s	remaining: 2.92s
693:	learn: 5.2349805	total: 6.6s	remaining: 2.91s
694:	learn: 5.2333781	total: 6.61s	remaining: 2.9s
695:	learn: 5.2319166	total: 6.62s	remaining: 2.89s
696:	learn: 5.2301736	total: 6.63s	remaining: 2.88s
697:	learn: 5.2285485	total: 6.64s	remaining: 2.87s
698:	learn: 5.2272641	total: 6.65s	remaining: 2.86s
699:	learn: 5.2250595	total: 6.66s	remaining: 2.85s
700:	learn: 5.2224972	total: 6.67s	remaining: 2.84s
701:	learn: 5.2211610	total: 6.68s	remaining: 2.83s
702:	learn: 5.2200482	total: 6.69s	remaining: 2.83s
703:	learn: 5.2185784	total: 6.7s	remaining: 2.82s
704:	learn: 5.2162587	total: 6.71s	remaining: 2.81s
705:	learn: 5.2148861	total: 6.72s	remaining: 2.8s
706:	learn: 5.2112860	total: 6.73s	remaining: 2.79s
707:	learn: 5.2101213	total: 6.74s	remaining: 2.78s
708:	learn: 5.2068498	total: 6.75s	remaining: 2.77s
709:	learn: 5.2044418	total: 6.76s	remaining: 2.76s
710:	learn: 5.2033101	total: 6.77s	remaining: 2.75s
711:	learn: 5.2009306	total: 6.78s	remaining: 2.74s
712:	learn: 5.1998838	total: 6.79s	remaining: 2.73s
713:	learn: 5.1982721	total: 6.8s	remaining: 2.72s
714:	learn: 5.1966848	total: 6.8s	remaining: 2.71s
715:	learn: 5.1935966	total: 6.81s	remaining: 2.7s
716:	learn: 5.1920361	total: 6.82s	remaining: 2.69s
717:	learn: 5.1907557	total: 6.83s	remaining: 2.68s
718:	learn: 5.1895370	total: 6.84s	remaining: 2.67s
719:	learn: 5.1882464	total: 6.85s	remaining: 2.67s
720:	learn: 5.1870450	total: 6.86s	remaining: 2.65s
721:	learn: 5.1848631	total: 6.87s	remaining: 2.65s
722:	learn: 5.1835345	total: 6.88s	remaining: 2.64s
723:	learn: 5.1819518	total: 6.89s	remaining: 2.63s
724:	learn: 5.1807253	total: 6.9s	remaining: 2.62s
725:	learn: 5.1790257	total: 6.91s	remaining: 2.61s
726:	learn: 5.1777063	total: 6.92s	remaining: 2.6s
727:	learn: 5.1765577	total: 6.93s	remaining: 2.59s
728:	learn: 5.1745302	total: 6.94s	remaining: 2.58s
729:	learn: 5.1729214	total: 6.95s	remaining: 2.57s
730:	learn: 5.1715709	total: 6.96s	remaining: 2.56s
731:	learn: 5.1699182	total: 6.97s	remaining: 2.55s
732:	learn: 5.1690596	total: 6.98s	remaining: 2.54s
733:	learn: 5.1679056	total: 6.99s	remaining: 2.53s
734:	learn: 5.1649182	total: 6.99s	remaining: 2.52s
735:	learn: 5.1632699	total: 7s	remaining: 2.51s
736:	learn: 5.1621629	total: 7.01s	remaining: 2.5s
737:	learn: 5.1609528	total: 7.02s	remaining: 2.49s
738:	learn: 5.1588875	total: 7.03s	remaining: 2.48s
739:	learn: 5.1580098	total: 7.04s	remaining: 2.47s
740:	learn: 5.1562012	total: 7.05s	remaining: 2.46s
741:	learn: 5.1549305	total: 7.06s	remaining: 2.45s
742:	learn: 5.1534669	total: 7.06s	remaining: 2.44s
743:	learn: 5.1527457	total: 7.08s	remaining: 2.43s
744:	learn: 5.1517645	total: 7.09s	remaining: 2.42s
745:	learn: 5.1504952	total: 7.09s	remaining: 2.42s
746:	learn: 5.1487687	total: 7.1s	remaining: 2.41s
747:	learn: 5.1475779	total: 7.11s	remaining: 2.4s
748:	learn: 5.1457326	total: 7.12s	remaining: 2.39s
749:	learn: 5.1444459	total: 7.13s	remaining: 2.38s
750:	learn: 5.1427977	total: 7.14s	remaining: 2.37s
751:	learn: 5.1416013	total: 7.15s	remaining: 2.36s
752:	learn: 5.1404572	total: 7.16s	remaining: 2.35s
753:	learn: 5.1386604	total: 7.17s	remaining: 2.34s
754:	learn: 5.1375607	total: 7.18s	remaining: 2.33s
755:	learn: 5.1364191	total: 7.19s	remaining: 2.32s
756:	learn: 5.1327377	total: 7.2s	remaining: 2.31s
757:	learn: 5.1298534	total: 7.21s	remaining: 2.3s
758:	learn: 5.1274364	total: 7.22s	remaining: 2.29s

759:	learn: 5.1251483	total: 7.23s	remaining: 2.28s
760:	learn: 5.1239978	total: 7.24s	remaining: 2.27s
761:	learn: 5.1224976	total: 7.25s	remaining: 2.26s
762:	learn: 5.1212725	total: 7.25s	remaining: 2.25s
763:	learn: 5.1202910	total: 7.26s	remaining: 2.24s
764:	learn: 5.1192571	total: 7.27s	remaining: 2.23s
765:	learn: 5.1177380	total: 7.28s	remaining: 2.23s
766:	learn: 5.1150871	total: 7.29s	remaining: 2.21s
767:	learn: 5.1137973	total: 7.31s	remaining: 2.21s
768:	learn: 5.1122722	total: 7.32s	remaining: 2.2s
769:	learn: 5.1108967	total: 7.33s	remaining: 2.19s
770:	learn: 5.1075830	total: 7.34s	remaining: 2.18s
771:	learn: 5.1065859	total: 7.35s	remaining: 2.17s
772:	learn: 5.1046845	total: 7.36s	remaining: 2.16s
773:	learn: 5.1032696	total: 7.37s	remaining: 2.15s
774:	learn: 5.1018303	total: 7.38s	remaining: 2.14s
775:	learn: 5.1007523	total: 7.39s	remaining: 2.13s
776:	learn: 5.0994135	total: 7.4s	remaining: 2.12s
777:	learn: 5.0980334	total: 7.41s	remaining: 2.11s
778:	learn: 5.0973318	total: 7.41s	remaining: 2.1s
779:	learn: 5.0964841	total: 7.42s	remaining: 2.09s
780:	learn: 5.0951787	total: 7.43s	remaining: 2.08s
781:	learn: 5.0934928	total: 7.44s	remaining: 2.07s
782:	learn: 5.0916957	total: 7.45s	remaining: 2.06s
783:	learn: 5.0907214	total: 7.46s	remaining: 2.05s
784:	learn: 5.0886646	total: 7.47s	remaining: 2.04s
785:	learn: 5.0874501	total: 7.47s	remaining: 2.04s
786:	learn: 5.0858896	total: 7.48s	remaining: 2.02s
787:	learn: 5.0831849	total: 7.49s	remaining: 2.02s
788:	learn: 5.0819070	total: 7.5s	remaining: 2.01s
789:	learn: 5.0808702	total: 7.51s	remaining: 2s
790:	learn: 5.0797209	total: 7.52s	remaining: 1.99s
791:	learn: 5.0787456	total: 7.53s	remaining: 1.98s
792:	learn: 5.0773759	total: 7.54s	remaining: 1.97s
793:	learn: 5.0756678	total: 7.55s	remaining: 1.96s
794:	learn: 5.0729589	total: 7.56s	remaining: 1.95s
795:	learn: 5.0714306	total: 7.57s	remaining: 1.94s
796:	learn: 5.0695657	total: 7.58s	remaining: 1.93s
797:	learn: 5.0685298	total: 7.59s	remaining: 1.92s
798:	learn: 5.0675165	total: 7.6s	remaining: 1.91s
799:	learn: 5.0644786	total: 7.61s	remaining: 1.9s
800:	learn: 5.0624328	total: 7.62s	remaining: 1.89s
801:	learn: 5.0602517	total: 7.63s	remaining: 1.88s
802:	learn: 5.0588396	total: 7.64s	remaining: 1.87s
803:	learn: 5.0568267	total: 7.64s	remaining: 1.86s
804:	learn: 5.0546931	total: 7.65s	remaining: 1.85s
805:	learn: 5.0537817	total: 7.66s	remaining: 1.84s
806:	learn: 5.0525640	total: 7.67s	remaining: 1.83s
807:	learn: 5.0499680	total: 7.68s	remaining: 1.82s
808:	learn: 5.0486877	total: 7.7s	remaining: 1.82s
809:	learn: 5.0471973	total: 7.71s	remaining: 1.81s
810:	learn: 5.0465909	total: 7.72s	remaining: 1.8s
811:	learn: 5.0457310	total: 7.73s	remaining: 1.79s
812:	learn: 5.0434260	total: 7.74s	remaining: 1.78s
813:	learn: 5.0423360	total: 7.75s	remaining: 1.77s
814:	learn: 5.0410710	total: 7.76s	remaining: 1.76s
815:	learn: 5.0386259	total: 7.77s	remaining: 1.75s
816:	learn: 5.0371963	total: 7.78s	remaining: 1.74s
817:	learn: 5.0360455	total: 7.79s	remaining: 1.73s
818:	learn: 5.0347963	total: 7.8s	remaining: 1.72s
819:	learn: 5.0317874	total: 7.81s	remaining: 1.71s
820:	learn: 5.0308415	total: 7.81s	remaining: 1.7s
821:	learn: 5.0284343	total: 7.83s	remaining: 1.69s
822:	learn: 5.0273590	total: 7.83s	remaining: 1.68s
823:	learn: 5.0266555	total: 7.84s	remaining: 1.68s
824:	learn: 5.0257305	total: 7.85s	remaining: 1.67s
825:	learn: 5.0243398	total: 7.86s	remaining: 1.66s
826:	learn: 5.0226165	total: 7.87s	remaining: 1.65s
827:	learn: 5.0197119	total: 7.88s	remaining: 1.64s
828:	learn: 5.0188106	total: 7.89s	remaining: 1.63s
829:	learn: 5.0178498	total: 7.89s	remaining: 1.62s
830:	learn: 5.0163043	total: 7.91s	remaining: 1.61s

831:	learn: 5.0147277	total: 7.91s	remaining: 1.6s
832:	learn: 5.0140598	total: 7.92s	remaining: 1.59s
833:	learn: 5.0130656	total: 7.93s	remaining: 1.58s
834:	learn: 5.0113911	total: 7.94s	remaining: 1.57s
835:	learn: 5.0088095	total: 7.96s	remaining: 1.56s
836:	learn: 5.0074431	total: 7.97s	remaining: 1.55s
837:	learn: 5.0060299	total: 7.97s	remaining: 1.54s
838:	learn: 5.0045043	total: 7.99s	remaining: 1.53s
839:	learn: 5.0033402	total: 7.99s	remaining: 1.52s
840:	learn: 5.0021645	total: 8s	remaining: 1.51s
841:	learn: 5.0016103	total: 8.01s	remaining: 1.5s
842:	learn: 4.9998790	total: 8.02s	remaining: 1.49s
843:	learn: 4.9965780	total: 8.03s	remaining: 1.48s
844:	learn: 4.9945234	total: 8.04s	remaining: 1.47s
845:	learn: 4.9927369	total: 8.05s	remaining: 1.47s
846:	learn: 4.9916688	total: 8.06s	remaining: 1.46s
847:	learn: 4.9900987	total: 8.07s	remaining: 1.45s
848:	learn: 4.9886627	total: 8.07s	remaining: 1.44s
849:	learn: 4.9878307	total: 8.08s	remaining: 1.43s
850:	learn: 4.9861523	total: 8.09s	remaining: 1.42s
851:	learn: 4.9850425	total: 8.1s	remaining: 1.41s
852:	learn: 4.9841904	total: 8.11s	remaining: 1.4s
853:	learn: 4.9833332	total: 8.12s	remaining: 1.39s
854:	learn: 4.9824780	total: 8.13s	remaining: 1.38s
855:	learn: 4.9814396	total: 8.14s	remaining: 1.37s
856:	learn: 4.9797476	total: 8.15s	remaining: 1.36s
857:	learn: 4.9783764	total: 8.16s	remaining: 1.35s
858:	learn: 4.9765417	total: 8.17s	remaining: 1.34s
859:	learn: 4.9758401	total: 8.18s	remaining: 1.33s
860:	learn: 4.9740589	total: 8.19s	remaining: 1.32s
861:	learn: 4.9729772	total: 8.2s	remaining: 1.31s
862:	learn: 4.9717019	total: 8.21s	remaining: 1.3s
863:	learn: 4.9700526	total: 8.21s	remaining: 1.29s
864:	learn: 4.9689162	total: 8.22s	remaining: 1.28s
865:	learn: 4.9677557	total: 8.23s	remaining: 1.27s
866:	learn: 4.9669148	total: 8.24s	remaining: 1.26s
867:	learn: 4.9638226	total: 8.25s	remaining: 1.25s
868:	learn: 4.9628315	total: 8.26s	remaining: 1.25s
869:	learn: 4.9612575	total: 8.27s	remaining: 1.24s
870:	learn: 4.9602451	total: 8.28s	remaining: 1.23s
871:	learn: 4.9592201	total: 8.29s	remaining: 1.22s
872:	learn: 4.9584774	total: 8.3s	remaining: 1.21s
873:	learn: 4.9578437	total: 8.31s	remaining: 1.2s
874:	learn: 4.9564721	total: 8.32s	remaining: 1.19s
875:	learn: 4.9556272	total: 8.33s	remaining: 1.18s
876:	learn: 4.9543309	total: 8.34s	remaining: 1.17s
877:	learn: 4.9529984	total: 8.35s	remaining: 1.16s
878:	learn: 4.9526536	total: 8.36s	remaining: 1.15s
879:	learn: 4.9507277	total: 8.37s	remaining: 1.14s
880:	learn: 4.9492715	total: 8.38s	remaining: 1.13s
881:	learn: 4.9483486	total: 8.39s	remaining: 1.12s
882:	learn: 4.9471703	total: 8.4s	remaining: 1.11s
883:	learn: 4.9463695	total: 8.41s	remaining: 1.1s
884:	learn: 4.9453751	total: 8.42s	remaining: 1.09s
885:	learn: 4.9447057	total: 8.43s	remaining: 1.08s
886:	learn: 4.9438469	total: 8.44s	remaining: 1.07s
887:	learn: 4.9424920	total: 8.45s	remaining: 1.07s
888:	learn: 4.9415273	total: 8.46s	remaining: 1.06s
889:	learn: 4.9397660	total: 8.47s	remaining: 1.05s
890:	learn: 4.9381452	total: 8.48s	remaining: 1.04s
891:	learn: 4.9368894	total: 8.49s	remaining: 1.03s
892:	learn: 4.9360691	total: 8.5s	remaining: 1.02s
893:	learn: 4.9350459	total: 8.51s	remaining: 1.01s
894:	learn: 4.9340920	total: 8.52s	remaining: 999ms
895:	learn: 4.9323474	total: 8.53s	remaining: 990ms
896:	learn: 4.9315624	total: 8.53s	remaining: 980ms
897:	learn: 4.9302343	total: 8.54s	remaining: 971ms
898:	learn: 4.9295393	total: 8.55s	remaining: 961ms
899:	learn: 4.9284766	total: 8.56s	remaining: 951ms
900:	learn: 4.9277565	total: 8.57s	remaining: 942ms

901:	learn: 4.9265300	total: 8.58s	remaining: 933ms
902:	learn: 4.9248970	total: 8.59s	remaining: 923ms
903:	learn: 4.9222075	total: 8.6s	remaining: 914ms
904:	learn: 4.9205061	total: 8.61s	remaining: 904ms
905:	learn: 4.9183680	total: 8.62s	remaining: 895ms
906:	learn: 4.9172249	total: 8.63s	remaining: 885ms
907:	learn: 4.9163650	total: 8.64s	remaining: 876ms
908:	learn: 4.9136606	total: 8.65s	remaining: 866ms
909:	learn: 4.9129772	total: 8.66s	remaining: 857ms
910:	learn: 4.9112610	total: 8.67s	remaining: 847ms
911:	learn: 4.9100744	total: 8.68s	remaining: 837ms
912:	learn: 4.9072987	total: 8.69s	remaining: 828ms
913:	learn: 4.9045985	total: 8.7s	remaining: 818ms
914:	learn: 4.9031809	total: 8.7s	remaining: 809ms
915:	learn: 4.9023173	total: 8.71s	remaining: 799ms
916:	learn: 4.9015886	total: 8.72s	remaining: 790ms
917:	learn: 4.8997481	total: 8.73s	remaining: 780ms
918:	learn: 4.8989935	total: 8.74s	remaining: 771ms
919:	learn: 4.8982149	total: 8.75s	remaining: 761ms
920:	learn: 4.8966282	total: 8.76s	remaining: 752ms
921:	learn: 4.8953558	total: 8.77s	remaining: 742ms
922:	learn: 4.8941570	total: 8.78s	remaining: 732ms
923:	learn: 4.8913361	total: 8.79s	remaining: 723ms
924:	learn: 4.8904036	total: 8.8s	remaining: 713ms
925:	learn: 4.8894367	total: 8.81s	remaining: 704ms
926:	learn: 4.8879869	total: 8.82s	remaining: 695ms
927:	learn: 4.8870990	total: 8.83s	remaining: 685ms
928:	learn: 4.8860584	total: 8.84s	remaining: 676ms
929:	learn: 4.8849399	total: 8.85s	remaining: 666ms
930:	learn: 4.8829270	total: 8.86s	remaining: 656ms
931:	learn: 4.8825887	total: 8.87s	remaining: 647ms
932:	learn: 4.8821144	total: 8.88s	remaining: 637ms
933:	learn: 4.8812907	total: 8.88s	remaining: 628ms
934:	learn: 4.8800814	total: 8.89s	remaining: 618ms
935:	learn: 4.8788244	total: 8.9s	remaining: 609ms
936:	learn: 4.8774372	total: 8.91s	remaining: 599ms
937:	learn: 4.8765941	total: 8.92s	remaining: 590ms
938:	learn: 4.8752280	total: 8.93s	remaining: 580ms
939:	learn: 4.8743435	total: 8.94s	remaining: 571ms
940:	learn: 4.8732148	total: 8.95s	remaining: 561ms
941:	learn: 4.8715897	total: 8.96s	remaining: 552ms
942:	learn: 4.8707753	total: 8.97s	remaining: 542ms
943:	learn: 4.8695410	total: 8.98s	remaining: 533ms
944:	learn: 4.8688682	total: 8.99s	remaining: 523ms
945:	learn: 4.8677158	total: 9s	remaining: 514ms
946:	learn: 4.8660407	total: 9.01s	remaining: 504ms
947:	learn: 4.8644357	total: 9.02s	remaining: 495ms
948:	learn: 4.8623768	total: 9.03s	remaining: 485ms
949:	learn: 4.8611826	total: 9.04s	remaining: 476ms
950:	learn: 4.8603045	total: 9.05s	remaining: 466ms
951:	learn: 4.8578218	total: 9.06s	remaining: 457ms
952:	learn: 4.8567718	total: 9.07s	remaining: 447ms
953:	learn: 4.8552762	total: 9.08s	remaining: 438ms
954:	learn: 4.8536493	total: 9.09s	remaining: 429ms
955:	learn: 4.8528466	total: 9.1s	remaining: 419ms
956:	learn: 4.8521627	total: 9.11s	remaining: 409ms
957:	learn: 4.8506609	total: 9.12s	remaining: 400ms
958:	learn: 4.8499393	total: 9.13s	remaining: 391ms
959:	learn: 4.8488338	total: 9.14s	remaining: 381ms
960:	learn: 4.8478399	total: 9.15s	remaining: 372ms
961:	learn: 4.8469482	total: 9.17s	remaining: 362ms
962:	learn: 4.8458689	total: 9.18s	remaining: 353ms
963:	learn: 4.8451919	total: 9.19s	remaining: 343ms
964:	learn: 4.8431018	total: 9.2s	remaining: 334ms
965:	learn: 4.8419121	total: 9.21s	remaining: 324ms
966:	learn: 4.8412526	total: 9.22s	remaining: 315ms
967:	learn: 4.8402206	total: 9.23s	remaining: 305ms
968:	learn: 4.8393706	total: 9.24s	remaining: 296ms
969:	learn: 4.8385984	total: 9.25s	remaining: 286ms
970:	learn: 4.8377258	total: 9.27s	remaining: 277ms
971:	learn: 4.8368435	total: 9.27s	remaining: 267ms
972:	learn: 4.8347268	total: 9.28s	remaining: 258ms

973:	learn: 4.8342636	total: 9.29s	remaining: 248ms
974:	learn: 4.8334778	total: 9.3s	remaining: 239ms
975:	learn: 4.8323432	total: 9.31s	remaining: 229ms
976:	learn: 4.8314267	total: 9.32s	remaining: 220ms
977:	learn: 4.8305205	total: 9.34s	remaining: 210ms
978:	learn: 4.8293782	total: 9.35s	remaining: 201ms
979:	learn: 4.8283523	total: 9.36s	remaining: 191ms
980:	learn: 4.8273381	total: 9.37s	remaining: 181ms
981:	learn: 4.8267492	total: 9.38s	remaining: 172ms
982:	learn: 4.8256095	total: 9.39s	remaining: 162ms
983:	learn: 4.8235105	total: 9.4s	remaining: 153ms
984:	learn: 4.8217468	total: 9.42s	remaining: 143ms
985:	learn: 4.8212005	total: 9.43s	remaining: 134ms
986:	learn: 4.8201669	total: 9.44s	remaining: 124ms
987:	learn: 4.8175301	total: 9.45s	remaining: 115ms
988:	learn: 4.8161825	total: 9.46s	remaining: 105ms
989:	learn: 4.8151794	total: 9.46s	remaining: 95.6ms
990:	learn: 4.8132404	total: 9.47s	remaining: 86.1ms
991:	learn: 4.8126403	total: 9.48s	remaining: 76.5ms
992:	learn: 4.8118854	total: 9.49s	remaining: 66.9ms
993:	learn: 4.8110014	total: 9.5s	remaining: 57.4ms
994:	learn: 4.8097502	total: 9.51s	remaining: 47.8ms
995:	learn: 4.8084426	total: 9.52s	remaining: 38.2ms
996:	learn: 4.8070573	total: 9.53s	remaining: 28.7ms
997:	learn: 4.8064431	total: 9.54s	remaining: 19.1ms
998:	learn: 4.8059454	total: 9.55s	remaining: 9.56ms
999:	learn: 4.8052169	total: 9.56s	remaining: 0us

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
 warnings.warn(

Learning rate set to 0.07344

0:	learn: 11.9400945	total: 16.5ms	remaining: 16.5s
1:	learn: 11.7172611	total: 22.6ms	remaining: 11.3s
2:	learn: 11.5410955	total: 28.2ms	remaining: 9.37s
3:	learn: 11.3597687	total: 34.2ms	remaining: 8.51s
4:	learn: 11.2033291	total: 42.3ms	remaining: 8.42s
5:	learn: 11.0599356	total: 49.6ms	remaining: 8.22s
6:	learn: 10.9350781	total: 54.8ms	remaining: 7.77s
7:	learn: 10.8069759	total: 61.4ms	remaining: 7.62s
8:	learn: 10.7002739	total: 66.6ms	remaining: 7.33s
9:	learn: 10.6016663	total: 76ms	remaining: 7.53s
10:	learn: 10.5097231	total: 81.8ms	remaining: 7.35s
11:	learn: 10.4365373	total: 87.1ms	remaining: 7.17s
12:	learn: 10.3571257	total: 93.5ms	remaining: 7.1s
13:	learn: 10.2795547	total: 100ms	remaining: 7.06s
14:	learn: 10.2197346	total: 107ms	remaining: 7.04s
15:	learn: 10.1451032	total: 113ms	remaining: 6.92s
16:	learn: 10.0830567	total: 119ms	remaining: 6.87s
17:	learn: 10.0234635	total: 124ms	remaining: 6.78s
18:	learn: 9.9687644	total: 130ms	remaining: 6.71s
19:	learn: 9.9190767	total: 138ms	remaining: 6.76s
20:	learn: 9.8756403	total: 144ms	remaining: 6.7s
21:	learn: 9.8277008	total: 151ms	remaining: 6.72s
22:	learn: 9.7741069	total: 157ms	remaining: 6.65s
23:	learn: 9.7262777	total: 167ms	remaining: 6.79s
24:	learn: 9.6831983	total: 176ms	remaining: 6.86s
25:	learn: 9.6416089	total: 184ms	remaining: 6.88s
26:	learn: 9.6011197	total: 190ms	remaining: 6.84s
27:	learn: 9.5664397	total: 198ms	remaining: 6.87s
28:	learn: 9.5389863	total: 208ms	remaining: 6.95s
29:	learn: 9.5102505	total: 215ms	remaining: 6.94s
30:	learn: 9.4821108	total: 220ms	remaining: 6.88s
31:	learn: 9.4597753	total: 227ms	remaining: 6.86s
32:	learn: 9.4337688	total: 233ms	remaining: 6.82s
33:	learn: 9.4038891	total: 240ms	remaining: 6.82s
34:	learn: 9.3775114	total: 247ms	remaining: 6.8s
35:	learn: 9.3271583	total: 253ms	remaining: 6.77s
36:	learn: 9.3004152	total: 258ms	remaining: 6.71s

