```
Open in Colab
```

```
In [ ]:
         import pandas as pd
         df = pd.read_csv('/content/Telecom_customer churn.csv');
         df.head()
In [ ]:
Out[]:
            rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean vceovr_Mean dat
         0
              23.9975
                          219.25
                                       22.500
                                                 0.2475
                                                                 0.00
                                                                               0.0
                                                                                            0.0
              57.4925
         1
                          482.75
                                       37.425
                                                 0.2475
                                                                22.75
                                                                               9.1
                                                                                            9.1
         2
              16.9900
                           10.25
                                       16.990
                                                 0.0000
                                                                 0.00
                                                                               0.0
                                                                                            0.0
         3
              38.0000
                            7.50
                                       38.000
                                                 0.0000
                                                                 0.00
                                                                               0.0
                                                                                            0.0
                          570.50
                                                                 0.00
                                                                               0.0
                                                                                            0.0
         4
              55.2300
                                       71.980
                                                 0.0000
        5 rows × 100 columns
         from google.colab import drive
         drive.mount('/content/drive')
         # Check for missing values
In [ ]:
         missing_values = df.isnull().sum()
         print(missing_values)
         rev_Mean
                          357
         mou_Mean
                          357
         totmrc_Mean
                          357
         da Mean
                          357
         ovrmou_Mean
                          357
         kid11_15
                         1732
         kid16 17
                         1732
         creditcd
                         1732
         eqpdays
                            1
         Customer_ID
                            0
         Length: 100, dtype: int64
In [ ]: df = df.dropna() # Drops rows with any missing values
```

numeric_cols = df.select_dtypes(include=['number']).columns

In []:

Get numeric columns

print("Numeric columns:", numeric_cols)

```
In [ ]: outlier_dict = {}
        for col in numeric_cols:
            # Calculate 01 and 03
            Q1 = df[col].quantile(0.25)
            Q3 = df[col].quantile(0.75)
            IQR = Q3 - Q1
            # Determine bounds for outliers
            lower_bound = Q1 - 1.5 * IQR
            upper_bound = Q3 + 1.5 * IQR
            # Identify outliers
            outliers = df[(df[col] < lower_bound) | (df[col] > upper_bound)]
            if not outliers.empty:
                outlier_dict[col] = outliers
        # Display outliers for each column
        for col, outliers in outlier dict.items():
             print(f"Outliers in column '{col}':")
            print(outliers)
```

```
Outliers in column 'rev_Mean':
                                             da_Mean
          rev_Mean mou_Mean totmrc_Mean
                                                       ovrmou_Mean ovrrev_Mean
       212.515000
                     1971.50
                                   84.9900
                                              2.2275
                                                                       99.800000
14
                                                        249.500000
20
       172.440000
                     1978.00
                                   99.9900
                                              0.0000
                                                        362.250000
                                                                       72.450000
123
       159.517500
                     2255.75
                                   82.9900
                                              3.2175
                                                                       66.650000
                                                        666.500000
127
       281.330000
                     3807.75
                                  182.9375
                                              8.4150
                                                        759.000000
                                                                       88.500000
178
       284.932500
                     3794.25
                                   75.0000
                                              1.7325
                                                       1948.750000
                                                                      194.875000
                                        . . .
99537
       149.220000
                     2032.00
                                   97.4900
                                              5.4450
                                                        234.500000
                                                                       58.625000
                                              2.9700
99641
       321.350000
                     1364.50
                                   69.5850
                                                        630.500000
                                                                      248.450000
99717
       197.945000
                     1118.50
                                   50.0000
                                              5.4450
                                                        475.000000
                                                                      142.500000
99760
       188.396667
                     1289.00
                                    24.8400
                                              0.0000
                                                        653.666667
                                                                      163.556667
       534.930000
                     4719.00
                                   10.0000
                                              6.9300
                                                       2018.000000
99872
                                                                      515.000000
       vceovr Mean
                     datovr Mean roam Mean
                                              change mou
                                                                  forgntvl
                                                                            ethnic
                                                            . . .
14
          99.800000
                            0.000
                                      35.4975
                                                  -200.50
                                                                       0.0
                                                                                  Ν
                                                                                  Ζ
20
          72.450000
                            0.000
                                                                       0.0
                                       0.0000
                                                  -1007.00
123
                            0.000
                                                  -2238.75
                                                                       0.0
                                                                                  Н
         66.650000
                                       0.5850
                                                            . . .
127
         88.425000
                            0.075
                                       0.0000
                                                      5.25
                                                                       0.0
                                                                                  N
                                                            . . .
178
        194.875000
                            0.000
                                       0.0000
                                                    437.75
                                                            . . .
                                                                       0.0
                                                                                  Ν
                              . . .
                                          . . .
                                                                       . . .
                                                      . . .
                                                            . . .
         58.625000
99537
                            0.000
                                       0.1600
                                                    442.00
                                                                       0.0
                                                                                  U
                                                            . . .
99641
        199.450000
                           49.000
                                       0.0000
                                                    741.50
                                                            . . .
                                                                       0.0
                                                                                  G
99717
        142.500000
                            0.000
                                       0.0000
                                                     30.50
                                                                       0.0
                                                                                  Ν
                                                            . . .
                                                                                  Ζ
99760
                            0.390
                                       0.0000
                                                  -1288.00
                                                                       0.0
        163.166667
                           29.250
99872
        485.750000
                                       0.0000
                                                      0.00
                                                                       0.0
                                                                                  N
               kid3_5
                                  kid11_15
                                             kid16_17
                                                        creditcd
                                                                   eqpdays
       kid0 2
                        kid6_10
14
             U
                     U
                               Υ
                                          U
                                                    U
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                                                                     199.0
20
                               U
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                                                    U
                                                                     143.0
             U
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                                                               Υ
             U
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                                          U
                                                    U
                                                                     318.0
123
                     U
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127
             U
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                                                                      77.0
             U
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178
                     U
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                                                                      88.0
                                        . . .
99537
            U
                     U
                               U
                                          U
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                                                                     250.0
99641
            U
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                                                                      45.0
            U
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                                                                     917.0
99717
99760
             U
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                                                                     107.0
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                                                     U
99872
             U
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                                                                      62.0
       Customer_ID
14
            1000015
20
            1000021
123
            1000124
127
            1000128
178
            1000179
. . .
                . . .
99537
            1099538
99641
            1099642
99717
            1099718
99760
            1099761
99872
            1099873
[1702 rows x 100 columns]
Outliers in column 'mou Mean':
       rev_Mean mou_Mean totmrc_Mean da_Mean
                                                    ovrmou_Mean
                                                                  ovrrev Mean
14
                                 84.9900
                                            2.2275
       212.5150
                   1971.50
                                                          249.50
                                                                       99.8000
20
       172.4400
                   1978.00
                                 99.9900
                                            0.0000
                                                          362.25
                                                                       72.4500
84
        93.0200
                   1348.25
                                 75.0000
                                            0.0000
                                                            4.75
                                                                        1.8525
85
        97.5900
                   1804.00
                                 75.0000
                                            1.4850
                                                           85.00
                                                                        8.5000
92
        72.8100
                   1306.00
                                 77.8975
                                            0.0000
                                                            0.00
                                                                        0.0000
             . . .
                       . . .
                                               . . .
                                                             . . .
                                                                            . . .
99498
       141.4825
                   1850.75
                                 75.0000
                                           11.6325
                                                          195.00
                                                                       48.7500
```