37:	learn: 9.2721601	total: 264ms	remaining: 6.68s
38:	learn: 9.2391247	total: 272ms	remaining: 6.71s
39:	learn: 9.2136664	total: 278ms	remaining: 6.68s
40:	learn: 9.1778168	total: 285ms	remaining: 6.67s
41:	learn: 9.1499216	total: 291ms	remaining: 6.64s
42:	learn: 9.1317923	total: 296ms	remaining: 6.59s
43:	learn: 9.1047651	total: 305ms	remaining: 6.63s
44:	learn: 9.0759754	total: 312ms	remaining: 6.61s
45:	learn: 9.0537081	total: 318ms	remaining: 6.59s
46:	learn: 9.0383688	total: 324ms	remaining: 6.57s
47:	learn: 9.0223350	total: 330ms	remaining: 6.55s
48:	learn: 8.9976972	total: 339ms	remaining: 6.58s
49:	learn: 8.9809401	total: 345ms	remaining: 6.55s
50:	learn: 8.9583517	total: 351ms	remaining: 6.54s
51:	learn: 8.9375766	total: 357ms	remaining: 6.51s
52:	learn: 8.9255626	total: 364ms	remaining: 6.51s
53:	learn: 8.9051173	total: 373ms	remaining: 6.54s
54:	learn: 8.8860633	total: 379ms	remaining: 6.52s
55:	learn: 8.8723673	total: 385ms	remaining: 6.49s
56:	learn: 8.8605748	total: 391ms	remaining: 6.47s
57:	learn: 8.8372162	total: 399ms	remaining: 6.48s
58:	learn: 8.8263200	total: 407ms	remaining: 6.49s
59:	learn: 8.8074463	total: 413ms	remaining: 6.47s
60:	learn: 8.7903794	total: 420ms	remaining: 6.47s
61:	learn: 8.7682167	total: 426ms	remaining: 6.45s
62:	learn: 8.7579336	total: 434ms	remaining: 6.45s
63:	learn: 8.7345789	total: 440ms	remaining: 6.43s
64:	learn: 8.7217254	total: 446ms	remaining: 6.41s
65:	learn: 8.7057415	total: 452ms	remaining: 6.39s
66:	learn: 8.6934253	total: 459ms	remaining: 6.38s
67:	learn: 8.6864979	total: 466ms	remaining: 6.39s
68:	learn: 8.6579799	total: 472ms	remaining: 6.36s
69:	learn: 8.6469821	total: 478ms	remaining: 6.35s
70:	learn: 8.6346395	total: 484ms	remaining: 6.33s
71:	learn: 8.6214161	total: 489ms	remaining: 6.31s
72:	learn: 8.6033493	total: 496ms	remaining: 6.29s
73:	learn: 8.5832443	total: 502ms	remaining: 6.29s
74:	learn: 8.5646050	total: 510ms	remaining: 6.29s
75:	learn: 8.5451542	total: 515ms	remaining: 6.27s
76:	learn: 8.5284601	total: 521ms	remaining: 6.24s
77:	learn: 8.5168824	total: 527ms	remaining: 6.23s
78:	learn: 8.5061963	total: 535ms	remaining: 6.23s
79:	learn: 8.4941247	total: 541ms	remaining: 6.22s
80:	learn: 8.4864758	total: 547ms	remaining: 6.21s
81:	learn: 8.4634891	total: 553ms	remaining: 6.19s
82:	learn: 8.4516492	total: 559ms	remaining: 6.17s
83:	learn: 8.4418090	total: 567ms	remaining: 6.18s
84:	learn: 8.4302130	total: 574ms	remaining: 6.18s
85:	learn: 8.4168498	total: 580ms	remaining: 6.16s
86:	learn: 8.4070862	total: 586ms	remaining: 6.15s
87:	learn: 8.3984287	total: 592ms	remaining: 6.13s
88:	learn: 8.3935263	total: 602ms	remaining: 6.16s
89:	learn: 8.3828719	total: 608ms	remaining: 6.14s
90:	learn: 8.3699817	total: 613ms	remaining: 6.12s
91:	learn: 8.3586989	total: 621ms	remaining: 6.13s
92:	learn: 8.3435065	total: 633ms	remaining: 6.17s
93:	learn: 8.3247326	total: 656ms	remaining: 6.32s
94:	learn: 8.3164649	total: 669ms	remaining: 6.38s
95:	learn: 8.3045482	total: 678ms	remaining: 6.38s
96:	learn: 8.2986603	total: 684ms	remaining: 6.37s
97:	learn: 8.2877244	total: 691ms	remaining: 6.36s
98:	learn: 8.2817038	total: 698ms	remaining: 6.36s
99:	learn: 8.2736693	total: 704ms	remaining: 6.34s
100:	learn: 8.2688179	total: 711ms	remaining: 6.33s
101:	learn: 8.2607408	total: 717ms	remaining: 6.31s
102:	learn: 8.2510407	total: 724ms	remaining: 6.31s
103:	learn: 8.2393799	total: 732ms	remaining: 6.3s
104:	learn: 8.2286917	total: 738ms	remaining: 6.29s
105:	learn: 8.2182403	total: 744ms	remaining: 6.27s
106:	learn: 8.2040736	total: 750ms	remaining: 6.26s
107:	learn: 8.1949058	total: 757ms	remaining: 6.25s
108:	learn: 8.1873075	total: 763ms	remaining: 6.24s

109:	learn: 8.1783120	total: 772ms	remaining: 6.25s
110:	learn: 8.1741369	total: 779ms	remaining: 6.24s
111:	learn: 8.1681772	total: 788ms	remaining: 6.25s
112:	learn: 8.1592855	total: 798ms	remaining: 6.26s
113:	learn: 8.1543002	total: 804ms	remaining: 6.25s
114:	learn: 8.1499103	total: 811ms	remaining: 6.24s
115:	learn: 8.1404496	total: 819ms	remaining: 6.24s
116:	learn: 8.1347117	total: 828ms	remaining: 6.25s
117:	learn: 8.1274989	total: 835ms	remaining: 6.24s
118:	learn: 8.1134913	total: 841ms	remaining: 6.22s
119:	learn: 8.1061437	total: 848ms	remaining: 6.22s
120:	learn: 8.0999492	total: 854ms	remaining: 6.21s
121:	learn: 8.0935715	total: 862ms	remaining: 6.2s
122:	learn: 8.0849390	total: 868ms	remaining: 6.19s
123:	learn: 8.0748165	total: 874ms	remaining: 6.18s
124:	learn: 8.0650801	total: 880ms	remaining: 6.16s
125:	learn: 8.0569917	total: 886ms	remaining: 6.14s
126:	learn: 8.0522263	total: 894ms	remaining: 6.15s
127:	learn: 8.0450380	total: 899ms	remaining: 6.13s
128:	learn: 8.0394511	total: 906ms	remaining: 6.12s
129:	learn: 8.0324692	total: 912ms	remaining: 6.1s
130:	learn: 8.0240211	total: 918ms	remaining: 6.09s
131:	learn: 8.0205660	total: 924ms	remaining: 6.07s
132:	learn: 8.0106073	total: 931ms	remaining: 6.07s
133:	learn: 8.0036035	total: 937ms	remaining: 6.06s
134:	learn: 7.9986411	total: 943ms	remaining: 6.04s
135:	learn: 7.9908793	total: 950ms	remaining: 6.04s
136:	learn: 7.9845415	total: 956ms	remaining: 6.02s
137:	learn: 7.9800216	total: 965ms	remaining: 6.03s
138:	learn: 7.9676503	total: 971ms	remaining: 6.01s
139:	learn: 7.9629429	total: 977ms	remaining: 6s
140:	learn: 7.9561220	total: 983ms	remaining: 5.99s
141:	learn: 7.9517720	total: 993ms	remaining: 6s
142:	learn: 7.9459068	total: 999ms	remaining: 5.99s
143:	learn: 7.9379119	total: 1s	remaining: 5.97s
144:	learn: 7.9305213	total: 1.01s	remaining: 5.96s
145:	learn: 7.9258535	total: 1.02s	remaining: 5.97s
146:	learn: 7.9184965	total: 1.03s	remaining: 5.97s
147:	learn: 7.9146869	total: 1.03s	remaining: 5.95s
148:	learn: 7.9057757	total: 1.04s	remaining: 5.95s
149:	learn: 7.9008276	total: 1.05s	remaining: 5.95s
150:	learn: 7.8860965	total: 1.06s	remaining: 5.96s
151:	learn: 7.8771675	total: 1.07s	remaining: 5.96s
152:	learn: 7.8724189	total: 1.07s	remaining: 5.95s
153:	learn: 7.8655421	total: 1.08s	remaining: 5.94s
154:	learn: 7.8587518	total: 1.09s	remaining: 5.93s
155:	learn: 7.8550959	total: 1.1s	remaining: 5.94s
156:	learn: 7.8480128	total: 1.1s	remaining: 5.93s
157:	learn: 7.8402225	total: 1.11s	remaining: 5.92s
158:	learn: 7.8283699	total: 1.12s	remaining: 5.91s
159:	learn: 7.8218969	total: 1.13s	remaining: 5.91s
160:	learn: 7.8176440	total: 1.13s	remaining: 5.9s
161:	learn: 7.8091795	total: 1.14s	remaining: 5.89s
162:	learn: 7.8020031	total: 1.15s	remaining: 5.89s
163:	learn: 7.7960813	total: 1.15s	remaining: 5.88s
164:	learn: 7.7888869	total: 1.16s	remaining: 5.88s
165:	learn: 7.7848311	total: 1.17s	remaining: 5.87s
166:	learn: 7.7805593	total: 1.18s	remaining: 5.87s
167:	learn: 7.7747205	total: 1.18s	remaining: 5.86s
168:	learn: 7.7681161	total: 1.19s	remaining: 5.87s
169:	learn: 7.7640984	total: 1.2s	remaining: 5.86s
170:	learn: 7.7554009	total: 1.21s	remaining: 5.86s
171:	learn: 7.7499579	total: 1.23s	remaining: 5.9s
172:	learn: 7.7400282	total: 1.23s	remaining: 5.89s
173:	learn: 7.7346832	total: 1.24s	remaining: 5.88s
174:	learn: 7.7294382	total: 1.25s	remaining: 5.88s
175:	learn: 7.7233045	total: 1.26s	remaining: 5.89s
176:	learn: 7.7169457	total: 1.27s	remaining: 5.89s
177:	learn: 7.7089667	total: 1.27s	remaining: 5.89s
178:	learn: 7.6989014	total: 1.3s	remaining: 5.96s
179:	learn: 7.6933773	total: 1.31s	remaining: 5.96s

180:	learn: 7.6832793	total: 1.32s	remaining: 5.98s
181:	learn: 7.6785363	total: 1.33s	remaining: 5.98s
182:	learn: 7.6716006	total: 1.34s	remaining: 5.97s
183:	learn: 7.6673763	total: 1.35s	remaining: 5.97s
184:	learn: 7.6631172	total: 1.36s	remaining: 5.98s
185:	learn: 7.6574498	total: 1.36s	remaining: 5.97s
186:	learn: 7.6510737	total: 1.37s	remaining: 5.97s
187:	learn: 7.6460241	total: 1.38s	remaining: 5.96s
188:	learn: 7.6399692	total: 1.39s	remaining: 5.97s
189:	learn: 7.6352379	total: 1.4s	remaining: 5.96s
190:	learn: 7.6246575	total: 1.41s	remaining: 5.96s
191:	learn: 7.6181459	total: 1.41s	remaining: 5.95s
192:	learn: 7.6137214	total: 1.42s	remaining: 5.95s
193:	learn: 7.6095062	total: 1.43s	remaining: 5.95s
194:	learn: 7.6048509	total: 1.44s	remaining: 5.95s
195:	learn: 7.6006255	total: 1.45s	remaining: 5.95s
196:	learn: 7.5948727	total: 1.46s	remaining: 5.96s
197:	learn: 7.5865920	total: 1.47s	remaining: 5.96s
198:	learn: 7.5714693	total: 1.48s	remaining: 5.96s
199:	learn: 7.5646608	total: 1.49s	remaining: 5.96s
200:	learn: 7.5591581	total: 1.5s	remaining: 5.96s
201:	learn: 7.5563011	total: 1.51s	remaining: 5.95s
202:	learn: 7.5527109	total: 1.51s	remaining: 5.95s
203:	learn: 7.5444211	total: 1.52s	remaining: 5.94s
204:	learn: 7.5415862	total: 1.53s	remaining: 5.94s
205:	learn: 7.5353165	total: 1.54s	remaining: 5.93s
206:	learn: 7.5304142	total: 1.55s	remaining: 5.93s
207:	learn: 7.5270703	total: 1.56s	remaining: 5.93s
208:	learn: 7.5178599	total: 1.57s	remaining: 5.93s
209:	learn: 7.5141492	total: 1.57s	remaining: 5.92s
210:	learn: 7.5091748	total: 1.58s	remaining: 5.92s
211:	learn: 7.5057323	total: 1.59s	remaining: 5.92s
212:	learn: 7.5023582	total: 1.6s	remaining: 5.91s
213:	learn: 7.4986169	total: 1.61s	remaining: 5.9s
214:	learn: 7.4938800	total: 1.62s	remaining: 5.92s
215:	learn: 7.4908685	total: 1.63s	remaining: 5.91s
216:	learn: 7.4869216	total: 1.64s	remaining: 5.91s
217:	learn: 7.4816934	total: 1.65s	remaining: 5.91s
218:	learn: 7.4781253	total: 1.66s	remaining: 5.91s
219:	learn: 7.4725488	total: 1.67s	remaining: 5.91s
220:	learn: 7.4668661	total: 1.68s	remaining: 5.91s
221:	learn: 7.4612903	total: 1.69s	remaining: 5.91s
222:	learn: 7.4571527	total: 1.69s	remaining: 5.91s
223:	learn: 7.4438220	total: 1.7s	remaining: 5.9s
224:	learn: 7.4393218	total: 1.71s	remaining: 5.9s
225:	learn: 7.4360863	total: 1.72s	remaining: 5.9s
226:	learn: 7.4305782	total: 1.73s	remaining: 5.89s
227:	learn: 7.4204923	total: 1.74s	remaining: 5.89s
228:	learn: 7.4157151	total: 1.75s	remaining: 5.89s
229:	learn: 7.4130244	total: 1.76s	remaining: 5.88s
230:	learn: 7.4103213	total: 1.77s	remaining: 5.88s
231:	learn: 7.4058492	total: 1.77s	remaining: 5.88s
232:	learn: 7.4035623	total: 1.78s	remaining: 5.87s
233:	learn: 7.3999321	total: 1.79s	remaining: 5.87s
234:	learn: 7.3963816	total: 1.8s	remaining: 5.86s
235:	learn: 7.3896513	total: 1.81s	remaining: 5.86s
236:	learn: 7.3856884	total: 1.82s	remaining: 5.86s
237:	learn: 7.3817593	total: 1.83s	remaining: 5.86s
238:	learn: 7.3783905	total: 1.84s	remaining: 5.85s
239:	learn: 7.3758726	total: 1.85s	remaining: 5.85s
240:	learn: 7.3716165	total: 1.86s	remaining: 5.86s
241:	learn: 7.3662316	total: 1.87s	remaining: 5.86s
242:	learn: 7.3592077	total: 1.88s	remaining: 5.86s
243:	learn: 7.3545246	total: 1.89s	remaining: 5.86s
244:	learn: 7.3503992	total: 1.9s	remaining: 5.86s
245:	learn: 7.3449870	total: 1.91s	remaining: 5.85s
246:	learn: 7.3418240	total: 1.92s	remaining: 5.85s
247:	learn: 7.3387077	total: 1.93s	remaining: 5.85s
248:	learn: 7.3291256	total: 1.94s	remaining: 5.84s
249:	learn: 7.3267696	total: 1.94s	remaining: 5.83s
250:	learn: 7.3239964	total: 1.95s	remaining: 5.83s
251:	learn: 7.3199971	total: 1.96s	remaining: 5.83s

252:	learn: 7.3165956	total: 1.97s	remaining: 5.83s
253:	learn: 7.3131830	total: 1.98s	remaining: 5.82s
254:	learn: 7.3074775	total: 1.99s	remaining: 5.82s
255:	learn: 7.3041594	total: 2s	remaining: 5.81s
256:	learn: 7.3002282	total: 2.01s	remaining: 5.81s
257:	learn: 7.2972059	total: 2.02s	remaining: 5.81s
258:	learn: 7.2943461	total: 2.03s	remaining: 5.8s
259:	learn: 7.2914686	total: 2.04s	remaining: 5.8s
260:	learn: 7.2883921	total: 2.04s	remaining: 5.79s
261:	learn: 7.2838651	total: 2.05s	remaining: 5.79s
262:	learn: 7.2809845	total: 2.07s	remaining: 5.79s
263:	learn: 7.2766346	total: 2.08s	remaining: 5.79s
264:	learn: 7.2719827	total: 2.09s	remaining: 5.79s
265:	learn: 7.2660450	total: 2.1s	remaining: 5.79s
266:	learn: 7.2632465	total: 2.11s	remaining: 5.78s
267:	learn: 7.2602525	total: 2.12s	remaining: 5.78s
268:	learn: 7.2571764	total: 2.13s	remaining: 5.78s
269:	learn: 7.2547206	total: 2.13s	remaining: 5.77s
270:	learn: 7.2520741	total: 2.14s	remaining: 5.77s
271:	learn: 7.2479161	total: 2.15s	remaining: 5.77s
272:	learn: 7.2416194	total: 2.16s	remaining: 5.76s
273:	learn: 7.2365966	total: 2.17s	remaining: 5.76s
274:	learn: 7.2320945	total: 2.18s	remaining: 5.76s
275:	learn: 7.2281937	total: 2.19s	remaining: 5.75s
276:	learn: 7.2258468	total: 2.2s	remaining: 5.74s
277:	learn: 7.2229427	total: 2.21s	remaining: 5.74s
278:	learn: 7.2169746	total: 2.22s	remaining: 5.73s
279:	learn: 7.2147467	total: 2.23s	remaining: 5.73s
280:	learn: 7.2120345	total: 2.23s	remaining: 5.72s
281:	learn: 7.2093468	total: 2.25s	remaining: 5.72s
282:	learn: 7.2065704	total: 2.25s	remaining: 5.71s
283:	learn: 7.2007940	total: 2.26s	remaining: 5.71s
284:	learn: 7.1955476	total: 2.28s	remaining: 5.71s
285:	learn: 7.1906719	total: 2.29s	remaining: 5.71s
286:	learn: 7.1874152	total: 2.3s	remaining: 5.71s
287:	learn: 7.1860216	total: 2.31s	remaining: 5.71s
288:	learn: 7.1826987	total: 2.32s	remaining: 5.7s
289:	learn: 7.1789305	total: 2.33s	remaining: 5.7s
290:	learn: 7.1755191	total: 2.34s	remaining: 5.7s
291:	learn: 7.1721731	total: 2.35s	remaining: 5.69s
292:	learn: 7.1693400	total: 2.36s	remaining: 5.69s
293:	learn: 7.1639483	total: 2.37s	remaining: 5.68s
294:	learn: 7.1585150	total: 2.38s	remaining: 5.68s
295:	learn: 7.1544978	total: 2.38s	remaining: 5.67s
296:	learn: 7.1500948	total: 2.39s	remaining: 5.67s
297:	learn: 7.1477024	total: 2.4s	remaining: 5.66s
298:	learn: 7.1447485	total: 2.41s	remaining: 5.66s
299:	learn: 7.1422662	total: 2.42s	remaining: 5.65s
300:	learn: 7.1402805	total: 2.43s	remaining: 5.65s
301:	learn: 7.1374705	total: 2.44s	remaining: 5.64s
302:	learn: 7.1340353	total: 2.45s	remaining: 5.64s
303:	learn: 7.1291716	total: 2.46s	remaining: 5.63s
304:	learn: 7.1277596	total: 2.47s	remaining: 5.63s
305:	learn: 7.1245562	total: 2.48s	remaining: 5.63s
306:	learn: 7.1203506	total: 2.49s	remaining: 5.62s
307:	learn: 7.1168669	total: 2.5s	remaining: 5.62s
308:	learn: 7.1131098	total: 2.51s	remaining: 5.62s
309:	learn: 7.1111788	total: 2.52s	remaining: 5.61s
310:	learn: 7.1086161	total: 2.53s	remaining: 5.61s
311:	learn: 7.1051011	total: 2.54s	remaining: 5.6s
312:	learn: 7.1032858	total: 2.55s	remaining: 5.59s
313:	learn: 7.1015468	total: 2.56s	remaining: 5.59s
314:	learn: 7.0985437	total: 2.57s	remaining: 5.58s
315:	learn: 7.0951766	total: 2.58s	remaining: 5.58s
316:	learn: 7.0892827	total: 2.59s	remaining: 5.58s
317:	learn: 7.0866437	total: 2.6s	remaining: 5.58s
318:	learn: 7.0836456	total: 2.61s	remaining: 5.58s
319:	learn: 7.0814993	total: 2.62s	remaining: 5.57s
320:	learn: 7.0802941	total: 2.63s	remaining: 5.56s
321:	learn: 7.0776715	total: 2.64s	remaining: 5.56s
322:	learn: 7.0747039	total: 2.65s	remaining: 5.55s
323:	learn: 7.0717679	total: 2.66s	remaining: 5.54s

324:	learn: 7.0699091	total: 2.67s	remaining: 5.54s
325:	learn: 7.0674843	total: 2.68s	remaining: 5.53s
326:	learn: 7.0654325	total: 2.69s	remaining: 5.53s
327:	learn: 7.0609736	total: 2.69s	remaining: 5.52s
328:	learn: 7.0590313	total: 2.71s	remaining: 5.52s
329:	learn: 7.0559266	total: 2.72s	remaining: 5.52s
330:	learn: 7.0536603	total: 2.73s	remaining: 5.51s
331:	learn: 7.0487716	total: 2.74s	remaining: 5.51s
332:	learn: 7.0451855	total: 2.75s	remaining: 5.5s
333:	learn: 7.0429585	total: 2.75s	remaining: 5.49s
334:	learn: 7.0412135	total: 2.76s	remaining: 5.49s
335:	learn: 7.0386881	total: 2.77s	remaining: 5.48s
336:	learn: 7.0344833	total: 2.78s	remaining: 5.47s
337:	learn: 7.0327500	total: 2.79s	remaining: 5.47s
338:	learn: 7.0297897	total: 2.8s	remaining: 5.46s
339:	learn: 7.0270923	total: 2.81s	remaining: 5.46s
340:	learn: 7.0243083	total: 2.82s	remaining: 5.45s
341:	learn: 7.0221234	total: 2.83s	remaining: 5.44s
342:	learn: 7.0202888	total: 2.84s	remaining: 5.44s
343:	learn: 7.0156033	total: 2.85s	remaining: 5.43s
344:	learn: 7.0125652	total: 2.86s	remaining: 5.43s
345:	learn: 7.0108614	total: 2.87s	remaining: 5.42s
346:	learn: 7.0074094	total: 2.88s	remaining: 5.42s
347:	learn: 7.0057192	total: 2.89s	remaining: 5.41s
348:	learn: 7.0028244	total: 2.9s	remaining: 5.4s

349:	learn: 7.0013441	total: 2.91s	remaining: 5.4s
350:	learn: 6.9967387	total: 2.92s	remaining: 5.39s
351:	learn: 6.9949283	total: 2.93s	remaining: 5.39s
352:	learn: 6.9876493	total: 2.94s	remaining: 5.39s
353:	learn: 6.9866844	total: 2.95s	remaining: 5.38s
354:	learn: 6.9826610	total: 2.96s	remaining: 5.38s
355:	learn: 6.9797913	total: 2.97s	remaining: 5.37s
356:	learn: 6.9754055	total: 2.98s	remaining: 5.37s
357:	learn: 6.9714250	total: 2.99s	remaining: 5.36s
358:	learn: 6.9676690	total: 3s	remaining: 5.36s
359:	learn: 6.9651746	total: 3.01s	remaining: 5.35s
360:	learn: 6.9631494	total: 3.02s	remaining: 5.34s
361:	learn: 6.9622130	total: 3.02s	remaining: 5.33s
362:	learn: 6.9602192	total: 3.04s	remaining: 5.33s
363:	learn: 6.9567847	total: 3.04s	remaining: 5.32s
364:	learn: 6.9531964	total: 3.05s	remaining: 5.31s
365:	learn: 6.9507005	total: 3.06s	remaining: 5.31s
366:	learn: 6.9489152	total: 3.07s	remaining: 5.3s
367:	learn: 6.9459722	total: 3.08s	remaining: 5.29s
368:	learn: 6.9425150	total: 3.09s	remaining: 5.28s
369:	learn: 6.9411241	total: 3.1s	remaining: 5.28s
370:	learn: 6.9385854	total: 3.11s	remaining: 5.28s
371:	learn: 6.9365739	total: 3.12s	remaining: 5.27s
372:	learn: 6.9347748	total: 3.14s	remaining: 5.28s
373:	learn: 6.9324664	total: 3.15s	remaining: 5.28s
374:	learn: 6.9304945	total: 3.17s	remaining: 5.28s
375:	learn: 6.9293766	total: 3.17s	remaining: 5.27s
376:	learn: 6.9261437	total: 3.18s	remaining: 5.26s
377:	learn: 6.9239782	total: 3.19s	remaining: 5.26s
378:	learn: 6.9216669	total: 3.2s	remaining: 5.25s
379:	learn: 6.9193557	total: 3.21s	remaining: 5.24s
380:	learn: 6.9178388	total: 3.22s	remaining: 5.24s
381:	learn: 6.9160572	total: 3.23s	remaining: 5.23s
382:	learn: 6.9139017	total: 3.24s	remaining: 5.22s
383:	learn: 6.9117355	total: 3.25s	remaining: 5.21s
384:	learn: 6.9102374	total: 3.26s	remaining: 5.21s
385:	learn: 6.9085442	total: 3.27s	remaining: 5.2s
386:	learn: 6.9065558	total: 3.28s	remaining: 5.19s
387:	learn: 6.9041448	total: 3.29s	remaining: 5.19s
388:	learn: 6.9025789	total: 3.3s	remaining: 5.18s
389:	learn: 6.8977480	total: 3.31s	remaining: 5.17s
390:	learn: 6.8957502	total: 3.32s	remaining: 5.17s
391:	learn: 6.8940716	total: 3.33s	remaining: 5.16s
392:	learn: 6.8923966	total: 3.34s	remaining: 5.16s
393:	learn: 6.8904322	total: 3.35s	remaining: 5.16s

394:	learn: 6.8867807	total: 3.36s	remaining: 5.15s
395:	learn: 6.8846542	total: 3.37s	remaining: 5.15s
396:	learn: 6.8822752	total: 3.38s	remaining: 5.14s
397:	learn: 6.8798170	total: 3.4s	remaining: 5.14s
398:	learn: 6.8777746	total: 3.41s	remaining: 5.14s
399:	learn: 6.8753030	total: 3.42s	remaining: 5.13s
400:	learn: 6.8741299	total: 3.43s	remaining: 5.12s
401:	learn: 6.8718624	total: 3.44s	remaining: 5.12s
402:	learn: 6.8688565	total: 3.45s	remaining: 5.11s
403:	learn: 6.8664580	total: 3.46s	remaining: 5.1s
404:	learn: 6.8646810	total: 3.47s	remaining: 5.09s
405:	learn: 6.8627149	total: 3.48s	remaining: 5.08s
406:	learn: 6.8611809	total: 3.48s	remaining: 5.08s
407:	learn: 6.8599192	total: 3.49s	remaining: 5.07s
408:	learn: 6.8568683	total: 3.5s	remaining: 5.06s
409:	learn: 6.8529008	total: 3.51s	remaining: 5.05s
410:	learn: 6.8509867	total: 3.52s	remaining: 5.05s
411:	learn: 6.8483827	total: 3.53s	remaining: 5.04s
412:	learn: 6.8467317	total: 3.54s	remaining: 5.04s
413:	learn: 6.8444439	total: 3.55s	remaining: 5.03s
414:	learn: 6.8414626	total: 3.56s	remaining: 5.03s
415:	learn: 6.8387060	total: 3.57s	remaining: 5.02s
416:	learn: 6.8375573	total: 3.58s	remaining: 5.01s
417:	learn: 6.8344236	total: 3.59s	remaining: 5s
418:	learn: 6.8334536	total: 3.6s	remaining: 5s
419:	learn: 6.8325031	total: 3.61s	remaining: 4.99s
420:	learn: 6.8296572	total: 3.62s	remaining: 4.98s
421:	learn: 6.8268056	total: 3.63s	remaining: 4.97s
422:	learn: 6.8250074	total: 3.64s	remaining: 4.96s
423:	learn: 6.8226242	total: 3.65s	remaining: 4.96s
424:	learn: 6.8212015	total: 3.66s	remaining: 4.95s
425:	learn: 6.8187722	total: 3.67s	remaining: 4.94s
426:	learn: 6.8167477	total: 3.68s	remaining: 4.93s
427:	learn: 6.8111353	total: 3.69s	remaining: 4.92s
428:	learn: 6.8080378	total: 3.69s	remaining: 4.92s
429:	learn: 6.8051621	total: 3.7s	remaining: 4.91s
430:	learn: 6.8031526	total: 3.71s	remaining: 4.9s
431:	learn: 6.8014047	total: 3.72s	remaining: 4.89s
432:	learn: 6.7994617	total: 3.73s	remaining: 4.89s
433:	learn: 6.7955579	total: 3.74s	remaining: 4.88s
434:	learn: 6.7940726	total: 3.75s	remaining: 4.88s
435:	learn: 6.7918132	total: 3.77s	remaining: 4.87s
436:	learn: 6.7908546	total: 3.77s	remaining: 4.86s
437:	learn: 6.7883937	total: 3.78s	remaining: 4.85s
438:	learn: 6.7850464	total: 3.79s	remaining: 4.85s
439:	learn: 6.7834901	total: 3.8s	remaining: 4.84s
440:	learn: 6.7808301	total: 3.81s	remaining: 4.83s
441:	learn: 6.7782233	total: 3.82s	remaining: 4.83s
442:	learn: 6.7767550	total: 3.83s	remaining: 4.82s
443:	learn: 6.7751292	total: 3.84s	remaining: 4.81s
444:	learn: 6.7728859	total: 3.85s	remaining: 4.8s
445:	learn: 6.7710776	total: 3.86s	remaining: 4.8s
446:	learn: 6.7696795	total: 3.87s	remaining: 4.79s
447:	learn: 6.7678169	total: 3.88s	remaining: 4.78s
448:	learn: 6.7655822	total: 3.89s	remaining: 4.78s
449:	learn: 6.7638394	total: 3.9s	remaining: 4.76s
450:	learn: 6.7619953	total: 3.91s	remaining: 4.76s
451:	learn: 6.7598156	total: 3.92s	remaining: 4.75s
452:	learn: 6.7574835	total: 3.93s	remaining: 4.74s
453:	learn: 6.7559962	total: 3.94s	remaining: 4.74s
454:	learn: 6.7535806	total: 3.95s	remaining: 4.73s
455:	learn: 6.7519343	total: 3.96s	remaining: 4.72s
456:	learn: 6.7501628	total: 3.97s	remaining: 4.72s
457:	learn: 6.7482955	total: 3.98s	remaining: 4.71s
458:	learn: 6.7463177	total: 3.99s	remaining: 4.7s
459:	learn: 6.7448859	total: 4s	remaining: 4.7s
460:	learn: 6.7440044	total: 4.01s	remaining: 4.69s
461:	learn: 6.7425913	total: 4.02s	remaining: 4.68s
462:	learn: 6.7388298	total: 4.03s	remaining: 4.68s
463:	learn: 6.7342812	total: 4.04s	remaining: 4.67s
464:	learn: 6.7324959	total: 4.05s	remaining: 4.66s
465:	learn: 6.7310766	total: 4.06s	remaining: 4.66s

466:	learn: 6.7293263	total: 4.07s	remaining: 4.65s
467:	learn: 6.7271327	total: 4.08s	remaining: 4.64s
468:	learn: 6.7240275	total: 4.09s	remaining: 4.63s
469:	learn: 6.7229513	total: 4.1s	remaining: 4.63s
470:	learn: 6.7221583	total: 4.11s	remaining: 4.62s
471:	learn: 6.7201860	total: 4.12s	remaining: 4.61s
472:	learn: 6.7178355	total: 4.13s	remaining: 4.6s
473:	learn: 6.7159536	total: 4.14s	remaining: 4.59s
474:	learn: 6.7111476	total: 4.15s	remaining: 4.59s
475:	learn: 6.7086032	total: 4.16s	remaining: 4.58s
476:	learn: 6.7060284	total: 4.17s	remaining: 4.58s
477:	learn: 6.7041392	total: 4.18s	remaining: 4.57s
478:	learn: 6.7008148	total: 4.19s	remaining: 4.56s
479:	learn: 6.6972163	total: 4.2s	remaining: 4.55s
480:	learn: 6.6954653	total: 4.21s	remaining: 4.55s
481:	learn: 6.6928304	total: 4.22s	remaining: 4.54s
482:	learn: 6.6909351	total: 4.23s	remaining: 4.53s
483:	learn: 6.6891103	total: 4.24s	remaining: 4.52s
484:	learn: 6.6876262	total: 4.25s	remaining: 4.51s
485:	learn: 6.6860552	total: 4.26s	remaining: 4.5s
486:	learn: 6.6831633	total: 4.27s	remaining: 4.5s
487:	learn: 6.6810180	total: 4.28s	remaining: 4.49s
488:	learn: 6.6797013	total: 4.29s	remaining: 4.48s
489:	learn: 6.6767290	total: 4.3s	remaining: 4.47s
490:	learn: 6.6748471	total: 4.31s	remaining: 4.46s
491:	learn: 6.6739113	total: 4.32s	remaining: 4.46s
492:	learn: 6.6725774	total: 4.32s	remaining: 4.45s
493:	learn: 6.6710588	total: 4.33s	remaining: 4.44s
494:	learn: 6.6695535	total: 4.34s	remaining: 4.43s
495:	learn: 6.6680649	total: 4.35s	remaining: 4.42s
496:	learn: 6.6622971	total: 4.37s	remaining: 4.42s
497:	learn: 6.6608656	total: 4.38s	remaining: 4.42s
498:	learn: 6.6590187	total: 4.39s	remaining: 4.41s
499:	learn: 6.6573209	total: 4.4s	remaining: 4.4s
500:	learn: 6.6562144	total: 4.41s	remaining: 4.39s
501:	learn: 6.6530231	total: 4.42s	remaining: 4.39s
502:	learn: 6.6505232	total: 4.43s	remaining: 4.38s
503:	learn: 6.6466753	total: 4.44s	remaining: 4.37s
504:	learn: 6.6450082	total: 4.45s	remaining: 4.36s
505:	learn: 6.6427748	total: 4.46s	remaining: 4.36s
506:	learn: 6.6404572	total: 4.47s	remaining: 4.35s
507:	learn: 6.6388187	total: 4.48s	remaining: 4.34s
508:	learn: 6.6370488	total: 4.49s	remaining: 4.33s
509:	learn: 6.6335293	total: 4.5s	remaining: 4.33s
510:	learn: 6.6311798	total: 4.51s	remaining: 4.32s
511:	learn: 6.6299505	total: 4.52s	remaining: 4.31s
512:	learn: 6.6284562	total: 4.53s	remaining: 4.3s
513:	learn: 6.6269364	total: 4.54s	remaining: 4.29s
514:	learn: 6.6254671	total: 4.55s	remaining: 4.29s
515:	learn: 6.6235506	total: 4.56s	remaining: 4.28s
516:	learn: 6.6216408	total: 4.57s	remaining: 4.27s
517:	learn: 6.6196530	total: 4.58s	remaining: 4.27s
518:	learn: 6.6183169	total: 4.59s	remaining: 4.26s
519:	learn: 6.6159572	total: 4.61s	remaining: 4.25s
520:	learn: 6.6145399	total: 4.62s	remaining: 4.24s
521:	learn: 6.6120075	total: 4.63s	remaining: 4.24s
522:	learn: 6.6106688	total: 4.63s	remaining: 4.23s
523:	learn: 6.6089121	total: 4.64s	remaining: 4.22s
524:	learn: 6.6071506	total: 4.66s	remaining: 4.21s
525:	learn: 6.6050911	total: 4.67s	remaining: 4.2s
526:	learn: 6.6042143	total: 4.68s	remaining: 4.2s
527:	learn: 6.6034856	total: 4.7s	remaining: 4.2s
528:	learn: 6.6025085	total: 4.71s	remaining: 4.19s
529:	learn: 6.6013671	total: 4.71s	remaining: 4.18s
530:	learn: 6.5999770	total: 4.72s	remaining: 4.17s
531:	learn: 6.5984475	total: 4.73s	remaining: 4.16s
532:	learn: 6.5971477	total: 4.74s	remaining: 4.16s
533:	learn: 6.5952830	total: 4.75s	remaining: 4.15s
534:	learn: 6.5946241	total: 4.76s	remaining: 4.14s
535:	learn: 6.5927555	total: 4.77s	remaining: 4.13s

536:	learn: 6.5911068	total: 4.78s	remaining: 4.12s
537:	learn: 6.5900561	total: 4.79s	remaining: 4.12s
538:	learn: 6.5889482	total: 4.81s	remaining: 4.11s
539:	learn: 6.5876718	total: 4.82s	remaining: 4.1s
540:	learn: 6.5858780	total: 4.82s	remaining: 4.09s
541:	learn: 6.5843695	total: 4.83s	remaining: 4.08s
542:	learn: 6.5829819	total: 4.84s	remaining: 4.08s
543:	learn: 6.5808763	total: 4.85s	remaining: 4.07s
544:	learn: 6.5778823	total: 4.86s	remaining: 4.06s
545:	learn: 6.5759882	total: 4.87s	remaining: 4.05s
546:	learn: 6.5746977	total: 4.88s	remaining: 4.04s
547:	learn: 6.5737198	total: 4.89s	remaining: 4.03s
548:	learn: 6.5720989	total: 4.9s	remaining: 4.03s
549:	learn: 6.5705896	total: 4.91s	remaining: 4.02s
550:	learn: 6.5689925	total: 4.92s	remaining: 4.01s
551:	learn: 6.5675021	total: 4.93s	remaining: 4s
552:	learn: 6.5660118	total: 4.94s	remaining: 3.99s
553:	learn: 6.5647925	total: 4.95s	remaining: 3.98s
554:	learn: 6.5599771	total: 4.96s	remaining: 3.98s
555:	learn: 6.5585202	total: 4.97s	remaining: 3.97s
556:	learn: 6.5572546	total: 4.98s	remaining: 3.96s
557:	learn: 6.5554898	total: 4.99s	remaining: 3.95s
558:	learn: 6.5548361	total: 5s	remaining: 3.94s
559:	learn: 6.5510025	total: 5.01s	remaining: 3.94s
560:	learn: 6.5501417	total: 5.02s	remaining: 3.93s
561:	learn: 6.5475778	total: 5.03s	remaining: 3.92s
562:	learn: 6.5460167	total: 5.04s	remaining: 3.91s
563:	learn: 6.5440500	total: 5.05s	remaining: 3.9s
564:	learn: 6.5429568	total: 5.06s	remaining: 3.89s
565:	learn: 6.5406127	total: 5.07s	remaining: 3.88s
566:	learn: 6.5392927	total: 5.08s	remaining: 3.88s
567:	learn: 6.5381253	total: 5.09s	remaining: 3.87s
568:	learn: 6.5372154	total: 5.1s	remaining: 3.86s
569:	learn: 6.5364181	total: 5.11s	remaining: 3.85s
570:	learn: 6.5348337	total: 5.12s	remaining: 3.84s
571:	learn: 6.5340757	total: 5.12s	remaining: 3.83s
572:	learn: 6.5327706	total: 5.13s	remaining: 3.83s
573:	learn: 6.5319090	total: 5.14s	remaining: 3.82s
574:	learn: 6.5301743	total: 5.15s	remaining: 3.81s
575:	learn: 6.5288558	total: 5.16s	remaining: 3.8s
576:	learn: 6.5280294	total: 5.17s	remaining: 3.79s
577:	learn: 6.5249266	total: 5.18s	remaining: 3.78s
578:	learn: 6.5238624	total: 5.19s	remaining: 3.77s
579:	learn: 6.5216250	total: 5.21s	remaining: 3.77s
580:	learn: 6.5207852	total: 5.21s	remaining: 3.76s
581:	learn: 6.5196777	total: 5.22s	remaining: 3.75s
582:	learn: 6.5179321	total: 5.23s	remaining: 3.74s
583:	learn: 6.5164872	total: 5.25s	remaining: 3.74s
584:	learn: 6.5138312	total: 5.25s	remaining: 3.73s
585:	learn: 6.5127203	total: 5.26s	remaining: 3.72s
586:	learn: 6.5114571	total: 5.27s	remaining: 3.71s
587:	learn: 6.5107202	total: 5.28s	remaining: 3.7s
588:	learn: 6.5091229	total: 5.29s	remaining: 3.69s
589:	learn: 6.5077523	total: 5.3s	remaining: 3.68s
590:	learn: 6.5062895	total: 5.31s	remaining: 3.67s
591:	learn: 6.5056464	total: 5.32s	remaining: 3.67s
592:	learn: 6.5047341	total: 5.33s	remaining: 3.66s
593:	learn: 6.5034917	total: 5.34s	remaining: 3.65s
594:	learn: 6.5016590	total: 5.35s	remaining: 3.64s
595:	learn: 6.5003966	total: 5.36s	remaining: 3.63s
596:	learn: 6.4993212	total: 5.37s	remaining: 3.62s
597:	learn: 6.4986265	total: 5.38s	remaining: 3.61s
598:	learn: 6.4973973	total: 5.39s	remaining: 3.61s
599:	learn: 6.4952874	total: 5.4s	remaining: 3.6s
600:	learn: 6.4937682	total: 5.41s	remaining: 3.59s
601:	learn: 6.4931059	total: 5.42s	remaining: 3.58s
602:	learn: 6.4920235	total: 5.44s	remaining: 3.58s
603:	learn: 6.4905212	total: 5.45s	remaining: 3.57s
604:	learn: 6.4887171	total: 5.46s	remaining: 3.56s
605:	learn: 6.4878501	total: 5.46s	remaining: 3.55s
606:	learn: 6.4866654	total: 5.47s	remaining: 3.54s
607:	learn: 6.4846383	total: 5.48s	remaining: 3.54s

608:	learn: 6.4834752	total: 5.5s	remaining: 3.53s
609:	learn: 6.4825974	total: 5.5s	remaining: 3.52s
610:	learn: 6.4820448	total: 5.51s	remaining: 3.51s
611:	learn: 6.4800520	total: 5.52s	remaining: 3.5s
612:	learn: 6.4776273	total: 5.53s	remaining: 3.49s
613:	learn: 6.4764525	total: 5.54s	remaining: 3.48s
614:	learn: 6.4755525	total: 5.55s	remaining: 3.47s
615:	learn: 6.4738435	total: 5.56s	remaining: 3.47s
616:	learn: 6.4724769	total: 5.57s	remaining: 3.46s
617:	learn: 6.4711057	total: 5.58s	remaining: 3.45s
618:	learn: 6.4678460	total: 5.59s	remaining: 3.44s
619:	learn: 6.4665174	total: 5.6s	remaining: 3.43s
620:	learn: 6.4655337	total: 5.61s	remaining: 3.42s
621:	learn: 6.4649443	total: 5.62s	remaining: 3.41s
622:	learn: 6.4640183	total: 5.63s	remaining: 3.41s
623:	learn: 6.4624834	total: 5.64s	remaining: 3.4s
624:	learn: 6.4608913	total: 5.65s	remaining: 3.39s
625:	learn: 6.4598323	total: 5.66s	remaining: 3.38s
626:	learn: 6.4591803	total: 5.67s	remaining: 3.37s
627:	learn: 6.4577981	total: 5.68s	remaining: 3.36s
628:	learn: 6.4557125	total: 5.69s	remaining: 3.35s
629:	learn: 6.4531893	total: 5.7s	remaining: 3.35s
630:	learn: 6.4518483	total: 5.71s	remaining: 3.34s
631:	learn: 6.4509464	total: 5.72s	remaining: 3.33s
632:	learn: 6.4501461	total: 5.73s	remaining: 3.32s
633:	learn: 6.4493263	total: 5.74s	remaining: 3.31s
634:	learn: 6.4481428	total: 5.75s	remaining: 3.31s
635:	learn: 6.4469428	total: 5.76s	remaining: 3.3s
636:	learn: 6.4458259	total: 5.77s	remaining: 3.29s
637:	learn: 6.4446843	total: 5.78s	remaining: 3.28s
638:	learn: 6.4415495	total: 5.79s	remaining: 3.27s
639:	learn: 6.4383909	total: 5.8s	remaining: 3.26s
640:	learn: 6.4376326	total: 5.81s	remaining: 3.25s
641:	learn: 6.4362847	total: 5.82s	remaining: 3.25s
642:	learn: 6.4340882	total: 5.83s	remaining: 3.24s
643:	learn: 6.4323061	total: 5.84s	remaining: 3.23s
644:	learn: 6.4315346	total: 5.86s	remaining: 3.22s
645:	learn: 6.4303034	total: 5.87s	remaining: 3.21s
646:	learn: 6.4298070	total: 5.87s	remaining: 3.21s
647:	learn: 6.4279799	total: 5.89s	remaining: 3.2s
648:	learn: 6.4273818	total: 5.9s	remaining: 3.19s
649:	learn: 6.4266831	total: 5.91s	remaining: 3.18s
650:	learn: 6.4251686	total: 5.92s	remaining: 3.17s
651:	learn: 6.4244760	total: 5.92s	remaining: 3.16s
652:	learn: 6.4234389	total: 5.93s	remaining: 3.15s
653:	learn: 6.4224736	total: 5.95s	remaining: 3.15s
654:	learn: 6.4212704	total: 5.95s	remaining: 3.14s
655:	learn: 6.4204080	total: 5.96s	remaining: 3.13s
656:	learn: 6.4195255	total: 5.97s	remaining: 3.12s
657:	learn: 6.4183570	total: 5.98s	remaining: 3.11s
658:	learn: 6.4170834	total: 5.99s	remaining: 3.1s
659:	learn: 6.4162168	total: 6s	remaining: 3.09s
660:	learn: 6.4146800	total: 6.01s	remaining: 3.08s
661:	learn: 6.4136549	total: 6.02s	remaining: 3.08s
662:	learn: 6.4129620	total: 6.03s	remaining: 3.07s
663:	learn: 6.4108990	total: 6.04s	remaining: 3.06s
664:	learn: 6.4099248	total: 6.06s	remaining: 3.05s
665:	learn: 6.4089575	total: 6.07s	remaining: 3.04s
666:	learn: 6.4083038	total: 6.09s	remaining: 3.04s
667:	learn: 6.4071232	total: 6.09s	remaining: 3.03s
668:	learn: 6.4061770	total: 6.1s	remaining: 3.02s
669:	learn: 6.4041491	total: 6.11s	remaining: 3.01s
670:	learn: 6.4036413	total: 6.12s	remaining: 3s
671:	learn: 6.4022649	total: 6.13s	remaining: 2.99s
672:	learn: 6.4011789	total: 6.14s	remaining: 2.98s
673:	learn: 6.4005375	total: 6.15s	remaining: 2.98s
674:	learn: 6.3997676	total: 6.16s	remaining: 2.97s
675:	learn: 6.3988181	total: 6.17s	remaining: 2.96s
676:	learn: 6.3978948	total: 6.18s	remaining: 2.95s
677:	learn: 6.3962202	total: 6.19s	remaining: 2.94s
678:	learn: 6.3948032	total: 6.2s	remaining: 2.93s
679:	learn: 6.3929123	total: 6.21s	remaining: 2.92s