99509

156.7125

3140.75

159.9900

2.7225

0.0000

0.00

```
5,4450
99537 149.2200
                   2032.00
                                 97.4900
                                                          234.50
                                                                       58,6250
                   1364.50
                                            2.9700
99641
      321.3500
                                 69.5850
                                                          630.50
                                                                      248.4500
99872
      534.9300
                   4719.00
                                 10.0000
                                            6.9300
                                                         2018.00
                                                                      515.0000
       vceovr Mean datovr Mean roam Mean change mou
                                                                 forgntvl ethnic
                                                           . . .
14
            99.800
                          0.0000
                                     35.4975
                                                  -200.50
                                                                       0.0
                                                                                 Ν
                                                            . . .
20
            72.450
                          0.0000
                                      0.0000
                                                 -1007.00
                                                                       0.0
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                                                           . . .
84
             0.000
                          1.8525
                                      1.9200
                                                  -165.25
                                                                       0.0
                                                                                 S
                                                           . . .
85
             8.500
                          0.0000
                                      0.0000
                                                  -343.00
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                                                                                 Ν
                                                           . . .
92
             0.000
                          0.0000
                                      0.0000
                                                  -462.00
                                                                       0.0
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                                                           . . .
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                                          . . .
                                                      . . .
                                                            . . .
                                                                       . . .
99498
            48.750
                          0.0000
                                      0.0000
                                                    16.25
                                                                       0.0
                                                                                 D
                                                            . . .
99509
             0.000
                          0.0000
                                      0.0000
                                                  -201.75
                                                                       0.0
                                                                                 Ν
                                                           . . .
                                                                                 U
99537
            58.625
                          0.0000
                                      0.1600
                                                   442.00 ...
                                                                       0.0
                         49.0000
                                                   741.50 ...
                                                                                 G
99641
           199,450
                                      0.0000
                                                                       0.0
99872
           485.750
                         29.2500
                                      0.0000
                                                     0.00
                                                                       0.0
                                                                                 N
                                                           . . .
       kid0 2
               kid3 5
                        kid6_10 kid11_15 kid16_17
                                                       creditcd eqpdays \
                                                    U
                                                                    199.0
14
            U
                     U
                               Υ
                                         U
                                                               Υ
            U
                     U
                               U
                                          U
                                                    U
                                                                    143.0
20
                                                               Υ
84
            U
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                                                               Υ
                                                                     10.0
85
            U
                     U
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                                                                    175.0
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92
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99498
            U
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                                                                    736.0
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99509
            U
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                                                                    278.0
                                                    U
99537
            U
                     U
                               U
                                         U
                                                               Υ
                                                                    250.0
            U
                     Υ
                               Υ
                                          U
                                                    U
                                                               Υ
                                                                     45.0
99641
99872
            U
                     U
                               U
                                         U
                                                    U
                                                                      62.0
       Customer ID
14
           1000015
20
           1000021
84
           1000085
85
           1000086
92
           1000093
99498
           1099499
99509
           1099510
99537
           1099538
           1099642
99641
99872
           1099873
[1567 rows x 100 columns]
Outliers in column 'totmrc_Mean':
       rev_Mean mou_Mean totmrc_Mean
                                          da_Mean
                                                    ovrmou_Mean ovrrev_Mean
127
       281.3300
                  3807.75
                                182.9375
                                            8.4150
                                                          759.00
                                                                       88.5000
193
       173.6675
                                159.9900
                                            0.0000
                                                            0.75
                                                                        0.2925
                   464.50
210
       111.6150
                  1161.00
                                104.9900
                                            0.0000
                                                           31.50
                                                                        7.8750
                                            0.0000
                                                            0.00
236
       124.5150
                    593.50
                                101.9250
                                                                        0.0000
251
       180.1150
                    496.75
                                154.9900
                                            0.4950
                                                            0.25
                                                                        0.0975
                       . . .
. . .
            . . .
                                     . . .
                                               . . .
                                                             . . .
                                                                           . . .
98453
       210.7100
                   2421.25
                                151.2400
                                            2.4750
                                                          206.00
                                                                       41.2500
                   1441.50
                                            0.9900
                                                          239.00
98612
       153.7700
                                109.9800
                                                                       47.8000
98988
       126.0000
                    948.25
                                119.9900
                                            1.4850
                                                           41.50
                                                                       14.5250
99297
       237.7525
                   2495.25
                                154.9900
                                            1.7325
                                                           36.00
                                                                        5.4000
                   3140.75
                                159.9900
                                                            0.00
                                                                        0.0000
99509
      156.7125
                                            2.7225
       vceovr Mean
                     datovr_Mean roam_Mean
                                               change mou ... forgntvl
                                                                           ethnic
127
            88.425
                          0.0750
                                      0.0000
                                                     5.25
                                                                       0.0
                                                                                 N
                                                                                 0
193
             0.000
                           0.2925
                                      0.0000
                                                  -224.50
                                                                       0.0
                                                           . . .
                                                                                 Ι
210
              7.875
                           0.0000
                                      0.0000
                                                   -43.00
                                                           . . .
                                                                       0.0
                                                                                 Ν
236
              0.000
                          0.0000
                                      0.0000
                                                   133.50
                                                            . . .
                                                                       0.0
              0.000
                           0.0975
                                     21.6250
                                                  -449.75
                                                                       0.0
                                                                                  S
251
                                                            . . .
```