680:	learn: 6.3920777	total: 6.22s	remaining: 2.91s
681:	learn: 6.3888409	total: 6.22s	remaining: 2.9s
682:	learn: 6.3877930	total: 6.24s	remaining: 2.89s
683:	learn: 6.3856147	total: 6.25s	remaining: 2.89s
684:	learn: 6.3848745	total: 6.25s	remaining: 2.88s
685:	learn: 6.3841652	total: 6.26s	remaining: 2.87s
686:	learn: 6.3829293	total: 6.28s	remaining: 2.86s
687:	learn: 6.3824147	total: 6.29s	remaining: 2.85s
688:	learn: 6.3815870	total: 6.3s	remaining: 2.84s
689:	learn: 6.3809381	total: 6.31s	remaining: 2.83s
690:	learn: 6.3799081	total: 6.32s	remaining: 2.83s
691:	learn: 6.3781106	total: 6.33s	remaining: 2.82s
692:	learn: 6.3765568	total: 6.34s	remaining: 2.81s
693:	learn: 6.3754829	total: 6.35s	remaining: 2.8s
694:	learn: 6.3750365	total: 6.36s	remaining: 2.79s
695:	learn: 6.3743689	total: 6.36s	remaining: 2.78s
696:	learn: 6.3732586	total: 6.37s	remaining: 2.77s
697:	learn: 6.3720887	total: 6.38s	remaining: 2.76s
698:	learn: 6.3709748	total: 6.39s	remaining: 2.75s
699:	learn: 6.3697653	total: 6.4s	remaining: 2.74s
700:	learn: 6.3681978	total: 6.41s	remaining: 2.73s
701:	learn: 6.3673482	total: 6.42s	remaining: 2.73s
702:	learn: 6.3664109	total: 6.43s	remaining: 2.72s
703:	learn: 6.3652429	total: 6.44s	remaining: 2.71s
704:	learn: 6.3646174	total: 6.45s	remaining: 2.7s
705:	learn: 6.3630217	total: 6.46s	remaining: 2.69s
706:	learn: 6.3604095	total: 6.47s	remaining: 2.68s
707:	learn: 6.3594450	total: 6.48s	remaining: 2.67s
708:	learn: 6.3584249	total: 6.49s	remaining: 2.67s
709:	learn: 6.3577443	total: 6.51s	remaining: 2.66s
710:	learn: 6.3566411	total: 6.51s	remaining: 2.65s
711:	learn: 6.3558176	total: 6.52s	remaining: 2.64s
712:	learn: 6.3552203	total: 6.54s	remaining: 2.63s
713:	learn: 6.3538379	total: 6.54s	remaining: 2.62s
714:	learn: 6.3522840	total: 6.55s	remaining: 2.61s
715:	learn: 6.3512582	total: 6.56s	remaining: 2.6s
716:	learn: 6.3502569	total: 6.57s	remaining: 2.59s
717:	learn: 6.3487462	total: 6.58s	remaining: 2.58s
718:	learn: 6.3475276	total: 6.59s	remaining: 2.58s
719:	learn: 6.3463758	total: 6.6s	remaining: 2.57s
720:	learn: 6.3455898	total: 6.61s	remaining: 2.56s
721:	learn: 6.3442149	total: 6.62s	remaining: 2.55s
722:	learn: 6.3436653	total: 6.63s	remaining: 2.54s
723:	learn: 6.3431524	total: 6.64s	remaining: 2.53s
724:	learn: 6.3415273	total: 6.65s	remaining: 2.52s
725:	learn: 6.3405622	total: 6.66s	remaining: 2.51s
726:	learn: 6.3398544	total: 6.67s	remaining: 2.5s
727:	learn: 6.3372322	total: 6.68s	remaining: 2.5s
728:	learn: 6.3364575	total: 6.69s	remaining: 2.49s
729:	learn: 6.3355091	total: 6.7s	remaining: 2.48s
730:	learn: 6.3337964	total: 6.71s	remaining: 2.47s
731:	learn: 6.3324380	total: 6.72s	remaining: 2.46s
732:	learn: 6.3316622	total: 6.73s	remaining: 2.45s
733:	learn: 6.3309936	total: 6.74s	remaining: 2.44s
734:	learn: 6.3292035	total: 6.75s	remaining: 2.43s
735:	learn: 6.3285562	total: 6.76s	remaining: 2.42s
736:	learn: 6.3279204	total: 6.77s	remaining: 2.42s
737:	learn: 6.3258738	total: 6.78s	remaining: 2.41s
738:	learn: 6.3234438	total: 6.79s	remaining: 2.4s
739:	learn: 6.3220307	total: 6.8s	remaining: 2.39s
740:	learn: 6.3208834	total: 6.81s	remaining: 2.38s
741:	learn: 6.3194623	total: 6.82s	remaining: 2.37s
742:	learn: 6.3186299	total: 6.83s	remaining: 2.36s
743:	learn: 6.3173946	total: 6.84s	remaining: 2.35s
744:	learn: 6.3155883	total: 6.85s	remaining: 2.34s
745:	learn: 6.3131096	total: 6.86s	remaining: 2.33s
746:	learn: 6.3123815	total: 6.87s	remaining: 2.33s
747:	learn: 6.3119306	total: 6.88s	remaining: 2.32s
748:	learn: 6.3102675	total: 6.89s	remaining: 2.31s
749:	learn: 6.3092366	total: 6.9s	remaining: 2.3s
750:	learn: 6.3086275	total: 6.91s	remaining: 2.29s

751:	learn: 6.3077522	total: 6.92s	remaining: 2.28s
752:	learn: 6.3071273	total: 6.93s	remaining: 2.27s
753:	learn: 6.3060841	total: 6.94s	remaining: 2.26s
754:	learn: 6.3050282	total: 6.95s	remaining: 2.25s
755:	learn: 6.3043389	total: 6.96s	remaining: 2.25s
756:	learn: 6.3032876	total: 6.97s	remaining: 2.24s
757:	learn: 6.3028631	total: 6.98s	remaining: 2.23s
758:	learn: 6.3017352	total: 6.99s	remaining: 2.22s
759:	learn: 6.3009293	total: 7s	remaining: 2.21s
760:	learn: 6.2999113	total: 7.01s	remaining: 2.2s
761:	learn: 6.2990499	total: 7.02s	remaining: 2.19s
762:	learn: 6.2982986	total: 7.03s	remaining: 2.18s
763:	learn: 6.2968102	total: 7.04s	remaining: 2.17s
764:	learn: 6.2959430	total: 7.05s	remaining: 2.16s
765:	learn: 6.2948107	total: 7.05s	remaining: 2.15s
766:	learn: 6.2938287	total: 7.07s	remaining: 2.15s
767:	learn: 6.2927387	total: 7.08s	remaining: 2.14s
768:	learn: 6.2915170	total: 7.08s	remaining: 2.13s
769:	learn: 6.2907196	total: 7.09s	remaining: 2.12s
770:	learn: 6.2896154	total: 7.1s	remaining: 2.11s
771:	learn: 6.2892073	total: 7.11s	remaining: 2.1s
772:	learn: 6.2879732	total: 7.12s	remaining: 2.09s
773:	learn: 6.2871109	total: 7.13s	remaining: 2.08s
774:	learn: 6.2864781	total: 7.14s	remaining: 2.07s
775:	learn: 6.2850196	total: 7.15s	remaining: 2.06s
776:	learn: 6.2834392	total: 7.16s	remaining: 2.06s
777:	learn: 6.2823434	total: 7.17s	remaining: 2.05s
778:	learn: 6.2802358	total: 7.18s	remaining: 2.04s
779:	learn: 6.2788061	total: 7.19s	remaining: 2.03s
780:	learn: 6.2778499	total: 7.2s	remaining: 2.02s
781:	learn: 6.2770913	total: 7.21s	remaining: 2.01s
782:	learn: 6.2749362	total: 7.22s	remaining: 2s
783:	learn: 6.2733442	total: 7.23s	remaining: 1.99s
784:	learn: 6.2726875	total: 7.24s	remaining: 1.98s
785:	learn: 6.2717105	total: 7.25s	remaining: 1.97s
786:	learn: 6.2709005	total: 7.26s	remaining: 1.96s
787:	learn: 6.2693768	total: 7.26s	remaining: 1.95s
788:	learn: 6.2683272	total: 7.28s	remaining: 1.95s
789:	learn: 6.2675001	total: 7.29s	remaining: 1.94s
790:	learn: 6.2669164	total: 7.29s	remaining: 1.93s
791:	learn: 6.2665853	total: 7.3s	remaining: 1.92s
792:	learn: 6.2658086	total: 7.31s	remaining: 1.91s
793:	learn: 6.2647635	total: 7.32s	remaining: 1.9s
794:	learn: 6.2640438	total: 7.33s	remaining: 1.89s
795:	learn: 6.2623289	total: 7.34s	remaining: 1.88s
796:	learn: 6.2617435	total: 7.35s	remaining: 1.87s
797:	learn: 6.2589196	total: 7.36s	remaining: 1.86s
798:	learn: 6.2583227	total: 7.37s	remaining: 1.85s
799:	learn: 6.2570694	total: 7.38s	remaining: 1.84s
800:	learn: 6.2552019	total: 7.39s	remaining: 1.84s
801:	learn: 6.2544365	total: 7.4s	remaining: 1.83s
802:	learn: 6.2538064	total: 7.41s	remaining: 1.82s
803:	learn: 6.2528607	total: 7.42s	remaining: 1.81s
804:	learn: 6.2526117	total: 7.43s	remaining: 1.8s
805:	learn: 6.2517822	total: 7.44s	remaining: 1.79s
806:	learn: 6.2511377	total: 7.46s	remaining: 1.78s
807:	learn: 6.2499675	total: 7.47s	remaining: 1.77s
808:	learn: 6.2488915	total: 7.48s	remaining: 1.76s
809:	learn: 6.2481739	total: 7.49s	remaining: 1.76s
810:	learn: 6.2466350	total: 7.5s	remaining: 1.75s
811:	learn: 6.2458569	total: 7.51s	remaining: 1.74s
812:	learn: 6.2451075	total: 7.52s	remaining: 1.73s
813:	learn: 6.2431887	total: 7.53s	remaining: 1.72s
814:	learn: 6.2418938	total: 7.54s	remaining: 1.71s
815:	learn: 6.2410292	total: 7.55s	remaining: 1.7s
816:	learn: 6.2404989	total: 7.56s	remaining: 1.69s
817:	learn: 6.2395780	total: 7.57s	remaining: 1.68s
818:	learn: 6.2390834	total: 7.58s	remaining: 1.68s
819:	learn: 6.2382060	total: 7.59s	remaining: 1.67s
820:	learn: 6.2376077	total: 7.6s	remaining: 1.66s
821:	learn: 6.2366057	total: 7.61s	remaining: 1.65s
822:	learn: 6.2359469	total: 7.62s	remaining: 1.64s

823:	learn: 6.2351901	total: 7.63s	remaining: 1.63s
824:	learn: 6.2344296	total: 7.63s	remaining: 1.62s
825:	learn: 6.2336411	total: 7.64s	remaining: 1.61s
826:	learn: 6.2328650	total: 7.66s	remaining: 1.6s
827:	learn: 6.2319752	total: 7.66s	remaining: 1.59s
828:	learn: 6.2299399	total: 7.67s	remaining: 1.58s
829:	learn: 6.2292522	total: 7.68s	remaining: 1.57s
830:	learn: 6.2284688	total: 7.69s	remaining: 1.56s
831:	learn: 6.2265291	total: 7.7s	remaining: 1.55s
832:	learn: 6.2253481	total: 7.71s	remaining: 1.54s
833:	learn: 6.2248571	total: 7.72s	remaining: 1.54s
834:	learn: 6.2237184	total: 7.73s	remaining: 1.53s
835:	learn: 6.2229700	total: 7.74s	remaining: 1.52s
836:	learn: 6.2218876	total: 7.75s	remaining: 1.51s
837:	learn: 6.2213314	total: 7.76s	remaining: 1.5s
838:	learn: 6.2203813	total: 7.77s	remaining: 1.49s
839:	learn: 6.2193276	total: 7.78s	remaining: 1.48s
840:	learn: 6.2176536	total: 7.79s	remaining: 1.47s
841:	learn: 6.2169105	total: 7.8s	remaining: 1.46s
842:	learn: 6.2157196	total: 7.81s	remaining: 1.45s
843:	learn: 6.2149885	total: 7.82s	remaining: 1.45s
844:	learn: 6.2140060	total: 7.83s	remaining: 1.44s
845:	learn: 6.2134907	total: 7.84s	remaining: 1.43s
846:	learn: 6.2127645	total: 7.85s	remaining: 1.42s
847:	learn: 6.2121959	total: 7.86s	remaining: 1.41s
848:	learn: 6.2116881	total: 7.87s	remaining: 1.4s
849:	learn: 6.2108619	total: 7.88s	remaining: 1.39s
850:	learn: 6.2101117	total: 7.89s	remaining: 1.38s
851:	learn: 6.2093005	total: 7.9s	remaining: 1.37s
852:	learn: 6.2081205	total: 7.91s	remaining: 1.36s
853:	learn: 6.2071652	total: 7.92s	remaining: 1.35s
854:	learn: 6.2066547	total: 7.92s	remaining: 1.34s
855:	learn: 6.2060228	total: 7.93s	remaining: 1.33s
856:	learn: 6.2055539	total: 7.94s	remaining: 1.32s
857:	learn: 6.2047692	total: 7.95s	remaining: 1.32s
858:	learn: 6.2043333	total: 7.96s	remaining: 1.31s
859:	learn: 6.2034371	total: 7.98s	remaining: 1.3s
860:	learn: 6.2027613	total: 7.99s	remaining: 1.29s
861:	learn: 6.2020520	total: 8s	remaining: 1.28s
862:	learn: 6.2012499	total: 8.01s	remaining: 1.27s
863:	learn: 6.2008571	total: 8.02s	remaining: 1.26s
864:	learn: 6.1994961	total: 8.03s	remaining: 1.25s
865:	learn: 6.1985725	total: 8.04s	remaining: 1.24s
866:	learn: 6.1977337	total: 8.05s	remaining: 1.23s
867:	learn: 6.1973394	total: 8.06s	remaining: 1.23s
868:	learn: 6.1957740	total: 8.07s	remaining: 1.22s
869:	learn: 6.1953441	total: 8.07s	remaining: 1.21s
870:	learn: 6.1936713	total: 8.09s	remaining: 1.2s
871:	learn: 6.1931122	total: 8.1s	remaining: 1.19s
872:	learn: 6.1921167	total: 8.1s	remaining: 1.18s
873:	learn: 6.1917021	total: 8.12s	remaining: 1.17s
874:	learn: 6.1905671	total: 8.13s	remaining: 1.16s
875:	learn: 6.1900608	total: 8.13s	remaining: 1.15s
876:	learn: 6.1890494	total: 8.14s	remaining: 1.14s
877:	learn: 6.1884528	total: 8.15s	remaining: 1.13s
878:	learn: 6.1879476	total: 8.16s	remaining: 1.12s
879:	learn: 6.1862149	total: 8.17s	remaining: 1.11s
880:	learn: 6.1844215	total: 8.18s	remaining: 1.1s
881:	learn: 6.1828034	total: 8.19s	remaining: 1.1s
882:	learn: 6.1823603	total: 8.2s	remaining: 1.09s
883:	learn: 6.1815020	total: 8.21s	remaining: 1.08s
884:	learn: 6.1809186	total: 8.22s	remaining: 1.07s
885:	learn: 6.1800539	total: 8.23s	remaining: 1.06s
886:	learn: 6.1793068	total: 8.24s	remaining: 1.05s
887:	learn: 6.1782338	total: 8.25s	remaining: 1.04s
888:	learn: 6.1773875	total: 8.26s	remaining: 1.03s
889:	learn: 6.1768304	total: 8.27s	remaining: 1.02s
890:	learn: 6.1756239	total: 8.28s	remaining: 1.01s
891:	learn: 6.1743934	total: 8.29s	remaining: 1s
892:	learn: 6.1739928	total: 8.3s	remaining: 994ms

893:	learn: 6.1734412	total: 8.3s	remaining: 985ms
894:	learn: 6.1727934	total: 8.31s	remaining: 976ms
895:	learn: 6.1720439	total: 8.33s	remaining: 966ms
896:	learn: 6.1711078	total: 8.33s	remaining: 957ms
897:	learn: 6.1704253	total: 8.34s	remaining: 948ms
898:	learn: 6.1689957	total: 8.35s	remaining: 939ms
899:	learn: 6.1681293	total: 8.36s	remaining: 929ms
900:	learn: 6.1648135	total: 8.37s	remaining: 920ms
901:	learn: 6.1630058	total: 8.39s	remaining: 911ms
902:	learn: 6.1624306	total: 8.4s	remaining: 902ms
903:	learn: 6.1614864	total: 8.41s	remaining: 893ms
904:	learn: 6.1600605	total: 8.42s	remaining: 884ms
905:	learn: 6.1584959	total: 8.43s	remaining: 874ms
906:	learn: 6.1576851	total: 8.43s	remaining: 865ms
907:	learn: 6.1566969	total: 8.45s	remaining: 856ms
908:	learn: 6.1559657	total: 8.46s	remaining: 847ms
909:	learn: 6.1553329	total: 8.47s	remaining: 837ms
910:	learn: 6.1545205	total: 8.48s	remaining: 828ms
911:	learn: 6.1536318	total: 8.49s	remaining: 819ms
912:	learn: 6.1518658	total: 8.49s	remaining: 810ms
913:	learn: 6.1511066	total: 8.5s	remaining: 800ms
914:	learn: 6.1506555	total: 8.51s	remaining: 791ms
915:	learn: 6.1499177	total: 8.52s	remaining: 782ms
916:	learn: 6.1494182	total: 8.53s	remaining: 772ms
917:	learn: 6.1479814	total: 8.54s	remaining: 763ms
918:	learn: 6.1468081	total: 8.55s	remaining: 754ms
919:	learn: 6.1462133	total: 8.56s	remaining: 744ms
920:	learn: 6.1458422	total: 8.57s	remaining: 735ms
921:	learn: 6.1447235	total: 8.58s	remaining: 726ms
922:	learn: 6.1442869	total: 8.59s	remaining: 716ms
923:	learn: 6.1436883	total: 8.6s	remaining: 707ms
924:	learn: 6.1427834	total: 8.61s	remaining: 698ms
925:	learn: 6.1420540	total: 8.62s	remaining: 689ms
926:	learn: 6.1416384	total: 8.63s	remaining: 679ms
927:	learn: 6.1407276	total: 8.63s	remaining: 670ms
928:	learn: 6.1393539	total: 8.64s	remaining: 661ms
929:	learn: 6.1373497	total: 8.65s	remaining: 651ms
930:	learn: 6.1367469	total: 8.66s	remaining: 642ms
931:	learn: 6.1349236	total: 8.68s	remaining: 633ms
932:	learn: 6.1342500	total: 8.69s	remaining: 624ms
933:	learn: 6.1333885	total: 8.69s	remaining: 614ms
934:	learn: 6.1322051	total: 8.7s	remaining: 605ms
935:	learn: 6.1315220	total: 8.71s	remaining: 596ms
936:	learn: 6.1308792	total: 8.72s	remaining: 586ms
937:	learn: 6.1300753	total: 8.73s	remaining: 577ms
938:	learn: 6.1295254	total: 8.74s	remaining: 568ms
939:	learn: 6.1287271	total: 8.75s	remaining: 558ms
940:	learn: 6.1274705	total: 8.76s	remaining: 549ms
941:	learn: 6.1259546	total: 8.76s	remaining: 540ms
942:	learn: 6.1252311	total: 8.78s	remaining: 530ms
943:	learn: 6.1239209	total: 8.78s	remaining: 521ms
944:	learn: 6.1228831	total: 8.79s	remaining: 512ms
945:	learn: 6.1219237	total: 8.8s	remaining: 503ms
946:	learn: 6.1211310	total: 8.81s	remaining: 493ms
947:	learn: 6.1208441	total: 8.82s	remaining: 484ms
948:	learn: 6.1197881	total: 8.83s	remaining: 475ms
949:	learn: 6.1194706	total: 8.84s	remaining: 465ms
950:	learn: 6.1185372	total: 8.85s	remaining: 456ms
951:	learn: 6.1180264	total: 8.86s	remaining: 447ms
952:	learn: 6.1176498	total: 8.87s	remaining: 437ms
953:	learn: 6.1167775	total: 8.88s	remaining: 428ms
954:	learn: 6.1162978	total: 8.89s	remaining: 419ms
955:	learn: 6.1156419	total: 8.9s	remaining: 409ms
956:	learn: 6.1144082	total: 8.91s	remaining: 400ms
957:	learn: 6.1139418	total: 8.92s	remaining: 391ms
958:	learn: 6.1130711	total: 8.92s	remaining: 382ms
959:	learn: 6.1125560	total: 8.93s	remaining: 372ms
960:	learn: 6.1119545	total: 8.94s	remaining: 363ms
961:	learn: 6.1111766	total: 8.95s	remaining: 354ms
962:	learn: 6.1105512	total: 8.96s	remaining: 344ms
963:	learn: 6.1090678	total: 8.97s	remaining: 335ms
964:	learn: 6.1084695	total: 8.98s	remaining: 326ms

965:	learn: 6.1072595	total: 8.99s	remaining: 316ms
966:	learn: 6.1067968	total: 9s	remaining: 307ms
967:	learn: 6.1052233	total: 9.01s	remaining: 298ms
968:	learn: 6.1048275	total: 9.02s	remaining: 289ms
969:	learn: 6.1043775	total: 9.03s	remaining: 279ms
970:	learn: 6.1040449	total: 9.04s	remaining: 270ms
971:	learn: 6.1032714	total: 9.05s	remaining: 261ms
972:	learn: 6.1021390	total: 9.05s	remaining: 251ms
973:	learn: 6.1018332	total: 9.06s	remaining: 242ms
974:	learn: 6.1014812	total: 9.07s	remaining: 233ms
975:	learn: 6.1010645	total: 9.08s	remaining: 223ms
976:	learn: 6.1001305	total: 9.09s	remaining: 214ms
977:	learn: 6.0993646	total: 9.1s	remaining: 205ms
978:	learn: 6.0989899	total: 9.11s	remaining: 195ms
979:	learn: 6.0983056	total: 9.12s	remaining: 186ms
980:	learn: 6.0974476	total: 9.13s	remaining: 177ms
981:	learn: 6.0965153	total: 9.14s	remaining: 167ms
982:	learn: 6.0957990	total: 9.14s	remaining: 158ms
983:	learn: 6.0949873	total: 9.15s	remaining: 149ms
984:	learn: 6.0937541	total: 9.16s	remaining: 140ms
985:	learn: 6.0928829	total: 9.17s	remaining: 130ms
986:	learn: 6.0922449	total: 9.18s	remaining: 121ms
987:	learn: 6.0913490	total: 9.19s	remaining: 112ms
988:	learn: 6.0902604	total: 9.2s	remaining: 102ms
989:	learn: 6.0897986	total: 9.21s	remaining: 93ms
990:	learn: 6.0894493	total: 9.22s	remaining: 83.7ms
991:	learn: 6.0884742	total: 9.23s	remaining: 74.4ms
992:	learn: 6.0880084	total: 9.23s	remaining: 65.1ms
993:	learn: 6.0874851	total: 9.24s	remaining: 55.8ms
994:	learn: 6.0871417	total: 9.25s	remaining: 46.5ms
995:	learn: 6.0865378	total: 9.27s	remaining: 37.2ms
996:	learn: 6.0849279	total: 9.28s	remaining: 27.9ms
997:	learn: 6.0844046	total: 9.29s	remaining: 18.6ms
998:	learn: 6.0835657	total: 9.3s	remaining: 9.31ms
999:	learn: 6.0829783	total: 9.31s	remaining: 0us

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
 warnings.warn(

Learning rate set to 0.07344

0:	learn: 12.2322016	total: 6.51ms	remaining: 6.51s
1:	learn: 12.0525663	total: 13.4ms	remaining: 6.68s
2:	learn: 11.8585721	total: 19.2ms	remaining: 6.38s
3:	learn: 11.6957700	total: 26.3ms	remaining: 6.55s
4:	learn: 11.5506020	total: 32.1ms	remaining: 6.39s
5:	learn: 11.4237153	total: 38.4ms	remaining: 6.36s
6:	learn: 11.2960166	total: 44.4ms	remaining: 6.3s
7:	learn: 11.1747358	total: 50.7ms	remaining: 6.28s
8:	learn: 11.0791449	total: 57.8ms	remaining: 6.36s
9:	learn: 10.9894784	total: 63ms	remaining: 6.24s
10:	learn: 10.8911632	total: 70.8ms	remaining: 6.36s
11:	learn: 10.8003529	total: 77.3ms	remaining: 6.36s
12:	learn: 10.7279549	total: 83.1ms	remaining: 6.31s
13:	learn: 10.6586761	total: 90.7ms	remaining: 6.39s
14:	learn: 10.5969437	total: 97.1ms	remaining: 6.38s
15:	learn: 10.5379019	total: 103ms	remaining: 6.36s
16:	learn: 10.4702411	total: 110ms	remaining: 6.38s
17:	learn: 10.4039357	total: 117ms	remaining: 6.36s
18:	learn: 10.3472262	total: 123ms	remaining: 6.36s
19:	learn: 10.3033648	total: 130ms	remaining: 6.39s
20:	learn: 10.2621510	total: 138ms	remaining: 6.41s
21:	learn: 10.2148587	total: 143ms	remaining: 6.35s
22:	learn: 10.1692284	total: 149ms	remaining: 6.32s
23:	learn: 10.1335068	total: 156ms	remaining: 6.36s
24:	learn: 10.0874035	total: 161ms	remaining: 6.3s
25:	learn: 10.0488593	total: 169ms	remaining: 6.34s
26:	learn: 10.0109714	total: 175ms	remaining: 6.31s
27:	learn: 9.9763940	total: 180ms	remaining: 6.25s
28:	learn: 9.9325627	total: 189ms	remaining: 6.32s

29:	learn: 9.8986264	total: 194ms	remaining: 6.29s
30:	learn: 9.8578214	total: 201ms	remaining: 6.28s
31:	learn: 9.8215962	total: 207ms	remaining: 6.28s
32:	learn: 9.7851424	total: 214ms	remaining: 6.29s
33:	learn: 9.7582636	total: 223ms	remaining: 6.34s
34:	learn: 9.7337878	total: 230ms	remaining: 6.33s
35:	learn: 9.6760744	total: 240ms	remaining: 6.44s
36:	learn: 9.6391493	total: 246ms	remaining: 6.41s
37:	learn: 9.6051949	total: 254ms	remaining: 6.42s
38:	learn: 9.5827957	total: 260ms	remaining: 6.4s
39:	learn: 9.5595125	total: 266ms	remaining: 6.39s
40:	learn: 9.5416729	total: 273ms	remaining: 6.37s
41:	learn: 9.5113395	total: 281ms	remaining: 6.4s
42:	learn: 9.4879077	total: 287ms	remaining: 6.39s
43:	learn: 9.4580711	total: 293ms	remaining: 6.37s
44:	learn: 9.4325796	total: 299ms	remaining: 6.34s
45:	learn: 9.4103746	total: 305ms	remaining: 6.33s
46:	learn: 9.3912373	total: 312ms	remaining: 6.32s
47:	learn: 9.3742755	total: 320ms	remaining: 6.34s
48:	learn: 9.3558291	total: 325ms	remaining: 6.3s
49:	learn: 9.3311194	total: 330ms	remaining: 6.28s
50:	learn: 9.3085644	total: 336ms	remaining: 6.26s
51:	learn: 9.2686285	total: 342ms	remaining: 6.24s
52:	learn: 9.2554040	total: 350ms	remaining: 6.25s
53:	learn: 9.2351345	total: 355ms	remaining: 6.22s
54:	learn: 9.2229296	total: 361ms	remaining: 6.2s
55:	learn: 9.1964545	total: 369ms	remaining: 6.22s
56:	learn: 9.1861655	total: 375ms	remaining: 6.2s
57:	learn: 9.1576459	total: 384ms	remaining: 6.24s
58:	learn: 9.1413572	total: 391ms	remaining: 6.23s
59:	learn: 9.1218994	total: 397ms	remaining: 6.22s
60:	learn: 9.1031854	total: 403ms	remaining: 6.2s
61:	learn: 9.0822214	total: 410ms	remaining: 6.2s
62:	learn: 9.0666617	total: 418ms	remaining: 6.22s
63:	learn: 9.0495940	total: 426ms	remaining: 6.23s
64:	learn: 9.0337485	total: 433ms	remaining: 6.22s
65:	learn: 9.0214718	total: 439ms	remaining: 6.21s
66:	learn: 8.9930262	total: 447ms	remaining: 6.23s
67:	learn: 8.9779324	total: 453ms	remaining: 6.21s
68:	learn: 8.9701452	total: 459ms	remaining: 6.19s
69:	learn: 8.9374512	total: 465ms	remaining: 6.18s
70:	learn: 8.9205476	total: 471ms	remaining: 6.16s
71:	learn: 8.9093802	total: 479ms	remaining: 6.17s
72:	learn: 8.8909894	total: 485ms	remaining: 6.16s
73:	learn: 8.8685891	total: 491ms	remaining: 6.15s
74:	learn: 8.8531768	total: 497ms	remaining: 6.13s
75:	learn: 8.8404196	total: 503ms	remaining: 6.11s
76:	learn: 8.8271047	total: 508ms	remaining: 6.09s
77:	learn: 8.8125660	total: 516ms	remaining: 6.1s
78:	learn: 8.7866262	total: 523ms	remaining: 6.09s
79:	learn: 8.7615888	total: 529ms	remaining: 6.08s
80:	learn: 8.7447296	total: 534ms	remaining: 6.06s
81:	learn: 8.7347347	total: 540ms	remaining: 6.04s
82:	learn: 8.7241718	total: 547ms	remaining: 6.04s
83:	learn: 8.7098512	total: 553ms	remaining: 6.04s
84:	learn: 8.6910505	total: 560ms	remaining: 6.03s
85:	learn: 8.6788234	total: 565ms	remaining: 6.01s
86:	learn: 8.6730904	total: 571ms	remaining: 5.99s
87:	learn: 8.6623078	total: 579ms	remaining: 6s
88:	learn: 8.6477705	total: 586ms	remaining: 6s
89:	learn: 8.6371771	total: 592ms	remaining: 5.99s
90:	learn: 8.6276183	total: 598ms	remaining: 5.98s
91:	learn: 8.6091753	total: 604ms	remaining: 5.96s
92:	learn: 8.6001660	total: 612ms	remaining: 5.97s
93:	learn: 8.5801445	total: 617ms	remaining: 5.95s
94:	learn: 8.5730893	total: 624ms	remaining: 5.94s
95:	learn: 8.5615260	total: 632ms	remaining: 5.95s
96:	learn: 8.5508722	total: 642ms	remaining: 5.97s
97:	learn: 8.5449579	total: 647ms	remaining: 5.96s
98:	learn: 8.5338589	total: 653ms	remaining: 5.95s
99:	learn: 8.5208407	total: 659ms	remaining: 5.93s
100:	learn: 8.5001814	total: 666ms	remaining: 5.93s

101:	learn: 8.4898241	total: 672ms	remaining: 5.91s
102:	learn: 8.4829038	total: 679ms	remaining: 5.91s
103:	learn: 8.4767270	total: 685ms	remaining: 5.9s
104:	learn: 8.4606506	total: 691ms	remaining: 5.89s
105:	learn: 8.4541302	total: 699ms	remaining: 5.9s
106:	learn: 8.4431391	total: 708ms	remaining: 5.91s
107:	learn: 8.4313270	total: 714ms	remaining: 5.89s
108:	learn: 8.4135907	total: 719ms	remaining: 5.88s
109:	learn: 8.4062749	total: 727ms	remaining: 5.88s
110:	learn: 8.3966941	total: 733ms	remaining: 5.87s
111:	learn: 8.3873060	total: 741ms	remaining: 5.87s
112:	learn: 8.3814333	total: 747ms	remaining: 5.86s
113:	learn: 8.3636153	total: 754ms	remaining: 5.86s
114:	learn: 8.3526240	total: 761ms	remaining: 5.86s
115:	learn: 8.3352524	total: 768ms	remaining: 5.85s
116:	learn: 8.3259257	total: 776ms	remaining: 5.86s
117:	learn: 8.3091921	total: 783ms	remaining: 5.85s
118:	learn: 8.3028495	total: 791ms	remaining: 5.86s
119:	learn: 8.2900662	total: 797ms	remaining: 5.84s
120:	learn: 8.2781775	total: 806ms	remaining: 5.86s
121:	learn: 8.2704447	total: 813ms	remaining: 5.85s
122:	learn: 8.2535627	total: 822ms	remaining: 5.86s
123:	learn: 8.2474296	total: 828ms	remaining: 5.85s
124:	learn: 8.2316562	total: 838ms	remaining: 5.86s
125:	learn: 8.2214180	total: 848ms	remaining: 5.88s
126:	learn: 8.2131759	total: 856ms	remaining: 5.88s
127:	learn: 8.2042132	total: 863ms	remaining: 5.88s
128:	learn: 8.1978665	total: 871ms	remaining: 5.88s
129:	learn: 8.1888812	total: 878ms	remaining: 5.87s
130:	learn: 8.1818577	total: 885ms	remaining: 5.87s
131:	learn: 8.1717565	total: 894ms	remaining: 5.88s
132:	learn: 8.1607391	total: 902ms	remaining: 5.88s
133:	learn: 8.1539536	total: 913ms	remaining: 5.9s
134:	learn: 8.1445461	total: 921ms	remaining: 5.9s
135:	learn: 8.1276394	total: 928ms	remaining: 5.89s
136:	learn: 8.1182246	total: 936ms	remaining: 5.9s
137:	learn: 8.1079389	total: 944ms	remaining: 5.9s
138:	learn: 8.0965148	total: 953ms	remaining: 5.9s
139:	learn: 8.0873536	total: 960ms	remaining: 5.9s
140:	learn: 8.0823820	total: 969ms	remaining: 5.91s
141:	learn: 8.0752167	total: 977ms	remaining: 5.9s
142:	learn: 8.0641493	total: 985ms	remaining: 5.9s
143:	learn: 8.0542006	total: 994ms	remaining: 5.91s
144:	learn: 8.0422860	total: 1s	remaining: 5.92s
145:	learn: 8.0378690	total: 1.01s	remaining: 5.92s
146:	learn: 8.0286529	total: 1.02s	remaining: 5.92s
147:	learn: 8.0189189	total: 1.03s	remaining: 5.92s
148:	learn: 8.0112690	total: 1.04s	remaining: 5.93s
149:	learn: 8.0032806	total: 1.05s	remaining: 5.93s
150:	learn: 7.9939731	total: 1.06s	remaining: 5.95s
151:	learn: 7.9855193	total: 1.07s	remaining: 5.96s
152:	learn: 7.9795927	total: 1.07s	remaining: 5.96s
153:	learn: 7.9732639	total: 1.08s	remaining: 5.96s
154:	learn: 7.9648139	total: 1.09s	remaining: 5.96s
155:	learn: 7.9556735	total: 1.1s	remaining: 5.97s
156:	learn: 7.9459129	total: 1.11s	remaining: 5.96s
157:	learn: 7.9381668	total: 1.12s	remaining: 5.96s
158:	learn: 7.9317447	total: 1.13s	remaining: 5.96s
159:	learn: 7.9207588	total: 1.14s	remaining: 5.97s
160:	learn: 7.9159208	total: 1.15s	remaining: 5.98s
161:	learn: 7.9096485	total: 1.16s	remaining: 5.97s
162:	learn: 7.9022087	total: 1.16s	remaining: 5.98s
163:	learn: 7.8876024	total: 1.17s	remaining: 5.98s
164:	learn: 7.8828079	total: 1.18s	remaining: 5.98s
165:	learn: 7.8772071	total: 1.19s	remaining: 5.97s
166:	learn: 7.8681999	total: 1.2s	remaining: 6s
167:	learn: 7.8598419	total: 1.21s	remaining: 6.02s
168:	learn: 7.8525026	total: 1.22s	remaining: 6.02s
169:	learn: 7.8487222	total: 1.23s	remaining: 6.02s
170:	learn: 7.8410645	total: 1.24s	remaining: 6.03s
171:	learn: 7.8312800	total: 1.25s	remaining: 6.04s

172:	learn: 7.8254096	total: 1.26s	remaining: 6.04s
173:	learn: 7.8194414	total: 1.28s	remaining: 6.06s
174:	learn: 7.8105387	total: 1.29s	remaining: 6.07s
175:	learn: 7.7995957	total: 1.3s	remaining: 6.07s
176:	learn: 7.7938854	total: 1.31s	remaining: 6.08s
177:	learn: 7.7878985	total: 1.32s	remaining: 6.08s
178:	learn: 7.7811205	total: 1.32s	remaining: 6.08s
179:	learn: 7.7755676	total: 1.34s	remaining: 6.09s
180:	learn: 7.7668505	total: 1.34s	remaining: 6.09s
181:	learn: 7.7614017	total: 1.35s	remaining: 6.08s
182:	learn: 7.7535937	total: 1.36s	remaining: 6.08s
183:	learn: 7.7441700	total: 1.37s	remaining: 6.08s
184:	learn: 7.7377279	total: 1.38s	remaining: 6.09s
185:	learn: 7.7326367	total: 1.39s	remaining: 6.08s
186:	learn: 7.7262559	total: 1.4s	remaining: 6.09s
187:	learn: 7.7191348	total: 1.41s	remaining: 6.11s
188:	learn: 7.7109795	total: 1.42s	remaining: 6.1s
189:	learn: 7.7034114	total: 1.43s	remaining: 6.11s
190:	learn: 7.6968757	total: 1.44s	remaining: 6.11s
191:	learn: 7.6904784	total: 1.45s	remaining: 6.12s
192:	learn: 7.6848918	total: 1.47s	remaining: 6.13s
193:	learn: 7.6811531	total: 1.48s	remaining: 6.14s
194:	learn: 7.6732705	total: 1.49s	remaining: 6.13s
195:	learn: 7.6672051	total: 1.5s	remaining: 6.13s
196:	learn: 7.6601944	total: 1.5s	remaining: 6.14s
197:	learn: 7.6547102	total: 1.51s	remaining: 6.13s
198:	learn: 7.6487300	total: 1.52s	remaining: 6.13s
199:	learn: 7.6384713	total: 1.53s	remaining: 6.13s
200:	learn: 7.6314140	total: 1.54s	remaining: 6.13s
201:	learn: 7.6256009	total: 1.55s	remaining: 6.12s
202:	learn: 7.6193519	total: 1.56s	remaining: 6.12s
203:	learn: 7.6144141	total: 1.57s	remaining: 6.12s
204:	learn: 7.6077991	total: 1.58s	remaining: 6.11s
205:	learn: 7.6025468	total: 1.59s	remaining: 6.11s
206:	learn: 7.5966991	total: 1.6s	remaining: 6.12s
207:	learn: 7.5904673	total: 1.6s	remaining: 6.11s
208:	learn: 7.5860590	total: 1.61s	remaining: 6.11s
209:	learn: 7.5819360	total: 1.62s	remaining: 6.1s
210:	learn: 7.5759721	total: 1.63s	remaining: 6.11s
211:	learn: 7.5698276	total: 1.64s	remaining: 6.11s
212:	learn: 7.5657440	total: 1.65s	remaining: 6.1s
213:	learn: 7.5615869	total: 1.66s	remaining: 6.11s
214:	learn: 7.5527159	total: 1.68s	remaining: 6.13s
215:	learn: 7.5485433	total: 1.69s	remaining: 6.14s
216:	learn: 7.5426768	total: 1.7s	remaining: 6.15s
217:	learn: 7.5363287	total: 1.71s	remaining: 6.14s
218:	learn: 7.5333342	total: 1.72s	remaining: 6.14s
219:	learn: 7.5268472	total: 1.74s	remaining: 6.16s
220:	learn: 7.5218351	total: 1.75s	remaining: 6.16s
221:	learn: 7.5158768	total: 1.76s	remaining: 6.17s
222:	learn: 7.5097872	total: 1.77s	remaining: 6.18s
223:	learn: 7.5053545	total: 1.78s	remaining: 6.18s
224:	learn: 7.5013344	total: 1.81s	remaining: 6.22s
225:	learn: 7.4939559	total: 1.82s	remaining: 6.22s
226:	learn: 7.4863174	total: 1.83s	remaining: 6.24s
227:	learn: 7.4822725	total: 1.84s	remaining: 6.24s
228:	learn: 7.4774587	total: 1.85s	remaining: 6.25s
229:	learn: 7.4717301	total: 1.87s	remaining: 6.26s
230:	learn: 7.4660925	total: 1.88s	remaining: 6.27s
231:	learn: 7.4592729	total: 1.9s	remaining: 6.29s
232:	learn: 7.4539556	total: 1.91s	remaining: 6.29s
233:	learn: 7.4496389	total: 1.92s	remaining: 6.29s
234:	learn: 7.4440776	total: 1.94s	remaining: 6.3s
235:	learn: 7.4392633	total: 1.95s	remaining: 6.3s
236:	learn: 7.4350210	total: 1.96s	remaining: 6.3s
237:	learn: 7.4309750	total: 1.97s	remaining: 6.3s
238:	learn: 7.4199155	total: 1.98s	remaining: 6.3s
239:	learn: 7.4148263	total: 1.99s	remaining: 6.3s
240:	learn: 7.4057073	total: 2s	remaining: 6.3s
241:	learn: 7.4017508	total: 2.01s	remaining: 6.29s
242:	learn: 7.3974336	total: 2.02s	remaining: 6.29s
243:	learn: 7.3917422	total: 2.03s	remaining: 6.29s

244:	learn: 7.3870164	total: 2.04s	remaining: 6.28s
245:	learn: 7.3826272	total: 2.05s	remaining: 6.29s
246:	learn: 7.3787875	total: 2.06s	remaining: 6.28s
247:	learn: 7.3737614	total: 2.07s	remaining: 6.28s
248:	learn: 7.3643190	total: 2.08s	remaining: 6.28s
249:	learn: 7.3610005	total: 2.1s	remaining: 6.29s
250:	learn: 7.3571775	total: 2.11s	remaining: 6.29s
251:	learn: 7.3508011	total: 2.12s	remaining: 6.28s
252:	learn: 7.3455250	total: 2.13s	remaining: 6.29s
253:	learn: 7.3419822	total: 2.16s	remaining: 6.33s
254:	learn: 7.3376097	total: 2.17s	remaining: 6.33s
255:	learn: 7.3318990	total: 2.18s	remaining: 6.32s
256:	learn: 7.3277336	total: 2.19s	remaining: 6.32s
257:	learn: 7.3199604	total: 2.2s	remaining: 6.32s
258:	learn: 7.3139062	total: 2.21s	remaining: 6.31s
259:	learn: 7.3078432	total: 2.23s	remaining: 6.34s
260:	learn: 7.3033016	total: 2.24s	remaining: 6.33s
261:	learn: 7.3000808	total: 2.25s	remaining: 6.33s
262:	learn: 7.2956637	total: 2.26s	remaining: 6.33s
263:	learn: 7.2914901	total: 2.27s	remaining: 6.32s
264:	learn: 7.2879101	total: 2.27s	remaining: 6.31s
265:	learn: 7.2828789	total: 2.29s	remaining: 6.31s
266:	learn: 7.2780927	total: 2.3s	remaining: 6.31s
267:	learn: 7.2758465	total: 2.31s	remaining: 6.31s
268:	learn: 7.2713001	total: 2.32s	remaining: 6.31s
269:	learn: 7.2674574	total: 2.33s	remaining: 6.3s
270:	learn: 7.2635249	total: 2.34s	remaining: 6.29s
271:	learn: 7.2606063	total: 2.35s	remaining: 6.29s
272:	learn: 7.2572710	total: 2.36s	remaining: 6.29s
273:	learn: 7.2541976	total: 2.37s	remaining: 6.28s
274:	learn: 7.2505801	total: 2.38s	remaining: 6.27s
275:	learn: 7.2468079	total: 2.39s	remaining: 6.27s
276:	learn: 7.2445676	total: 2.4s	remaining: 6.26s
277:	learn: 7.2400908	total: 2.41s	remaining: 6.25s
278:	learn: 7.2358262	total: 2.42s	remaining: 6.24s
279:	learn: 7.2321452	total: 2.43s	remaining: 6.24s
280:	learn: 7.2276063	total: 2.44s	remaining: 6.24s
281:	learn: 7.2248203	total: 2.44s	remaining: 6.23s
282:	learn: 7.2221336	total: 2.46s	remaining: 6.23s
283:	learn: 7.2162009	total: 2.47s	remaining: 6.22s
284:	learn: 7.2134321	total: 2.48s	remaining: 6.21s
285:	learn: 7.2103017	total: 2.49s	remaining: 6.21s
286:	learn: 7.2062718	total: 2.5s	remaining: 6.2s
287:	learn: 7.2016320	total: 2.51s	remaining: 6.2s
288:	learn: 7.1968980	total: 2.52s	remaining: 6.2s
289:	learn: 7.1926942	total: 2.53s	remaining: 6.19s
290:	learn: 7.1892294	total: 2.54s	remaining: 6.19s
291:	learn: 7.1838822	total: 2.55s	remaining: 6.18s
292:	learn: 7.1768021	total: 2.56s	remaining: 6.18s
293:	learn: 7.1735213	total: 2.57s	remaining: 6.17s
294:	learn: 7.1709335	total: 2.58s	remaining: 6.16s
295:	learn: 7.1672214	total: 2.59s	remaining: 6.16s
296:	learn: 7.1630096	total: 2.6s	remaining: 6.15s
297:	learn: 7.1550427	total: 2.61s	remaining: 6.15s
298:	learn: 7.1481606	total: 2.62s	remaining: 6.14s
299:	learn: 7.1423962	total: 2.63s	remaining: 6.14s
300:	learn: 7.1377549	total: 2.64s	remaining: 6.13s
301:	learn: 7.1335582	total: 2.65s	remaining: 6.13s
302:	learn: 7.1300639	total: 2.66s	remaining: 6.13s
303:	learn: 7.1270908	total: 2.67s	remaining: 6.12s
304:	learn: 7.1219216	total: 2.68s	remaining: 6.12s
305:	learn: 7.1177890	total: 2.69s	remaining: 6.11s
306:	learn: 7.1136489	total: 2.71s	remaining: 6.12s
307:	learn: 7.1102026	total: 2.72s	remaining: 6.12s
308:	learn: 7.1072666	total: 2.73s	remaining: 6.12s
309:	learn: 7.1041820	total: 2.75s	remaining: 6.12s
310:	learn: 7.0997685	total: 2.76s	remaining: 6.11s
311:	learn: 7.0977057	total: 2.77s	remaining: 6.1s
312:	learn: 7.0957360	total: 2.78s	remaining: 6.09s
313:	learn: 7.0936165	total: 2.79s	remaining: 6.09s
314:	learn: 7.0902907	total: 2.8s	remaining: 6.09s
315:	learn: 7.0846076	total: 2.81s	remaining: 6.08s

316:	learn: 7.0787281	total: 2.82s	remaining: 6.08s
317:	learn: 7.0721297	total: 2.83s	remaining: 6.07s
318:	learn: 7.0694651	total: 2.84s	remaining: 6.06s
319:	learn: 7.0660268	total: 2.85s	remaining: 6.06s
320:	learn: 7.0630980	total: 2.86s	remaining: 6.05s
321:	learn: 7.0586298	total: 2.87s	remaining: 6.05s
322:	learn: 7.0559402	total: 2.88s	remaining: 6.04s
323:	learn: 7.0522496	total: 2.89s	remaining: 6.04s
324:	learn: 7.0498636	total: 2.91s	remaining: 6.04s
325:	learn: 7.0476691	total: 2.92s	remaining: 6.04s
326:	learn: 7.0443952	total: 2.93s	remaining: 6.04s
327:	learn: 7.0410560	total: 2.95s	remaining: 6.04s
328:	learn: 7.0381699	total: 2.96s	remaining: 6.03s
329:	learn: 7.0316960	total: 2.97s	remaining: 6.02s
330:	learn: 7.0285301	total: 2.98s	remaining: 6.01s
331:	learn: 7.0262224	total: 2.99s	remaining: 6.01s
332:	learn: 7.0213818	total: 3s	remaining: 6s
333:	learn: 7.0178251	total: 3s	remaining: 5.99s
334:	learn: 7.0151419	total: 3.02s	remaining: 5.99s
335:	learn: 7.0123444	total: 3.03s	remaining: 5.98s
336:	learn: 7.0095343	total: 3.04s	remaining: 5.97s
337:	learn: 7.0075043	total: 3.05s	remaining: 5.97s
338:	learn: 7.0027439	total: 3.06s	remaining: 5.96s
339:	learn: 6.9996681	total: 3.07s	remaining: 5.95s
340:	learn: 6.9951901	total: 3.08s	remaining: 5.95s
341:	learn: 6.9920669	total: 3.09s	remaining: 5.94s
342:	learn: 6.9886148	total: 3.1s	remaining: 5.93s
343:	learn: 6.9859912	total: 3.11s	remaining: 5.92s
344:	learn: 6.9829413	total: 3.12s	remaining: 5.92s
345:	learn: 6.9809856	total: 3.13s	remaining: 5.91s
346:	learn: 6.9771103	total: 3.14s	remaining: 5.91s
347:	learn: 6.9723520	total: 3.16s	remaining: 5.92s
348:	learn: 6.9702107	total: 3.17s	remaining: 5.91s
349:	learn: 6.9686949	total: 3.18s	remaining: 5.91s
350:	learn: 6.9658488	total: 3.19s	remaining: 5.9s
351:	learn: 6.9630987	total: 3.2s	remaining: 5.89s
352:	learn: 6.9595487	total: 3.21s	remaining: 5.89s
353:	learn: 6.9564398	total: 3.22s	remaining: 5.88s
354:	learn: 6.9512679	total: 3.23s	remaining: 5.87s
355:	learn: 6.9485046	total: 3.24s	remaining: 5.87s
356:	learn: 6.9415186	total: 3.25s	remaining: 5.86s
357:	learn: 6.9391490	total: 3.26s	remaining: 5.85s
358:	learn: 6.9345729	total: 3.27s	remaining: 5.84s
359:	learn: 6.9315254	total: 3.28s	remaining: 5.84s
360:	learn: 6.9276370	total: 3.29s	remaining: 5.83s
361:	learn: 6.9248587	total: 3.3s	remaining: 5.82s
362:	learn: 6.9208084	total: 3.31s	remaining: 5.82s
363:	learn: 6.9174508	total: 3.33s	remaining: 5.81s
364:	learn: 6.9158936	total: 3.33s	remaining: 5.8s
365:	learn: 6.9128194	total: 3.35s	remaining: 5.8s
366:	learn: 6.9099284	total: 3.37s	remaining: 5.81s
367:	learn: 6.9080232	total: 3.38s	remaining: 5.8s
368:	learn: 6.9066076	total: 3.39s	remaining: 5.79s
369:	learn: 6.9052345	total: 3.4s	remaining: 5.78s
370:	learn: 6.9026589	total: 3.4s	remaining: 5.77s
371:	learn: 6.9006074	total: 3.41s	remaining: 5.76s
372:	learn: 6.8981591	total: 3.42s	remaining: 5.76s
373:	learn: 6.8915099	total: 3.43s	remaining: 5.75s
374:	learn: 6.8888780	total: 3.44s	remaining: 5.74s
375:	learn: 6.8859184	total: 3.45s	remaining: 5.73s
376:	learn: 6.8832230	total: 3.46s	remaining: 5.72s
377:	learn: 6.8801330	total: 3.47s	remaining: 5.71s
378:	learn: 6.8788231	total: 3.48s	remaining: 5.71s
379:	learn: 6.8733469	total: 3.49s	remaining: 5.7s
380:	learn: 6.8688295	total: 3.5s	remaining: 5.69s
381:	learn: 6.8658720	total: 3.51s	remaining: 5.69s
382:	learn: 6.8619615	total: 3.52s	remaining: 5.68s
383:	learn: 6.8570628	total: 3.53s	remaining: 5.67s
384:	learn: 6.8520503	total: 3.54s	remaining: 5.66s
385:	learn: 6.8486087	total: 3.55s	remaining: 5.65s