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. . .
                . . .
                              . . .
                                          . . .
                                                      . . .
                                                            . . .
                                                                        . . .
                                                                                 . . .
                                                                                   S
98453
             41.250
                           0.0000
                                       0.1725
                                                    -22.25
                                                                        0.0
98612
             47.800
                           0.0000
                                       0.0000
                                                   -992.50
                                                                        0.0
                                                                                   Н
                                                            . . .
98988
             14.525
                           0.0000
                                       0.0000
                                                     -8.25
                                                                        0.0
                                                                                   Ν
                                                             . . .
                                                                                   J
99297
              5.400
                           0.0000
                                       0.0975
                                                    258.75
                                                                        0.0
99509
              0.000
                           0.0000
                                       0.0000
                                                   -201.75
                                                                        0.0
                                                                                   N
       kid0 2 kid3 5
                        kid6_10
                                  kid11_15 kid16_17
                                                        creditcd
                                                                   eqpdays
127
                     U
                                          U
                                                     Υ
                                                                       77.0
                                                                Υ
193
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                      542.0
210
             U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     299.0
236
             U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                       61.0
251
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     195.0
                                                                     533.0
98453
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
98612
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     169.0
98988
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     464.0
99297
             U
                     U
                               U
                                          U
                                                     U
                                                                      76.0
                     IJ
                               U
                                          U
                                                     IJ
99509
             U
                                                                Υ
                                                                      278.0
       Customer ID
127
            1000128
193
            1000194
210
            1000211
236
            1000237
251
           1000252
. . .
98453
            1098454
98612
            1098613
98988
            1098989
99297
           1099298
99509
            1099510
[536 rows x 100 columns]
Outliers in column 'da Mean':
       rev_Mean
                     mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean \
                                               2.2275
                                     84.9900
                                                               249.5
14
       212.5150 1971.500000
                                                                             99.80
114
       113.5225 1807.250000
                                     85.0000
                                               1.9800
                                                               102.0
                                                                             10.20
123
       159.5175
                  2255.750000
                                     82.9900
                                                3.2175
                                                               666.5
                                                                             66.65
127
       281.3300
                  3807.750000
                                    182.9375
                                                8.4150
                                                               759.0
                                                                             88.50
128
        97.8275
                  1669.500000
                                     83.0000
                                                3.7125
                                                                 0.0
                                                                              0.00
. . .
             . . .
                           . . .
                                         . . .
                                                   . . .
                                                                 . . .
                                                                               . . .
99776
        52.3100
                   157.666667
                                     50.0000
                                                2.3100
                                                                 0.0
                                                                              0.00
99849
        99.1500
                   927.500000
                                     70.0000
                                                5.9400
                                                                32.0
                                                                              8.00
99872
       534.9300
                  4719.000000
                                     10.0000
                                                              2018.0
                                                                            515.00
                                                6.9300
99875
       105.5300
                   736.000000
                                     44.9900
                                                2.6400
                                                               194.0
                                                                             67.90
99939
        49.3625
                   187.750000
                                     40.0725
                                                2.9700
                                                                18.0
                                                                              6.32
       vceovr Mean
                     datovr Mean
                                    roam Mean
                                                 change mou
                                                                   forgntvl
14
             99.800
                            0.000
                                                                         0.0
                                      35.4975
                                               -200.500000
                                                              . . .
114
             10.200
                            0.000
                                       1.0025
                                                                         0.0
                                                -373.250000
123
             66.650
                            0.000
                                       0.5850 -2238.750000
                                                                         0.0
                                                              . . .
                            0.075
127
             88.425
                                       0.0000
                                                   5.250000
                                                                         0.0
                                                              . . .
                            0.000
                                                 240.500000
128
              0.000
                                       1.2800
                                                                         0.0
                                                                         . . .
                . . .
                              . . .
                                          . . .
                                                              . . .
                                                         . . .
99776
              0.000
                            0.000
                                       0.0000
                                                                         1.0
                                                  -5.666667
99849
              8.000
                            0.000
                                      15.2100
                                                 -55.500000
                                                                         0.0
99872
            485.750
                           29.250
                                       0.0000
                                                   0.000000
                                                                         0.0
99875
             67.900
                            0.000
                                       0.0000
                                                 272.000000
                                                                         0.0
99939
              6.125
                            0.195
                                       0.0000
                                               -187.750000
                                                                         0.0
                        kid3_5 kid6_10
       ethnic
                kid0 2
                                           kid11_15
                                                      kid16_17 creditcd
                                                                            eqpdays
             Ν
                     U
                              U
                                        Υ
                                                   U
                                                              U
                                                                         Υ
                                                                              199.0
14
114
             Ν
                     U
                              U
                                        U
                                                   U
                                                              U
                                                                         Υ
                                                                              387.0
```

				Lab6			
123	Н	U U	U	U	U	Υ	318.0
127	N	U U	U	U	Υ	Υ	77.0
128	Н	U U	U	U	U	Υ	116.0
	• • • •		• • •	•••	• • •		• • •
99776	G	U Y		U	U	Υ	910.0
99849	N	U U		U	U	Υ	408.0
99872	N	U U		U	U	Υ	62.0
99875	Н	U U		Ü	Ü	Y	958.0
99939	S	U U		U	U	Y	153.0
2222	3	0 0	· ·	O	Ü		133.0
	Customon ID						
14	Customer_ID						
	1000015						
114	1000115						
123	1000124						
127	1000128						
128	1000129						
• • •	• • •						
99776	1099777						
99849	1099850						
99872	1099873						
99875	1099876						
99939	1099940						
[3331	rows x 100 cc	lumns]					
Outlie	ers in column	'ovrmou_Me	an':				
	rev_Mean	mou_Mean	totmrc_Mean	da_Mean ov	rmou_Mean	ovrrev	/_Mean \
14	212.515000	1971.50	84.99		49.500000		300000
20	172.440000	1978.00	99.99		62.250000		150000
40	82.162500	660.00	50.00		00.750000		225000
48	107.235000	782.00	24.99		32.750000		L17500
85	97.590000	1804.00	75.00		85.000000		500000
						0	
99697	69.547500	325.25	34.98	0.7425 1	10.250000	33 (975000
99717	197.945000	1118.50	50.00		75.00000		500000
99760	188.396667	1289.00	24.84		53.666667		556667
99872	534.930000	4719.00	10.00		18.000000		000000
99875	105.530000	736.00	44.99	2.6400 1	94.000000	6/.5	900000
					_		
	vceovr_Mean	datovr_Me				orgntvl	ethnic \
14	99.800000		00 35.497			0.0	N
20	72.450000		00 0.0000			0.0	Z
40	30.225000		00 1.937			0.0	N
48	86.117500	0.	00 0.000	258.0	0	0.0	N
85	8.500000	0.	00 0.000	-343.0	0	0.0	N
• • •	• • •						• • •
99697	33.075000	0.	0.000	25.7	5	0.0	I
99717	142.500000	0.	00 0.000	30.5	0	0.0	N
99760	163.166667	0.	39 0.0000	-1288.0	0	0.0	Z
99872	485.750000	29.	25 0.0000	0.0	0	0.0	N
99875	67.900000	0.	00 0.000		0	0.0	Н
	kid0_2 kid3	3_5 kid6_1	0 kid11_15	kid16_17 c	reditcd	eqpdays	\
14	U		Y U	U	Y	199.0	,
20	Ü	-	U U	Ü	Y	143.0	
40	U		U Y	U	Y	107.0	
48	U		Y Y	Y	Ϋ́	162.0	
46 85	U		T T	T U	Ϋ́	175.0	
	_						
00607	•••			•••	٠		
99697	U		U U	U	Y	980.0	
99717	U		Y Y	U	Y	917.0	
99760	U		U U	U	Y	107.0	
99872	U		U U	U	Υ	62.0	
99875	U	U	U U	U	Υ	958.0	