386:	learn: 6.8465292	total: 3.56s	remaining: 5.64s
387:	learn: 6.8440383	total: 3.58s	remaining: 5.64s
388:	learn: 6.8419236	total: 3.59s	remaining: 5.63s
389:	learn: 6.8380540	total: 3.6s	remaining: 5.62s
390:	learn: 6.8347913	total: 3.6s	remaining: 5.61s
391:	learn: 6.8316649	total: 3.62s	remaining: 5.61s
392:	learn: 6.8287687	total: 3.62s	remaining: 5.6s
393:	learn: 6.8254681	total: 3.63s	remaining: 5.59s
394:	learn: 6.8224925	total: 3.64s	remaining: 5.58s
395:	learn: 6.8200235	total: 3.65s	remaining: 5.57s
396:	learn: 6.8179133	total: 3.66s	remaining: 5.56s
397:	learn: 6.8161214	total: 3.67s	remaining: 5.56s
398:	learn: 6.8140856	total: 3.68s	remaining: 5.55s
399:	learn: 6.8120015	total: 3.69s	remaining: 5.54s
400:	learn: 6.8095431	total: 3.7s	remaining: 5.53s
401:	learn: 6.8068842	total: 3.71s	remaining: 5.52s
402:	learn: 6.8046665	total: 3.72s	remaining: 5.51s
403:	learn: 6.8019128	total: 3.73s	remaining: 5.5s
404:	learn: 6.7998156	total: 3.74s	remaining: 5.5s
405:	learn: 6.7981800	total: 3.75s	remaining: 5.49s
406:	learn: 6.7958032	total: 3.76s	remaining: 5.48s
407:	learn: 6.7941295	total: 3.77s	remaining: 5.47s
408:	learn: 6.7917902	total: 3.78s	remaining: 5.47s
409:	learn: 6.7860423	total: 3.79s	remaining: 5.46s
410:	learn: 6.7843811	total: 3.8s	remaining: 5.45s
411:	learn: 6.7808140	total: 3.81s	remaining: 5.44s
412:	learn: 6.7785236	total: 3.82s	remaining: 5.43s
413:	learn: 6.7754920	total: 3.83s	remaining: 5.42s
414:	learn: 6.7739613	total: 3.84s	remaining: 5.42s
415:	learn: 6.7701239	total: 3.85s	remaining: 5.41s
416:	learn: 6.7670402	total: 3.86s	remaining: 5.4s
417:	learn: 6.7647480	total: 3.87s	remaining: 5.39s
418:	learn: 6.7626516	total: 3.88s	remaining: 5.38s
419:	learn: 6.7599700	total: 3.89s	remaining: 5.38s
420:	learn: 6.7582130	total: 3.9s	remaining: 5.37s
421:	learn: 6.7555287	total: 3.92s	remaining: 5.36s
422:	learn: 6.7536833	total: 3.93s	remaining: 5.36s
423:	learn: 6.7517659	total: 3.94s	remaining: 5.35s
424:	learn: 6.7485837	total: 3.95s	remaining: 5.34s
425:	learn: 6.7461991	total: 3.96s	remaining: 5.33s
426:	learn: 6.7446573	total: 3.97s	remaining: 5.32s
427:	learn: 6.7432077	total: 3.98s	remaining: 5.32s
428:	learn: 6.7415748	total: 3.99s	remaining: 5.31s
429:	learn: 6.7383071	total: 4s	remaining: 5.31s
430:	learn: 6.7362929	total: 4.01s	remaining: 5.3s
431:	learn: 6.7340445	total: 4.02s	remaining: 5.29s
432:	learn: 6.7306598	total: 4.03s	remaining: 5.28s
433:	learn: 6.7287139	total: 4.04s	remaining: 5.27s
434:	learn: 6.7255435	total: 4.05s	remaining: 5.26s
435:	learn: 6.7227425	total: 4.06s	remaining: 5.25s
436:	learn: 6.7204806	total: 4.07s	remaining: 5.24s
437:	learn: 6.7186792	total: 4.08s	remaining: 5.23s
438:	learn: 6.7161727	total: 4.09s	remaining: 5.22s
439:	learn: 6.7137278	total: 4.1s	remaining: 5.21s
440:	learn: 6.7109219	total: 4.11s	remaining: 5.21s
441:	learn: 6.7099755	total: 4.11s	remaining: 5.19s
442:	learn: 6.7077710	total: 4.12s	remaining: 5.18s
443:	learn: 6.7062667	total: 4.13s	remaining: 5.18s
444:	learn: 6.7042836	total: 4.14s	remaining: 5.17s
445:	learn: 6.7014235	total: 4.15s	remaining: 5.16s
446:	learn: 6.6994623	total: 4.16s	remaining: 5.15s
447:	learn: 6.6979237	total: 4.17s	remaining: 5.14s
448:	learn: 6.6951874	total: 4.18s	remaining: 5.13s
449:	learn: 6.6919152	total: 4.19s	remaining: 5.13s
450:	learn: 6.6906942	total: 4.21s	remaining: 5.12s
451:	learn: 6.6891248	total: 4.21s	remaining: 5.11s
452:	learn: 6.6871301	total: 4.22s	remaining: 5.1s
453:	learn: 6.6848387	total: 4.24s	remaining: 5.09s
454:	learn: 6.6819193	total: 4.24s	remaining: 5.08s
455:	learn: 6.6797299	total: 4.25s	remaining: 5.07s
456:	learn: 6.6764441	total: 4.26s	remaining: 5.07s
457:	learn: 6.6748376	total: 4.27s	remaining: 5.06s

458:	learn: 6.6720369	total: 4.28s	remaining: 5.05s
459:	learn: 6.6685887	total: 4.29s	remaining: 5.04s
460:	learn: 6.6667692	total: 4.3s	remaining: 5.03s
461:	learn: 6.6644441	total: 4.31s	remaining: 5.02s
462:	learn: 6.6617517	total: 4.32s	remaining: 5.01s
463:	learn: 6.6570406	total: 4.33s	remaining: 5.01s
464:	learn: 6.6539784	total: 4.34s	remaining: 5s
465:	learn: 6.6515990	total: 4.35s	remaining: 4.99s
466:	learn: 6.6492684	total: 4.36s	remaining: 4.98s
467:	learn: 6.6474674	total: 4.37s	remaining: 4.97s
468:	learn: 6.6459185	total: 4.38s	remaining: 4.96s
469:	learn: 6.6430623	total: 4.39s	remaining: 4.95s
470:	learn: 6.6409125	total: 4.4s	remaining: 4.95s
471:	learn: 6.6392123	total: 4.42s	remaining: 4.94s
472:	learn: 6.6377665	total: 4.43s	remaining: 4.93s
473:	learn: 6.6357062	total: 4.44s	remaining: 4.92s
474:	learn: 6.6344336	total: 4.45s	remaining: 4.91s
475:	learn: 6.6318967	total: 4.46s	remaining: 4.91s
476:	learn: 6.6294652	total: 4.47s	remaining: 4.9s
477:	learn: 6.6278715	total: 4.47s	remaining: 4.89s
478:	learn: 6.6261750	total: 4.49s	remaining: 4.88s
479:	learn: 6.6245398	total: 4.49s	remaining: 4.87s
480:	learn: 6.6227622	total: 4.5s	remaining: 4.86s
481:	learn: 6.6211657	total: 4.51s	remaining: 4.85s
482:	learn: 6.6193286	total: 4.52s	remaining: 4.84s
483:	learn: 6.6179186	total: 4.53s	remaining: 4.83s
484:	learn: 6.6147345	total: 4.54s	remaining: 4.82s
485:	learn: 6.6128347	total: 4.55s	remaining: 4.81s
486:	learn: 6.6099479	total: 4.56s	remaining: 4.8s
487:	learn: 6.6083570	total: 4.57s	remaining: 4.79s
488:	learn: 6.6059496	total: 4.58s	remaining: 4.78s
489:	learn: 6.6037407	total: 4.59s	remaining: 4.77s
490:	learn: 6.6015805	total: 4.6s	remaining: 4.77s
491:	learn: 6.6001954	total: 4.61s	remaining: 4.76s
492:	learn: 6.5984316	total: 4.62s	remaining: 4.75s
493:	learn: 6.5967480	total: 4.63s	remaining: 4.75s
494:	learn: 6.5950544	total: 4.64s	remaining: 4.74s
495:	learn: 6.5916808	total: 4.65s	remaining: 4.72s
496:	learn: 6.5907578	total: 4.66s	remaining: 4.72s
497:	learn: 6.5862470	total: 4.67s	remaining: 4.71s
498:	learn: 6.5849720	total: 4.68s	remaining: 4.7s
499:	learn: 6.5827970	total: 4.69s	remaining: 4.69s
500:	learn: 6.5812215	total: 4.7s	remaining: 4.68s
501:	learn: 6.5795395	total: 4.71s	remaining: 4.67s
502:	learn: 6.5775359	total: 4.72s	remaining: 4.66s
503:	learn: 6.5760520	total: 4.73s	remaining: 4.65s
504:	learn: 6.5731041	total: 4.74s	remaining: 4.64s
505:	learn: 6.5711437	total: 4.75s	remaining: 4.63s
506:	learn: 6.5694706	total: 4.76s	remaining: 4.63s
507:	learn: 6.5673494	total: 4.77s	remaining: 4.62s
508:	learn: 6.5646157	total: 4.78s	remaining: 4.61s
509:	learn: 6.5626781	total: 4.79s	remaining: 4.6s
510:	learn: 6.5601407	total: 4.8s	remaining: 4.59s
511:	learn: 6.5579892	total: 4.81s	remaining: 4.58s
512:	learn: 6.5566811	total: 4.82s	remaining: 4.58s
513:	learn: 6.5542969	total: 4.84s	remaining: 4.57s
514:	learn: 6.5524895	total: 4.85s	remaining: 4.57s
515:	learn: 6.5511657	total: 4.86s	remaining: 4.56s
516:	learn: 6.5491042	total: 4.87s	remaining: 4.55s
517:	learn: 6.5477625	total: 4.88s	remaining: 4.54s
518:	learn: 6.5459504	total: 4.89s	remaining: 4.53s
519:	learn: 6.5440272	total: 4.9s	remaining: 4.52s
520:	learn: 6.5414297	total: 4.91s	remaining: 4.51s
521:	learn: 6.5386259	total: 4.92s	remaining: 4.5s
522:	learn: 6.5366841	total: 4.93s	remaining: 4.5s
523:	learn: 6.5342341	total: 4.94s	remaining: 4.49s
524:	learn: 6.5320999	total: 4.95s	remaining: 4.48s
525:	learn: 6.5307470	total: 4.96s	remaining: 4.47s
526:	learn: 6.5262681	total: 4.97s	remaining: 4.46s
527:	learn: 6.5235598	total: 4.99s	remaining: 4.46s

528:	learn: 6.5216982	total: 5s	remaining: 4.45s
529:	learn: 6.5196151	total: 5.01s	remaining: 4.44s
530:	learn: 6.5158720	total: 5.02s	remaining: 4.44s
531:	learn: 6.5133476	total: 5.03s	remaining: 4.43s
532:	learn: 6.5118614	total: 5.04s	remaining: 4.42s
533:	learn: 6.5103184	total: 5.05s	remaining: 4.41s
534:	learn: 6.5088846	total: 5.06s	remaining: 4.4s
535:	learn: 6.5071898	total: 5.07s	remaining: 4.39s
536:	learn: 6.5060950	total: 5.08s	remaining: 4.38s
537:	learn: 6.5045831	total: 5.09s	remaining: 4.37s
538:	learn: 6.5008839	total: 5.1s	remaining: 4.37s
539:	learn: 6.4997981	total: 5.11s	remaining: 4.36s
540:	learn: 6.4983705	total: 5.12s	remaining: 4.35s
541:	learn: 6.4972403	total: 5.13s	remaining: 4.34s
542:	learn: 6.4945464	total: 5.14s	remaining: 4.33s
543:	learn: 6.4928378	total: 5.15s	remaining: 4.32s
544:	learn: 6.4909156	total: 5.16s	remaining: 4.31s
545:	learn: 6.4897452	total: 5.17s	remaining: 4.3s
546:	learn: 6.4878296	total: 5.18s	remaining: 4.29s
547:	learn: 6.4869130	total: 5.19s	remaining: 4.28s
548:	learn: 6.4853841	total: 5.2s	remaining: 4.27s
549:	learn: 6.4844347	total: 5.21s	remaining: 4.26s
550:	learn: 6.4828837	total: 5.22s	remaining: 4.26s
551:	learn: 6.4811385	total: 5.23s	remaining: 4.25s
552:	learn: 6.4796210	total: 5.24s	remaining: 4.24s
553:	learn: 6.4784058	total: 5.25s	remaining: 4.23s
554:	learn: 6.4765097	total: 5.26s	remaining: 4.22s
555:	learn: 6.4755535	total: 5.27s	remaining: 4.21s
556:	learn: 6.4743105	total: 5.28s	remaining: 4.2s
557:	learn: 6.4725805	total: 5.29s	remaining: 4.19s
558:	learn: 6.4715821	total: 5.3s	remaining: 4.18s
559:	learn: 6.4705296	total: 5.31s	remaining: 4.17s
560:	learn: 6.4694907	total: 5.32s	remaining: 4.16s
561:	learn: 6.4663231	total: 5.33s	remaining: 4.16s
562:	learn: 6.4638638	total: 5.34s	remaining: 4.14s
563:	learn: 6.4614539	total: 5.35s	remaining: 4.13s
564:	learn: 6.4601722	total: 5.36s	remaining: 4.13s
565:	learn: 6.4587522	total: 5.37s	remaining: 4.12s
566:	learn: 6.4572227	total: 5.38s	remaining: 4.11s
567:	learn: 6.4559592	total: 5.39s	remaining: 4.1s
568:	learn: 6.4537293	total: 5.4s	remaining: 4.09s
569:	learn: 6.4517495	total: 5.41s	remaining: 4.08s
570:	learn: 6.4479224	total: 5.42s	remaining: 4.07s
571:	learn: 6.4467325	total: 5.43s	remaining: 4.06s
572:	learn: 6.4442306	total: 5.44s	remaining: 4.05s
573:	learn: 6.4428490	total: 5.45s	remaining: 4.04s
574:	learn: 6.4399528	total: 5.46s	remaining: 4.04s
575:	learn: 6.4377880	total: 5.47s	remaining: 4.03s
576:	learn: 6.4358349	total: 5.48s	remaining: 4.02s
577:	learn: 6.4338874	total: 5.49s	remaining: 4.01s
578:	learn: 6.4328862	total: 5.5s	remaining: 4s
579:	learn: 6.4310597	total: 5.51s	remaining: 3.99s
580:	learn: 6.4299317	total: 5.52s	remaining: 3.98s
581:	learn: 6.4278661	total: 5.53s	remaining: 3.97s
582:	learn: 6.4257459	total: 5.54s	remaining: 3.96s
583:	learn: 6.4239006	total: 5.55s	remaining: 3.95s
584:	learn: 6.4218555	total: 5.56s	remaining: 3.94s
585:	learn: 6.4200522	total: 5.57s	remaining: 3.94s
586:	learn: 6.4185744	total: 5.58s	remaining: 3.92s
587:	learn: 6.4163285	total: 5.59s	remaining: 3.92s
588:	learn: 6.4150411	total: 5.6s	remaining: 3.91s
589:	learn: 6.4137410	total: 5.61s	remaining: 3.9s
590:	learn: 6.4116998	total: 5.62s	remaining: 3.89s
591:	learn: 6.4085245	total: 5.63s	remaining: 3.88s
592:	learn: 6.4073494	total: 5.64s	remaining: 3.87s
593:	learn: 6.4060638	total: 5.65s	remaining: 3.86s
594:	learn: 6.4042007	total: 5.66s	remaining: 3.85s
595:	learn: 6.4029442	total: 5.67s	remaining: 3.84s
596:	learn: 6.4016415	total: 5.68s	remaining: 3.83s
597:	learn: 6.3986548	total: 5.69s	remaining: 3.83s
598:	learn: 6.3974826	total: 5.7s	remaining: 3.82s
599:	learn: 6.3952771	total: 5.71s	remaining: 3.81s

600:	learn: 6.3942106	total: 5.72s	remaining: 3.8s
601:	learn: 6.3926812	total: 5.73s	remaining: 3.79s
602:	learn: 6.3921672	total: 5.74s	remaining: 3.78s
603:	learn: 6.3896154	total: 5.75s	remaining: 3.77s
604:	learn: 6.3875475	total: 5.75s	remaining: 3.76s
605:	learn: 6.3862247	total: 5.77s	remaining: 3.75s
606:	learn: 6.3825449	total: 5.78s	remaining: 3.74s
607:	learn: 6.3811812	total: 5.79s	remaining: 3.73s
608:	learn: 6.3797604	total: 5.81s	remaining: 3.73s
609:	learn: 6.3777110	total: 5.82s	remaining: 3.72s
610:	learn: 6.3762679	total: 5.83s	remaining: 3.71s
611:	learn: 6.3745730	total: 5.84s	remaining: 3.71s
612:	learn: 6.3723910	total: 5.86s	remaining: 3.7s
613:	learn: 6.3705410	total: 5.87s	remaining: 3.69s
614:	learn: 6.3679498	total: 5.88s	remaining: 3.68s
615:	learn: 6.3663231	total: 5.89s	remaining: 3.67s
616:	learn: 6.3651206	total: 5.9s	remaining: 3.66s
617:	learn: 6.3639561	total: 5.91s	remaining: 3.65s
618:	learn: 6.3628305	total: 5.92s	remaining: 3.65s
619:	learn: 6.3617883	total: 5.93s	remaining: 3.64s
620:	learn: 6.3603536	total: 5.94s	remaining: 3.63s
621:	learn: 6.3590162	total: 5.96s	remaining: 3.62s
622:	learn: 6.3576990	total: 5.96s	remaining: 3.61s
623:	learn: 6.3563293	total: 5.97s	remaining: 3.6s
624:	learn: 6.3548316	total: 5.99s	remaining: 3.59s
625:	learn: 6.3529950	total: 6s	remaining: 3.58s
626:	learn: 6.3519980	total: 6s	remaining: 3.57s
627:	learn: 6.3506343	total: 6.02s	remaining: 3.56s
628:	learn: 6.3492243	total: 6.03s	remaining: 3.55s
629:	learn: 6.3478150	total: 6.04s	remaining: 3.54s
630:	learn: 6.3468482	total: 6.05s	remaining: 3.54s
631:	learn: 6.3459659	total: 6.06s	remaining: 3.53s
632:	learn: 6.3446155	total: 6.07s	remaining: 3.52s
633:	learn: 6.3423477	total: 6.08s	remaining: 3.51s
634:	learn: 6.3401435	total: 6.09s	remaining: 3.5s
635:	learn: 6.3392052	total: 6.1s	remaining: 3.49s
636:	learn: 6.3385637	total: 6.11s	remaining: 3.48s
637:	learn: 6.3375349	total: 6.12s	remaining: 3.47s
638:	learn: 6.3357678	total: 6.13s	remaining: 3.46s
639:	learn: 6.3348743	total: 6.14s	remaining: 3.45s
640:	learn: 6.3332902	total: 6.14s	remaining: 3.44s
641:	learn: 6.3323898	total: 6.16s	remaining: 3.43s
642:	learn: 6.3313627	total: 6.16s	remaining: 3.42s
643:	learn: 6.3303269	total: 6.17s	remaining: 3.41s
644:	learn: 6.3283652	total: 6.18s	remaining: 3.4s
645:	learn: 6.3279419	total: 6.19s	remaining: 3.39s
646:	learn: 6.3264609	total: 6.2s	remaining: 3.38s
647:	learn: 6.3253580	total: 6.21s	remaining: 3.37s
648:	learn: 6.3243325	total: 6.22s	remaining: 3.36s
649:	learn: 6.3237476	total: 6.23s	remaining: 3.35s
650:	learn: 6.3209285	total: 6.24s	remaining: 3.34s
651:	learn: 6.3195366	total: 6.25s	remaining: 3.34s
652:	learn: 6.3190002	total: 6.26s	remaining: 3.33s
653:	learn: 6.3170965	total: 6.27s	remaining: 3.32s
654:	learn: 6.3162566	total: 6.28s	remaining: 3.31s
655:	learn: 6.3148140	total: 6.29s	remaining: 3.3s
656:	learn: 6.3136204	total: 6.3s	remaining: 3.29s
657:	learn: 6.3125709	total: 6.31s	remaining: 3.28s
658:	learn: 6.3115114	total: 6.32s	remaining: 3.27s
659:	learn: 6.3090821	total: 6.33s	remaining: 3.26s
660:	learn: 6.3075389	total: 6.34s	remaining: 3.25s
661:	learn: 6.3065220	total: 6.35s	remaining: 3.24s
662:	learn: 6.3050494	total: 6.36s	remaining: 3.23s
663:	learn: 6.3041878	total: 6.37s	remaining: 3.23s
664:	learn: 6.3029922	total: 6.38s	remaining: 3.21s
665:	learn: 6.3014135	total: 6.39s	remaining: 3.21s
666:	learn: 6.2993575	total: 6.4s	remaining: 3.2s
667:	learn: 6.2982519	total: 6.41s	remaining: 3.19s
668:	learn: 6.2962053	total: 6.42s	remaining: 3.18s
669:	learn: 6.2948190	total: 6.43s	remaining: 3.17s
670:	learn: 6.2930454	total: 6.45s	remaining: 3.16s
671:	learn: 6.2915302	total: 6.45s	remaining: 3.15s


672:	learn: 6.2904636	total: 6.47s	remaining: 3.14s
673:	learn: 6.2894754	total: 6.48s	remaining: 3.13s
674:	learn: 6.2886139	total: 6.49s	remaining: 3.12s
675:	learn: 6.2869722	total: 6.5s	remaining: 3.12s
676:	learn: 6.2855344	total: 6.51s	remaining: 3.11s
677:	learn: 6.2840115	total: 6.52s	remaining: 3.1s
678:	learn: 6.2832404	total: 6.53s	remaining: 3.09s
679:	learn: 6.2825173	total: 6.54s	remaining: 3.08s
680:	learn: 6.2810816	total: 6.55s	remaining: 3.07s
681:	learn: 6.2791379	total: 6.56s	remaining: 3.06s
682:	learn: 6.2779082	total: 6.58s	remaining: 3.05s
683:	learn: 6.2758176	total: 6.59s	remaining: 3.04s
684:	learn: 6.2745608	total: 6.59s	remaining: 3.03s
685:	learn: 6.2734997	total: 6.61s	remaining: 3.02s
686:	learn: 6.2725810	total: 6.62s	remaining: 3.01s
687:	learn: 6.2713657	total: 6.63s	remaining: 3s
688:	learn: 6.2705803	total: 6.64s	remaining: 3s
689:	learn: 6.2697489	total: 6.65s	remaining: 2.99s
690:	learn: 6.2678379	total: 6.66s	remaining: 2.98s
691:	learn: 6.2647873	total: 6.67s	remaining: 2.97s
692:	learn: 6.2640432	total: 6.68s	remaining: 2.96s
693:	learn: 6.2630594	total: 6.7s	remaining: 2.95s
694:	learn: 6.2620092	total: 6.71s	remaining: 2.94s
695:	learn: 6.2612810	total: 6.72s	remaining: 2.94s
696:	learn: 6.2596107	total: 6.74s	remaining: 2.93s
697:	learn: 6.2586384	total: 6.75s	remaining: 2.92s
698:	learn: 6.2579956	total: 6.75s	remaining: 2.91s
699:	learn: 6.2567157	total: 6.77s	remaining: 2.9s
700:	learn: 6.2560488	total: 6.77s	remaining: 2.89s
701:	learn: 6.2539465	total: 6.78s	remaining: 2.88s
702:	learn: 6.2527587	total: 6.79s	remaining: 2.87s
703:	learn: 6.2516747	total: 6.8s	remaining: 2.86s
704:	learn: 6.2502941	total: 6.81s	remaining: 2.85s
705:	learn: 6.2490712	total: 6.82s	remaining: 2.84s
706:	learn: 6.2479997	total: 6.83s	remaining: 2.83s
707:	learn: 6.2470822	total: 6.84s	remaining: 2.82s
708:	learn: 6.2460009	total: 6.85s	remaining: 2.81s
709:	learn: 6.2444650	total: 6.86s	remaining: 2.8s
710:	learn: 6.2433444	total: 6.88s	remaining: 2.79s
711:	learn: 6.2422530	total: 6.88s	remaining: 2.78s
712:	learn: 6.2413449	total: 6.9s	remaining: 2.77s
713:	learn: 6.2397261	total: 6.91s	remaining: 2.77s
714:	learn: 6.2388817	total: 6.92s	remaining: 2.76s
715:	learn: 6.2381171	total: 6.92s	remaining: 2.75s
716:	learn: 6.2373753	total: 6.93s	remaining: 2.74s
717:	learn: 6.2341105	total: 6.94s	remaining: 2.73s
718:	learn: 6.2334277	total: 6.95s	remaining: 2.72s
719:	learn: 6.2325488	total: 6.96s	remaining: 2.71s
720:	learn: 6.2305100	total: 6.97s	remaining: 2.7s
721:	learn: 6.2295682	total: 6.98s	remaining: 2.69s
722:	learn: 6.2286518	total: 6.99s	remaining: 2.68s
723:	learn: 6.2271641	total: 7s	remaining: 2.67s
724:	learn: 6.2259907	total: 7.01s	remaining: 2.66s
725:	learn: 6.2243825	total: 7.02s	remaining: 2.65s
726:	learn: 6.2233858	total: 7.03s	remaining: 2.64s
727:	learn: 6.2221283	total: 7.04s	remaining: 2.63s
728:	learn: 6.2213025	total: 7.05s	remaining: 2.62s
729:	learn: 6.2192743	total: 7.06s	remaining: 2.61s
730:	learn: 6.2185157	total: 7.07s	remaining: 2.6s
731:	learn: 6.2170173	total: 7.08s	remaining: 2.59s
732:	learn: 6.2164879	total: 7.09s	remaining: 2.58s
733:	learn: 6.2157609	total: 7.11s	remaining: 2.58s
734:	learn: 6.2136819	total: 7.12s	remaining: 2.56s
735:	learn: 6.2127290	total: 7.13s	remaining: 2.56s
736:	learn: 6.2120402	total: 7.14s	remaining: 2.55s
737:	learn: 6.2105172	total: 7.14s	remaining: 2.54s
738:	learn: 6.2099191	total: 7.16s	remaining: 2.53s
739:	learn: 6.2088956	total: 7.16s	remaining: 2.52s
740:	learn: 6.2078196	total: 7.17s	remaining: 2.51s
741:	learn: 6.2068928	total: 7.18s	remaining: 2.5s

742:	learn: 6.2060781	total: 7.19s	remaining: 2.49s
743:	learn: 6.2053228	total: 7.2s	remaining: 2.48s
744:	learn: 6.2043866	total: 7.21s	remaining: 2.47s
745:	learn: 6.2034266	total: 7.22s	remaining: 2.46s
746:	learn: 6.2022570	total: 7.23s	remaining: 2.45s
747:	learn: 6.2010790	total: 7.24s	remaining: 2.44s
748:	learn: 6.1997549	total: 7.25s	remaining: 2.43s
749:	learn: 6.1980102	total: 7.26s	remaining: 2.42s
750:	learn: 6.1951763	total: 7.27s	remaining: 2.41s
751:	learn: 6.1944070	total: 7.28s	remaining: 2.4s
752:	learn: 6.1919545	total: 7.29s	remaining: 2.39s
753:	learn: 6.1909005	total: 7.3s	remaining: 2.38s
754:	learn: 6.1887725	total: 7.31s	remaining: 2.37s
755:	learn: 6.1880561	total: 7.33s	remaining: 2.36s
756:	learn: 6.1872533	total: 7.33s	remaining: 2.35s
757:	learn: 6.1864140	total: 7.34s	remaining: 2.34s
758:	learn: 6.1854711	total: 7.35s	remaining: 2.33s
759:	learn: 6.1838601	total: 7.36s	remaining: 2.33s
760:	learn: 6.1827228	total: 7.37s	remaining: 2.31s
761:	learn: 6.1821594	total: 7.38s	remaining: 2.31s
762:	learn: 6.1808248	total: 7.39s	remaining: 2.3s
763:	learn: 6.1791720	total: 7.4s	remaining: 2.29s
764:	learn: 6.1779896	total: 7.41s	remaining: 2.28s
765:	learn: 6.1771392	total: 7.42s	remaining: 2.27s
766:	learn: 6.1766864	total: 7.43s	remaining: 2.26s
767:	learn: 6.1758244	total: 7.44s	remaining: 2.25s
768:	learn: 6.1730644	total: 7.45s	remaining: 2.24s
769:	learn: 6.1725417	total: 7.46s	remaining: 2.23s
770:	learn: 6.1716598	total: 7.47s	remaining: 2.22s
771:	learn: 6.1698210	total: 7.48s	remaining: 2.21s
772:	learn: 6.1692474	total: 7.49s	remaining: 2.2s
773:	learn: 6.1674590	total: 7.5s	remaining: 2.19s
774:	learn: 6.1664960	total: 7.52s	remaining: 2.18s
775:	learn: 6.1654567	total: 7.53s	remaining: 2.17s
776:	learn: 6.1645395	total: 7.54s	remaining: 2.16s
777:	learn: 6.1638169	total: 7.55s	remaining: 2.15s
778:	learn: 6.1629100	total: 7.56s	remaining: 2.14s
779:	learn: 6.1622041	total: 7.57s	remaining: 2.13s
780:	learn: 6.1613097	total: 7.58s	remaining: 2.12s
781:	learn: 6.1604492	total: 7.59s	remaining: 2.12s
782:	learn: 6.1589874	total: 7.6s	remaining: 2.1s
783:	learn: 6.1584866	total: 7.61s	remaining: 2.1s
784:	learn: 6.1578865	total: 7.62s	remaining: 2.09s
785:	learn: 6.1564245	total: 7.63s	remaining: 2.08s
786:	learn: 6.1554471	total: 7.64s	remaining: 2.07s
787:	learn: 6.1541132	total: 7.65s	remaining: 2.06s
788:	learn: 6.1531610	total: 7.66s	remaining: 2.05s
789:	learn: 6.1522774	total: 7.67s	remaining: 2.04s
790:	learn: 6.1517018	total: 7.68s	remaining: 2.03s
791:	learn: 6.1500520	total: 7.69s	remaining: 2.02s
792:	learn: 6.1488717	total: 7.7s	remaining: 2.01s
793:	learn: 6.1480649	total: 7.71s	remaining: 2s
794:	learn: 6.1476058	total: 7.72s	remaining: 1.99s
795:	learn: 6.1468095	total: 7.73s	remaining: 1.98s
796:	learn: 6.1454120	total: 7.74s	remaining: 1.97s
797:	learn: 6.1444631	total: 7.75s	remaining: 1.96s
798:	learn: 6.1436895	total: 7.76s	remaining: 1.95s
799:	learn: 6.1430400	total: 7.77s	remaining: 1.94s
800:	learn: 6.1420724	total: 7.78s	remaining: 1.93s
801:	learn: 6.1405062	total: 7.79s	remaining: 1.92s
802:	learn: 6.1396433	total: 7.8s	remaining: 1.91s
803:	learn: 6.1385786	total: 7.81s	remaining: 1.9s
804:	learn: 6.1380744	total: 7.82s	remaining: 1.89s
805:	learn: 6.1372810	total: 7.83s	remaining: 1.88s
806:	learn: 6.1364673	total: 7.84s	remaining: 1.87s
807:	learn: 6.1357807	total: 7.85s	remaining: 1.86s
808:	learn: 6.1347231	total: 7.86s	remaining: 1.85s
809:	learn: 6.1334653	total: 7.87s	remaining: 1.84s
810:	learn: 6.1326006	total: 7.88s	remaining: 1.84s
811:	learn: 6.1319407	total: 7.89s	remaining: 1.83s
812:	learn: 6.1312124	total: 7.9s	remaining: 1.82s
813:	learn: 6.1298404	total: 7.91s	remaining: 1.81s

814:	learn: 6.1281939	total: 7.92s	remaining: 1.8s
815:	learn: 6.1268220	total: 7.93s	remaining: 1.79s
816:	learn: 6.1262220	total: 7.96s	remaining: 1.78s
817:	learn: 6.1254946	total: 7.98s	remaining: 1.77s
818:	learn: 6.1244708	total: 7.99s	remaining: 1.77s
819:	learn: 6.1240921	total: 8.01s	remaining: 1.76s
820:	learn: 6.1234972	total: 8.02s	remaining: 1.75s
821:	learn: 6.1221422	total: 8.03s	remaining: 1.74s
822:	learn: 6.1212651	total: 8.04s	remaining: 1.73s
823:	learn: 6.1204690	total: 8.05s	remaining: 1.72s
824:	learn: 6.1201033	total: 8.06s	remaining: 1.71s
825:	learn: 6.1186087	total: 8.07s	remaining: 1.7s
826:	learn: 6.1173109	total: 8.08s	remaining: 1.69s
827:	learn: 6.1160526	total: 8.09s	remaining: 1.68s
828:	learn: 6.1147732	total: 8.1s	remaining: 1.67s
829:	learn: 6.1138193	total: 8.11s	remaining: 1.66s
830:	learn: 6.1129050	total: 8.12s	remaining: 1.65s
831:	learn: 6.1120117	total: 8.13s	remaining: 1.64s
832:	learn: 6.1110393	total: 8.15s	remaining: 1.63s
833:	learn: 6.1091274	total: 8.16s	remaining: 1.62s
834:	learn: 6.1087561	total: 8.17s	remaining: 1.61s
835:	learn: 6.1078836	total: 8.18s	remaining: 1.6s
836:	learn: 6.1073315	total: 8.19s	remaining: 1.59s
837:	learn: 6.1068026	total: 8.2s	remaining: 1.58s
838:	learn: 6.1044038	total: 8.21s	remaining: 1.57s
839:	learn: 6.1032536	total: 8.22s	remaining: 1.56s
840:	learn: 6.1019433	total: 8.23s	remaining: 1.55s
841:	learn: 6.1008849	total: 8.24s	remaining: 1.55s
842:	learn: 6.1001456	total: 8.25s	remaining: 1.54s
843:	learn: 6.0987516	total: 8.26s	remaining: 1.53s
844:	learn: 6.0981172	total: 8.27s	remaining: 1.52s
845:	learn: 6.0966721	total: 8.28s	remaining: 1.51s
846:	learn: 6.0957279	total: 8.29s	remaining: 1.5s
847:	learn: 6.0952014	total: 8.3s	remaining: 1.49s
848:	learn: 6.0944641	total: 8.31s	remaining: 1.48s
849:	learn: 6.0938456	total: 8.32s	remaining: 1.47s
850:	learn: 6.0928126	total: 8.33s	remaining: 1.46s
851:	learn: 6.0918725	total: 8.34s	remaining: 1.45s
852:	learn: 6.0910735	total: 8.35s	remaining: 1.44s
853:	learn: 6.0904926	total: 8.36s	remaining: 1.43s
854:	learn: 6.0897027	total: 8.37s	remaining: 1.42s
855:	learn: 6.0886917	total: 8.39s	remaining: 1.41s
856:	learn: 6.0866646	total: 8.39s	remaining: 1.4s
857:	learn: 6.0856557	total: 8.4s	remaining: 1.39s
858:	learn: 6.0851951	total: 8.41s	remaining: 1.38s
859:	learn: 6.0831797	total: 8.42s	remaining: 1.37s
860:	learn: 6.0824108	total: 8.43s	remaining: 1.36s
861:	learn: 6.0816306	total: 8.44s	remaining: 1.35s
862:	learn: 6.0808659	total: 8.45s	remaining: 1.34s
863:	learn: 6.0801491	total: 8.46s	remaining: 1.33s
864:	learn: 6.0793910	total: 8.47s	remaining: 1.32s
865:	learn: 6.0779419	total: 8.48s	remaining: 1.31s
866:	learn: 6.0775063	total: 8.49s	remaining: 1.3s
867:	learn: 6.0764460	total: 8.5s	remaining: 1.29s
868:	learn: 6.0760277	total: 8.51s	remaining: 1.28s
869:	learn: 6.0756361	total: 8.52s	remaining: 1.27s
870:	learn: 6.0750066	total: 8.53s	remaining: 1.26s
871:	learn: 6.0740466	total: 8.54s	remaining: 1.25s
872:	learn: 6.0734314	total: 8.55s	remaining: 1.24s
873:	learn: 6.0708711	total: 8.56s	remaining: 1.23s
874:	learn: 6.0702137	total: 8.57s	remaining: 1.22s
875:	learn: 6.0691828	total: 8.58s	remaining: 1.21s
876:	learn: 6.0679238	total: 8.59s	remaining: 1.2s
877:	learn: 6.0671628	total: 8.6s	remaining: 1.2s
878:	learn: 6.0665348	total: 8.61s	remaining: 1.19s
879:	learn: 6.0655206	total: 8.62s	remaining: 1.18s
880:	learn: 6.0649760	total: 8.63s	remaining: 1.17s
881:	learn: 6.0641272	total: 8.64s	remaining: 1.16s
882:	learn: 6.0614608	total: 8.65s	remaining: 1.15s
883:	learn: 6.0607432	total: 8.68s	remaining: 1.14s
884:	learn: 6.0599166	total: 8.69s	remaining: 1.13s

885:	learn: 6.0590558	total: 8.69s	remaining: 1.12s
886:	learn: 6.0581445	total: 8.7s	remaining: 1.11s
887:	learn: 6.0572721	total: 8.71s	remaining: 1.1s
888:	learn: 6.0568193	total: 8.72s	remaining: 1.09s
889:	learn: 6.0562455	total: 8.73s	remaining: 1.08s
890:	learn: 6.0556122	total: 8.74s	remaining: 1.07s
891:	learn: 6.0547457	total: 8.75s	remaining: 1.06s
892:	learn: 6.0541553	total: 8.76s	remaining: 1.05s
893:	learn: 6.0538734	total: 8.77s	remaining: 1.04s
894:	learn: 6.0520854	total: 8.78s	remaining: 1.03s
895:	learn: 6.0514349	total: 8.79s	remaining: 1.02s
896:	learn: 6.0501540	total: 8.8s	remaining: 1.01s
897:	learn: 6.0495356	total: 8.81s	remaining: 1s
898:	learn: 6.0483028	total: 8.82s	remaining: 991ms
899:	learn: 6.0474277	total: 8.83s	remaining: 982ms
900:	learn: 6.0465394	total: 8.85s	remaining: 972ms
901:	learn: 6.0457691	total: 8.85s	remaining: 962ms
902:	learn: 6.0451431	total: 8.87s	remaining: 952ms
903:	learn: 6.0442130	total: 8.88s	remaining: 943ms
904:	learn: 6.0435848	total: 8.88s	remaining: 933ms
905:	learn: 6.0431629	total: 8.89s	remaining: 923ms
906:	learn: 6.0424782	total: 8.9s	remaining: 913ms
907:	learn: 6.0419728	total: 8.91s	remaining: 903ms
908:	learn: 6.0408861	total: 8.92s	remaining: 893ms
909:	learn: 6.0394175	total: 8.93s	remaining: 883ms
910:	learn: 6.0387592	total: 8.94s	remaining: 874ms
911:	learn: 6.0381055	total: 8.95s	remaining: 864ms
912:	learn: 6.0368987	total: 8.96s	remaining: 854ms
913:	learn: 6.0360975	total: 8.97s	remaining: 844ms
914:	learn: 6.0348225	total: 8.98s	remaining: 834ms
915:	learn: 6.0342234	total: 8.99s	remaining: 825ms
916:	learn: 6.0338527	total: 9s	remaining: 815ms
917:	learn: 6.0331387	total: 9.01s	remaining: 805ms
918:	learn: 6.0323756	total: 9.02s	remaining: 795ms
919:	learn: 6.0318352	total: 9.03s	remaining: 785ms
920:	learn: 6.0310771	total: 9.04s	remaining: 775ms
921:	learn: 6.0303415	total: 9.05s	remaining: 766ms
922:	learn: 6.0295265	total: 9.06s	remaining: 756ms
923:	learn: 6.0280335	total: 9.07s	remaining: 746ms
924:	learn: 6.0275692	total: 9.08s	remaining: 736ms
925:	learn: 6.0269845	total: 9.09s	remaining: 726ms
926:	learn: 6.0256752	total: 9.1s	remaining: 716ms
927:	learn: 6.0248941	total: 9.11s	remaining: 707ms
928:	learn: 6.0232684	total: 9.12s	remaining: 697ms
929:	learn: 6.0222489	total: 9.13s	remaining: 687ms
930:	learn: 6.0201402	total: 9.14s	remaining: 677ms
931:	learn: 6.0192329	total: 9.14s	remaining: 667ms
932:	learn: 6.0183905	total: 9.15s	remaining: 657ms
933:	learn: 6.0167714	total: 9.16s	remaining: 648ms
934:	learn: 6.0161034	total: 9.17s	remaining: 638ms
935:	learn: 6.0151553	total: 9.18s	remaining: 628ms
936:	learn: 6.0142906	total: 9.2s	remaining: 618ms
937:	learn: 6.0134438	total: 9.21s	remaining: 608ms
938:	learn: 6.0128956	total: 9.21s	remaining: 599ms
939:	learn: 6.0121094	total: 9.23s	remaining: 589ms
940:	learn: 6.0108526	total: 9.23s	remaining: 579ms
941:	learn: 6.0094453	total: 9.24s	remaining: 569ms
942:	learn: 6.0082290	total: 9.25s	remaining: 559ms
943:	learn: 6.0072679	total: 9.27s	remaining: 550ms
944:	learn: 6.0059011	total: 9.27s	remaining: 540ms
945:	learn: 6.0048789	total: 9.28s	remaining: 530ms
946:	learn: 6.0043611	total: 9.29s	remaining: 520ms
947:	learn: 6.0035117	total: 9.3s	remaining: 510ms
948:	learn: 6.0028559	total: 9.31s	remaining: 500ms
949:	learn: 6.0020268	total: 9.32s	remaining: 491ms
950:	learn: 6.0011507	total: 9.33s	remaining: 481ms
951:	learn: 6.0003057	total: 9.34s	remaining: 471ms
952:	learn: 5.9997975	total: 9.35s	remaining: 461ms
953:	learn: 5.9992415	total: 9.36s	remaining: 452ms
954:	learn: 5.9984283	total: 9.37s	remaining: 442ms
955:	learn: 5.9979285	total: 9.38s	remaining: 432ms
956:	learn: 5.9967895	total: 9.39s	remaining: 422ms

957:	learn: 5.9960433	total: 9.4s	remaining: 412ms
958:	learn: 5.9954550	total: 9.41s	remaining: 402ms
959:	learn: 5.9943297	total: 9.42s	remaining: 393ms
960:	learn: 5.9937777	total: 9.43s	remaining: 383ms
961:	learn: 5.9930833	total: 9.44s	remaining: 373ms
962:	learn: 5.9907271	total: 9.45s	remaining: 363ms
963:	learn: 5.9897766	total: 9.46s	remaining: 353ms
964:	learn: 5.9891058	total: 9.47s	remaining: 343ms
965:	learn: 5.9885399	total: 9.48s	remaining: 334ms
966:	learn: 5.9877306	total: 9.49s	remaining: 324ms
967:	learn: 5.9870738	total: 9.5s	remaining: 314ms
968:	learn: 5.9864909	total: 9.51s	remaining: 304ms
969:	learn: 5.9853996	total: 9.52s	remaining: 294ms
970:	learn: 5.9847762	total: 9.53s	remaining: 285ms
971:	learn: 5.9829899	total: 9.54s	remaining: 275ms
972:	learn: 5.9823001	total: 9.54s	remaining: 265ms
973:	learn: 5.9815327	total: 9.56s	remaining: 255ms
974:	learn: 5.9809296	total: 9.57s	remaining: 245ms
975:	learn: 5.9783668	total: 9.57s	remaining: 235ms
976:	learn: 5.9767816	total: 9.59s	remaining: 226ms
977:	learn: 5.9759863	total: 9.6s	remaining: 216ms
978:	learn: 5.9736424	total: 9.61s	remaining: 206ms
979:	learn: 5.9733230	total: 9.62s	remaining: 196ms
980:	learn: 5.9727025	total: 9.63s	remaining: 186ms
981:	learn: 5.9719902	total: 9.64s	remaining: 177ms
982:	learn: 5.9712021	total: 9.65s	remaining: 167ms
983:	learn: 5.9703405	total: 9.66s	remaining: 157ms
984:	learn: 5.9684553	total: 9.67s	remaining: 147ms
985:	learn: 5.9680083	total: 9.68s	remaining: 137ms
986:	learn: 5.9671287	total: 9.69s	remaining: 128ms
987:	learn: 5.9664382	total: 9.7s	remaining: 118ms
988:	learn: 5.9658511	total: 9.71s	remaining: 108ms
989:	learn: 5.9650362	total: 9.71s	remaining: 98.1ms
990:	learn: 5.9643285	total: 9.72s	remaining: 88.3ms
991:	learn: 5.9640032	total: 9.73s	remaining: 78.5ms
992:	learn: 5.9635422	total: 9.74s	remaining: 68.7ms
993:	learn: 5.9630892	total: 9.75s	remaining: 58.9ms
994:	learn: 5.9616381	total: 9.76s	remaining: 49.1ms
995:	learn: 5.9608500	total: 9.77s	remaining: 39.2ms
996:	learn: 5.9592080	total: 9.78s	remaining: 29.4ms
997:	learn: 5.9584238	total: 9.79s	remaining: 19.6ms
998:	learn: 5.9576390	total: 9.8s	remaining: 9.81ms
999:	learn: 5.9567190	total: 9.81s	remaining: 0us

In [81]:  catboost_model.print_cv_summary()

executed in 13ms, finished 15:38:51 2022-05-27

CV Results for `catboost` model:
0.39275 ± 0.20042 R_squared

Our CatBoost Regressor did so much better than our first 3 models. But 0.397 R2 is still very low. Let's do a grid search for our CatBoost Model.

2.3.6.1 Grid Search

In [89]:  params

executed in 35ms, finished 16:01:32 2022-05-27

Out[89]: {'catboost__learning_rate': [0.01, 0.1, 0.5],
'catboost__n_estimators': [100, 1000, 10000],
'catboost__min_samples_split': [10, 100, 1000],
'catboost__max_depth': [10, 50, 100, 500],
'catboost__max_leaf_nodes': [10, 100, 1000, 10000],
'catboost__n_iter_no_change': [10, 100, 1000]}

```
In [99]:
params = {}
params['catboost_learning_rate'] = [0.01,0.1,0.5]
params['catboost_n_estimators'] = [100, 1000, 10000]
params['catboost_min_data_in_leaf'] = [10,100,1000]
params['catboost_depth'] = [10,50,100,500]
# params['catboost_max_leaves']=[10,100,1000,10000]
# params['catboost_n_iter_no_change']=[10,100,1000]

catboost_grid = GridSearchCV(estimator=catboost_model_pipe,
                             param_grid=params,
                             n_jobs=-3,
                             scoring=['explained_variance', 'r2', 'neg_root_mean_squared_error'],
                             refit='r2',
                             verbose=1)

catboost_grid_model = catboost_grid.fit(X_train,y_train)
```

executed in 5h 11m 57s, finished 12:51:50 2022-05-30

Fitting 5 folds for each of 108 candidates, totalling 540 fits

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\model_selection_validation.py:372:

FitFailedWarning:

405 fits failed out of a total of 540.

The score on these train-test partitions for these parameters will be set to nan.

If these failures are not expected, you can try to debug them by setting error_score='raise'.

Below are more details about the failures:

405 fits failed with the following error:

Traceback (most recent call last):

File "C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\model_selection_validation.py", line 680, in _fit_and_score

estimator.fit(X_train, y_train, **fit_params)

File "C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\pipeline.py", line 394, in fit

self._final_estimator.fit(Xt, y, **fit_params_last_step)

File "C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\catboost\core.py", line 5590, in fit
return self._fit(X, y, cat_features, None, None, sample_weight, None, None, None, None, baseline,

File "C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\catboost\core.py", line 2262, in fit

train_params = self._prepare_train_params()

File "C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\catboost\core.py", line 2194, in _prepare_train_params

_check_train_params(params)

File "_catboost.pyx", line 6032, in _catboost._check_train_params

File "_catboost.pyx", line 6051, in _catboost._check_train_params

_catboost.CatBoostError: C:/Program Files (x86)/Go Agent/pipelines/BuildMaster/catboost.git/catboost/private/libs/options/oblivious_tree_options.cpp:125: Maximum tree depth is 16

warnings.warn(some_fits_failed_message, FitFailedWarning)

C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\model_selection_search.py:969: User

Warning: One or more of the test scores are non-finite: [0.2491033 0.42166658 0.41732115 0.2491033

0.42166658 0.41732115

0.2491033 0.42166658 0.41732115 0.42526619 0.416426 0.38369048

0.42526619 0.416426 0.38369048 0.42526619 0.416426 0.38369048

0.36284437 0.3344669 0.32542249 0.36284437 0.3344669 0.32542249

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```

nan nan nan nan nan nan]
warnings.warn(
C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\model_selection\_search.py:969: User
Warning: One or more of the test scores are non-finite: [0.21227538 0.39185396 0.38770391 0.21227538
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0.39770456 0.38647293 0.35015258 0.39770456 0.38647293 0.35015258
0.32654648 0.29601455 0.28659226 0.32654648 0.29601455 0.28659226
0.32654648 0.29601455 0.28659226 nan nan nan
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nan nan nan nan nan nan
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nan nan nan nan nan nan
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warnings.warn(
C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\model_selection\_search.py:969: User
Warning: One or more of the test scores are non-finite: [-10.75772831 -9.45992883 -9.3706138 -10.
75772831 -9.45992883
-9.3706138 -10.75772831 -9.45992883 -9.3706138 -9.398405
-9.36356182 -9.59765705 -9.398405 -9.36356182 -9.59765705
-9.398405 -9.36356182 -9.59765705 -9.78890851 -9.97611119
-10.02654913 -9.78890851 -9.97611119 -10.02654913 -9.78890851
-9.97611119 -10.02654913 nan nan nan
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nan nan nan nan nan]
warnings.warn(
C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute\_iterative.py:699: Convergen
eWarning: [IterativeImputer] Early stopping criterion not reached.
warnings.warn(
0: learn: 12.2895306 total: 50.1ms remaining: 4.96s
1: learn: 11.9393409 total: 87.1ms remaining: 4.27s
2: learn: 11.5855681 total: 132ms remaining: 4.27s
3: learn: 11.3225386 total: 179ms remaining: 4.29s
4: learn: 11.0658309 total: 223ms remaining: 4.24s
5: learn: 10.8333484 total: 270ms remaining: 4.24s
6: learn: 10.6367051 total: 313ms remaining: 4.15s
7: learn: 10.4565308 total: 351ms remaining: 4.03s
8: learn: 10.3088606 total: 396ms remaining: 4s
9: learn: 10.1626117 total: 442ms remaining: 3.98s
10: learn: 10.0262724 total: 482ms remaining: 3.9s
11: learn: 9.9058343 total: 526ms remaining: 3.86s
12: learn: 9.8015146 total: 573ms remaining: 3.83s
13: learn: 9.7086956 total: 617ms remaining: 3.79s
14: learn: 9.5993299 total: 661ms remaining: 3.75s
15: learn: 9.5161060 total: 708ms remaining: 3.72s
16: learn: 9.4379623 total: 748ms remaining: 3.65s
17: learn: 9.3498825 total: 789ms remaining: 3.59s

```

18:	learn: 9.2859175	total: 831ms	remaining: 3.54s
19:	learn: 9.2260702	total: 875ms	remaining: 3.5s
20:	learn: 9.1794787	total: 921ms	remaining: 3.46s
21:	learn: 9.1317546	total: 959ms	remaining: 3.4s
22:	learn: 9.0780444	total: 998ms	remaining: 3.34s
23:	learn: 9.0298584	total: 1.04s	remaining: 3.3s
24:	learn: 8.9859200	total: 1.09s	remaining: 3.26s
25:	learn: 8.9459013	total: 1.14s	remaining: 3.23s
26:	learn: 8.9328598	total: 1.14s	remaining: 3.1s
27:	learn: 8.8910069	total: 1.18s	remaining: 3.04s
28:	learn: 8.8271210	total: 1.23s	remaining: 3s
29:	learn: 8.7886038	total: 1.27s	remaining: 2.97s
30:	learn: 8.7372303	total: 1.32s	remaining: 2.94s
31:	learn: 8.7015251	total: 1.36s	remaining: 2.89s
32:	learn: 8.6531188	total: 1.4s	remaining: 2.85s
33:	learn: 8.6220443	total: 1.45s	remaining: 2.81s
34:	learn: 8.5927728	total: 1.49s	remaining: 2.76s
35:	learn: 8.5554932	total: 1.53s	remaining: 2.72s
36:	learn: 8.5135864	total: 1.57s	remaining: 2.68s
37:	learn: 8.4800895	total: 1.61s	remaining: 2.64s
38:	learn: 8.4623255	total: 1.66s	remaining: 2.6s
39:	learn: 8.4239733	total: 1.7s	remaining: 2.56s
40:	learn: 8.3814267	total: 1.75s	remaining: 2.52s
41:	learn: 8.3399990	total: 1.79s	remaining: 2.48s
42:	learn: 8.3184340	total: 1.83s	remaining: 2.43s
43:	learn: 8.2830472	total: 1.87s	remaining: 2.38s
44:	learn: 8.2547699	total: 1.92s	remaining: 2.34s
45:	learn: 8.2316152	total: 1.96s	remaining: 2.31s
46:	learn: 8.2003196	total: 2.01s	remaining: 2.27s
47:	learn: 8.1778163	total: 2.06s	remaining: 2.23s
48:	learn: 8.1556264	total: 2.1s	remaining: 2.18s
49:	learn: 8.1302331	total: 2.14s	remaining: 2.14s
50:	learn: 8.1108368	total: 2.18s	remaining: 2.1s
51:	learn: 8.0850823	total: 2.23s	remaining: 2.06s
52:	learn: 8.0621026	total: 2.27s	remaining: 2.01s
53:	learn: 8.0455452	total: 2.31s	remaining: 1.97s
54:	learn: 8.0296325	total: 2.36s	remaining: 1.93s
55:	learn: 8.0080526	total: 2.4s	remaining: 1.89s
56:	learn: 7.9887022	total: 2.44s	remaining: 1.84s
57:	learn: 7.9737964	total: 2.49s	remaining: 1.8s
58:	learn: 7.9497409	total: 2.53s	remaining: 1.76s
59:	learn: 7.9304518	total: 2.57s	remaining: 1.71s
60:	learn: 7.9186987	total: 2.61s	remaining: 1.67s
61:	learn: 7.8945349	total: 2.66s	remaining: 1.63s
62:	learn: 7.8732881	total: 2.7s	remaining: 1.59s
63:	learn: 7.8550119	total: 2.75s	remaining: 1.54s
64:	learn: 7.8362547	total: 2.79s	remaining: 1.5s
65:	learn: 7.8146221	total: 2.83s	remaining: 1.46s
66:	learn: 7.7980921	total: 2.88s	remaining: 1.42s
67:	learn: 7.7867833	total: 2.92s	remaining: 1.37s
68:	learn: 7.7743221	total: 2.96s	remaining: 1.33s
69:	learn: 7.7537431	total: 3.01s	remaining: 1.29s
70:	learn: 7.7357236	total: 3.05s	remaining: 1.25s
71:	learn: 7.7095794	total: 3.1s	remaining: 1.2s
72:	learn: 7.6989074	total: 3.14s	remaining: 1.16s
73:	learn: 7.6878706	total: 3.18s	remaining: 1.12s
74:	learn: 7.6739586	total: 3.23s	remaining: 1.08s
75:	learn: 7.6563922	total: 3.27s	remaining: 1.03s
76:	learn: 7.6419921	total: 3.31s	remaining: 989ms
77:	learn: 7.6219854	total: 3.35s	remaining: 945ms
78:	learn: 7.6110585	total: 3.4s	remaining: 903ms
79:	learn: 7.5965696	total: 3.44s	remaining: 860ms
80:	learn: 7.5882102	total: 3.48s	remaining: 817ms
81:	learn: 7.5740873	total: 3.52s	remaining: 773ms
82:	learn: 7.5642537	total: 3.56s	remaining: 730ms
83:	learn: 7.5382330	total: 3.61s	remaining: 687ms
84:	learn: 7.5257892	total: 3.65s	remaining: 644ms
85:	learn: 7.5112655	total: 3.7s	remaining: 602ms
86:	learn: 7.4968225	total: 3.74s	remaining: 559ms
87:	learn: 7.4811927	total: 3.79s	remaining: 516ms
88:	learn: 7.4688189	total: 3.83s	remaining: 473ms
89:	learn: 7.4593972	total: 3.87s	remaining: 430ms

90:	learn: 7.4476683	total: 3.92s	remaining: 388ms
91:	learn: 7.4347120	total: 3.97s	remaining: 345ms
92:	learn: 7.4213537	total: 4.01s	remaining: 302ms
93:	learn: 7.4069744	total: 4.05s	remaining: 259ms
94:	learn: 7.3959124	total: 4.1s	remaining: 216ms
95:	learn: 7.3860710	total: 4.14s	remaining: 173ms
96:	learn: 7.3717302	total: 4.19s	remaining: 130ms
97:	learn: 7.3576333	total: 4.23s	remaining: 86.3ms
98:	learn: 7.3440524	total: 4.27s	remaining: 43.2ms
99:	learn: 7.3304716	total: 4.32s	remaining: 0us

```
In [100]: > filePath = f'../models/catboost_gridCV.sav'
pickle.dump(catboost_grid_model, open(filePath, 'wb'))
```

executed in 133ms, finished 14:05:34 2022-05-30

```
In [101]: > catboost_grid_model.best_score_
```

executed in 36ms, finished 15:58:02 2022-05-30

Out[101]: 0.39770456030367163

```
In [102]: > catboost_grid_model.best_params_
```

executed in 13ms, finished 15:58:59 2022-05-30

Out[102]: {'catboost__depth': 10,
'catboost__learning_rate': 0.1,
'catboost__min_data_in_leaf': 10,
'catboost__n_estimators': 100}


Our hypertuned CatBoost Regressor only did better by 0.05 from our untuned CatBoost Regressor. That's still not good. This was expected from the very beginning since none of our model features actually carry any direct information about our grid cells other than latitude and longitude. Even then, we fuzzed out the latitude and longitude of our grid cell that we used in our model input to reduce cardinality. Our model could definitely benefit more from getting more geospatial related information of the grid cells such as satellite imagery, elevation at the grid cell, climate data (temperature and precipitation).

Let's still try LightGBM to see if we get a different results.

2.3.7 LightGBM


```
In [52]: > lgb_pipe = Pipeline(steps=[
    ('ct1', ct_all),
    ('ct2', ct_pca),
    ('lgb', lgb.LGBMRegressor(random_state=42))
])
```

executed in 16ms, finished 13:09:31 2022-05-27

In [61]:  `lgb_model = ModelWithCV(lgb_pipe,model_name = 'lgb', X=X_train,y=y_train)`

executed in 1m 15.3s, finished 13:20:21 2022-05-27

```
C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute\_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
  warnings.warn(
C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute\_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
  warnings.warn(
C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute\_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
  warnings.warn(
C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute\_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
  warnings.warn(
C:\Users\hanis\anaconda3\envs\geo_env\lib\site-packages\sklearn\impute\_iterative.py:699: ConvergenceWarning: [IterativeImputer] Early stopping criterion not reached.
  warnings.warn(
```

In [62]:  `lgb_model.print_cv_summary()`

executed in 12ms, finished 13:20:23 2022-05-27

```
CV Results for `lgb` model:
      0.23872 ± 0.40247 R_squared
```

Our LightGBM isn't doing better than our CatBoost Regressor.

All of the models used in this model building workflow is a decision tree based gradient boosting models with the exception of Linear Regression and our first simple model (Dummy model). [Here \(https://towardsdatascience.com/catboost-vs-lightgbm-vs-xgboost-c80f40662924#:~:text=In%20CatBoost%2C%20symmetric%20trees%2C%20or,the%20same%20depth%20can%20differ.\)](https://towardsdatascience.com/catboost-vs-lightgbm-vs-xgboost-c80f40662924#:~:text=In%20CatBoost%2C%20symmetric%20trees%2C%20or,the%20same%20depth%20can%20differ.) is a resource if you're interested in learning more about the differences under the hood for these different models.

2.4 Model Comparison

Let's compare R2 scores of all our model so far to see how all of them did relative to each other.

```
In [126]: # Create dictionary to save R2 scores

R2={}
R2['Dummy Regressor'] = 0.09730
R2['Linear Regressor'] = 0.16237
R2['Gradient Boosting Regressor'] = 0.17293
R2['Light GBM'] = 0.23872
R2['CatBoost Regressor'] = 0.39275
R2['CatBoost Regressor w/ Hypertune'] = 0.39770

R2 = pd.DataFrame.from_dict(R2,orient='index')
R2 = R2.reset_index()
R2 = R2.rename(columns={'index':'Model',0:'R2'})
R2
```

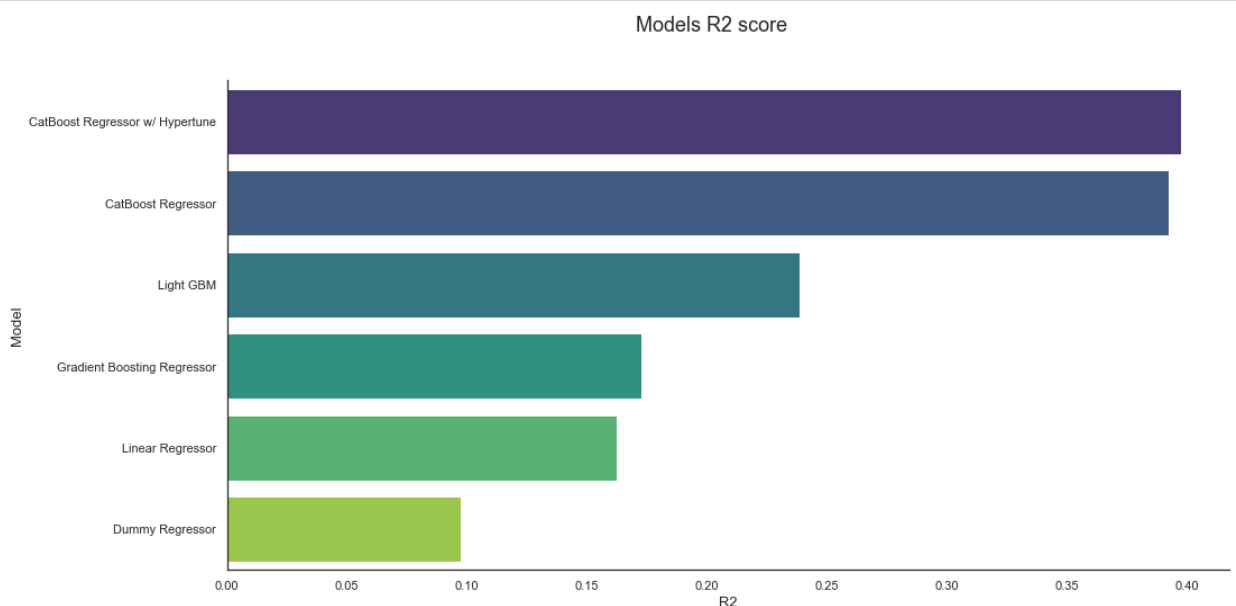
executed in 27ms, finished 16:45:09 2022-05-30

Out[126]:

	Model	R2
0	Dummy Regressor	0.09730
1	Linear Regressor	0.16237
2	Gradient Boosting Regressor	0.17293
3	Light GBM	0.23872
4	CatBoost Regressor	0.39275
5	CatBoost Regressor w/ Hypertune	0.39770

```
In [199]: fig, ax = plt.subplots(figsize=(16,8))
sns.set_palette("viridis", len(R2))
# rank = forcasted_sort.argsort().argsort() # http://stackoverflow.com/a/6266510/1628638
sns.barplot(x='R2', y='Model', data = R2.sort_values('R2',ascending=False))
sns.despine()
fig.suptitle("Models R2 score", fontsize = 18)
ax.set_xlabel("R2", fontsize = 13)
ax.set_ylabel("Model", fontsize = 13)
plt.savefig('../figures/r2.png', transparent=True,bbox_inches="tight", dpi=500)
plt.savefig('../figures/r2.jpeg', transparent=True,bbox_inches="tight", dpi=500)
```

executed in 5.38s, finished 23:46:44 2022-06-01



We can see from the above plot that our best model is our CatBoost Regressor with Hypertuned parameters. Our best estimator from that grid search is with the following parameters:

```
{'catboost__depth': 10,  
 'catboost__learning_rate': 0.1,  
 'catboost__min_data_in_leaf': 10,  
 'catboost__n_estimators': 100}
```

2.4.1 Prediction with Best Model

Let's use our best model to predict our test data and find the RMSE.

```
In [157]: ► y_pred = catboost_grid_model.best_estimator_.predict(X_test)  
  
          rmse = mean_squared_error(y_test,y_pred,squared=False)  
  
          rmse
```

executed in 893ms, finished 23:01:59 2022-06-01

Out[157]: 6.577646870173051

```
In [190]: #Plot average prediction error
fig, ax = plt.subplots(1,1,figsize = (15,15))

sns.set_theme(style = 'white')

ax1 = sns.scatterplot(x=y_test, y=y_pred, ax = ax, color = 'lightsteelblue', alpha = 0.3)
sns.lineplot(x=y_test, y=y_test, ax = ax)

x_label = 'Actual SWE'
y_label = 'Predicted SWE'

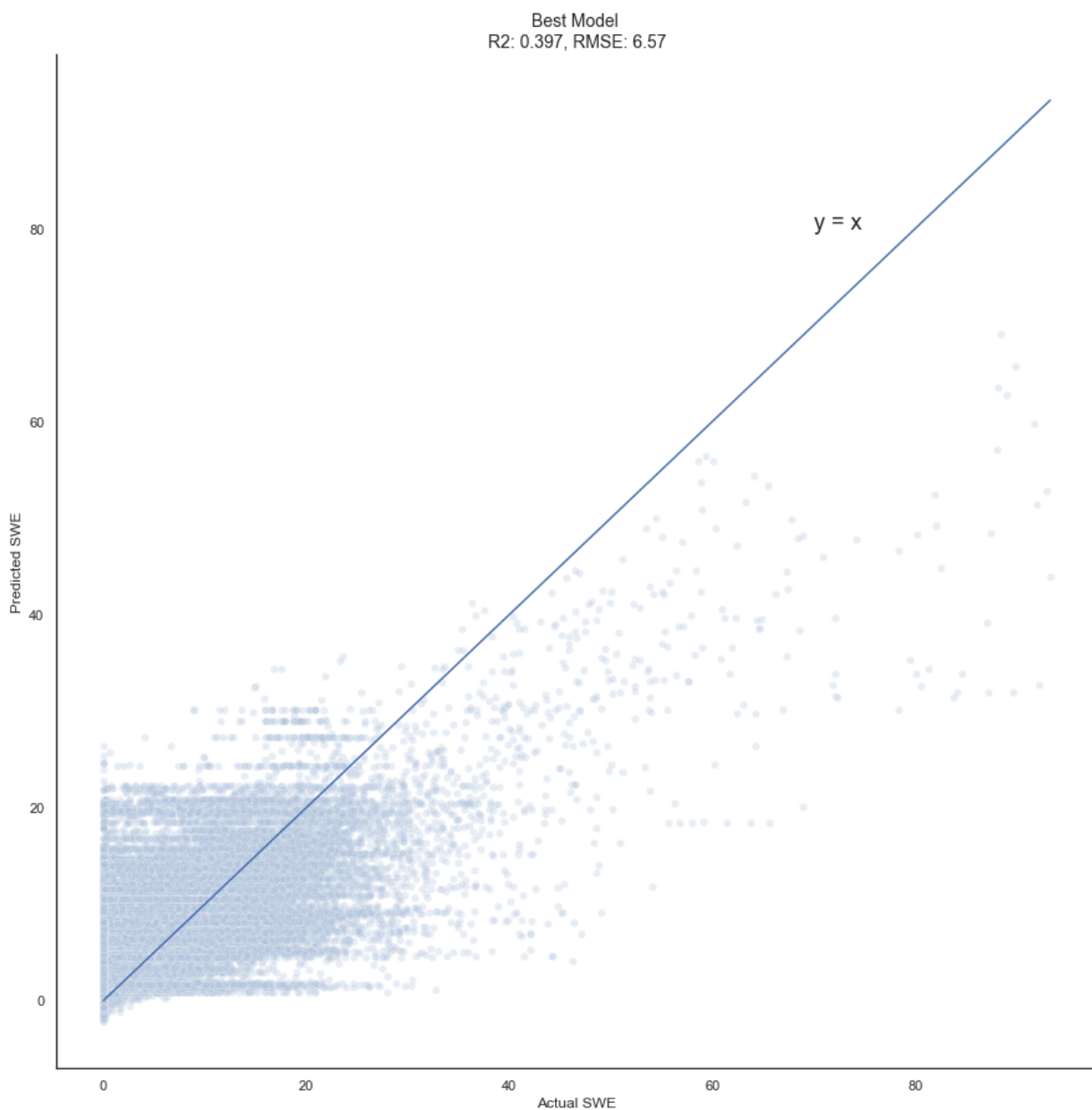
ax1.set_xlabel(x_label)
ax1.set_ylabel(y_label)

ax1.set_title('Best Model \nR2: 0.397, RMSE: 6.57',fontsize = 14)
ax1.annotate('y = x', xy =(70,80), fontsize = 18)

sns.despine()

plt.savefig('../figures/model_performance.jpeg',bbox_inches="tight",dpi=500)
```

executed in 33.5s, finished 23:34:54 2022-06-01



The blue lines represent if our model perfectly predicted the SWE and the scatter points represent Predicted SWE vs Actual SWE. We see that our model isn't able to predict our SWE very well and to reiterate, this is primarily due to the lack of features that are directly describing the environment of the grid cells. And this is important since Snow Water formation is highly influenced by regional climate (temperature, precipitation etc.) and geospatial information (i.e. elevation, vegetation).

2.5 Feature Importance

Let's get feature importance from our best model.

```
In [186]: #Get feature importance values
feature_values = list(catboost_grid_model.best_estimator_.named_steps["catboost"].feature_importances_)

#Build list of column names after Column Transformation
feature_names = ['PC1', 'PC2', 'PC3']
feature_names.extend(list(X_train.columns[13:22]))
feature_names.extend(list(subpipe_cat.fit(X_train).named_steps['ohe'].get_feature_names_out()))
len(feature_names)
```

Out[186]: 15

```
In [201]: # Create key:value pair col_name:feature_importance
feature_imp_dict = {ft_name:ft_imp for ft_name,ft_imp in zip(feature_names,feature_values)}

#Create dataframe from dictionary of features
feature_imp_df = pd.DataFrame.from_dict(feature_imp_dict, orient = 'index').reset_index()
feature_imp_df = feature_imp_df.rename(columns={'index':'col_name',0:'feat_imp'})
#Get top 10 feature
feature_imp_df = feature_imp_df.sort_values('feat_imp',ascending = False).head(10)

#Sniff test
feature_imp_df
```

executed in 88ms, finished 00:12:28 2022-06-02

Out[201]:

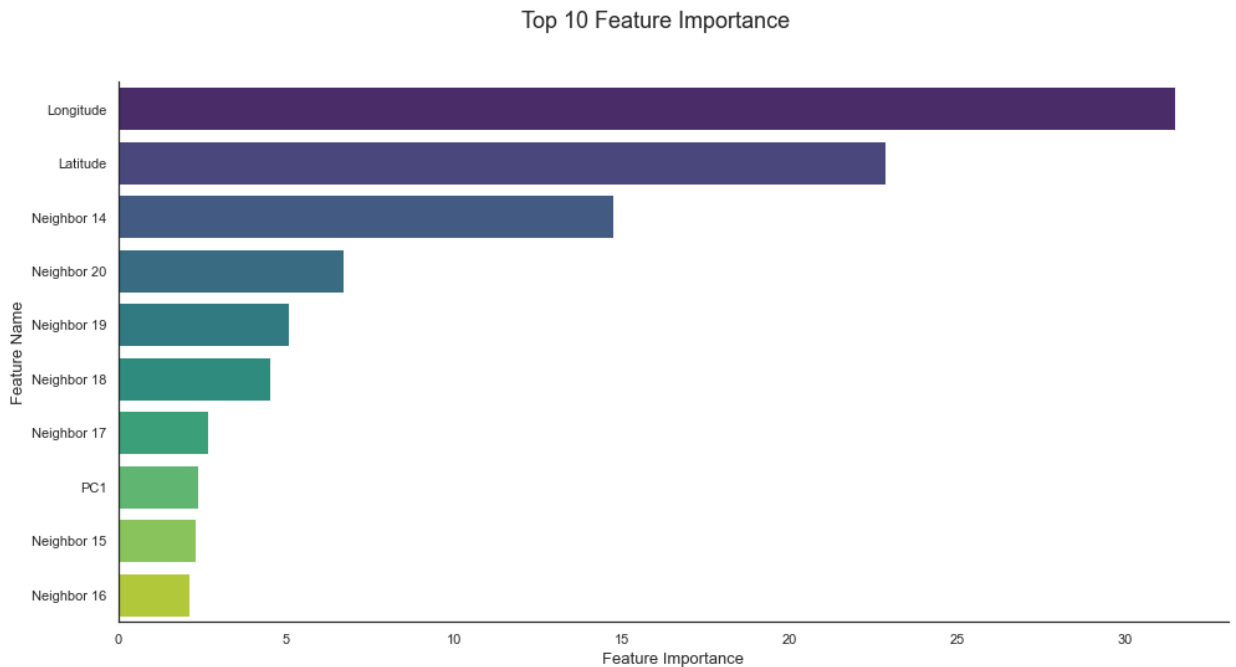
	col_name	feat_imp
11	longitude	31.509204
10	latitude	22.872581
3	neighbor_14	14.746022
9	neighbor_20	6.703263
8	neighbor_19	5.062632
7	neighbor_18	4.506834
6	neighbor_17	2.656348
0	PC1	2.358456
4	neighbor_15	2.300856
5	neighbor_16	2.096531

```
In [205]: #Plot feature importance

fig, ax = plt.subplots(figsize=(16,8))
sns.set_palette("viridis", len(feature_imp_df))
# rank = forcasted_sort.argsort().argsort() # http://stackoverflow.com/a/6266510/1628638
g = sns.barplot(x='feat_imp', y='col_name', data = feature_imp_df, ax=ax)
g.set_yticks(range(len(feature_imp_df))) # <--- set the ticks first
g.set_yticklabels(['Longitude', 'Latitude', 'Neighbor 14', 'Neighbor 20', 'Neighbor 19', \
                   'Neighbor 18', 'Neighbor 17', 'PC1', 'Neighbor 15', 'Neighbor 16'])

sns.despine()
fig.suptitle("Top 10 Feature Importance", fontsize = 18)
ax.set_xlabel("Feature Importance", fontsize = 13)
ax.set_ylabel("Feature Name", fontsize = 13)
plt.savefig('../figures/feat_imp.png', transparent=True, bbox_inches="tight", dpi=500)
plt.savefig('../figures/feat_imp.jpeg', transparent=True, bbox_inches="tight", dpi=500)
```

executed in 5.09s, finished 00:14:39 2022-06-02



It is no surprise that the most important features is latitude and longitude since these two features are the only features that are **direct** geospatial features of our grid cells. This further emphasizes how beneficial it would be to incorporate satellite imagery, elevation and climate data as part of our model features to improve our R2 and RMSE since the thickness of snow packs at any given time depend on these climatological and geospatial features at those grid cells.

2.6 Conclusion

2.6.1 Future Work

1. Explore Time-Series to forecast SWE at SNOTEL and CDEC stations

On top of predicting SWE at the location of grid cells, it would be highly valuable to conduct a time series analysis of SWE at SNOTEL and CDEC (ground measure) stations and furthermore, to be able to forecast SWE at these locations.

2. Exploration of feature engineering

As observed from our model performance, our model could do better with more features that are engineered. Some possibilities include:

- Using historical mean of SWE and SWE relative to historical mean. This could possibly capture long term trends in the region.
- Calculate the snow day at which the observation was measured. This could help capture seasonal trends in our data.

3. Incorporate data from satellite imageries & remote sensing data

- Satellite imageries (MODIS Terra/Aqua Data)
- Climate data
- DEM The model could've benefitted just from the mean and variance of pixel values over an entire grid cell for the satellite imageris (MODIS and DEM).

4. Use near Real-time data to predict SWE