```
Customer_ID
            1000015
14
20
            1000021
40
            1000041
48
            1000049
85
            1000086
. . .
            1099698
99697
99717
            1099718
99760
            1099761
99872
            1099873
99875
            1099876
[3412 rows x 100 columns]
Outliers in column 'ovrrev Mean':
          rev_Mean mou_Mean totmrc_Mean
                                              da_Mean
                                                        ovrmou_Mean
                                                                      ovrrev_Mean
14
                                               2.2275
                                                                         99.800000
       212.515000
                      1971.50
                                      84.99
                                                          249.500000
20
       172.440000
                      1978.00
                                      99.99
                                               0.0000
                                                          362.250000
                                                                         72.450000
40
        82.162500
                       660.00
                                      50.00
                                               0.0000
                                                          100.750000
                                                                         30.225000
48
       107.235000
                       782.00
                                      24.99
                                               0.0000
                                                          232.750000
                                                                         86.117500
       159.517500
                                      82.99
                                                          666.500000
                                                                         66.650000
123
                      2255.75
                                               3.2175
                          . . .
                                        . . .
                                                   . . .
99697
        69.547500
                       325.25
                                       34.98
                                               0.7425
                                                          110.250000
                                                                         33.075000
99717
       197.945000
                      1118.50
                                      50.00
                                               5.4450
                                                          475.000000
                                                                        142.500000
       188.396667
                                      24.84
99760
                      1289.00
                                               0.0000
                                                          653.666667
                                                                        163.556667
                      4719.00
                                      10.00
99872
       534.930000
                                               6.9300
                                                        2018.000000
                                                                        515.000000
99875
       105.530000
                       736.00
                                      44.99
                                               2.6400
                                                          194.000000
                                                                         67.900000
       vceovr_Mean
                      datovr_Mean
                                    roam_Mean
                                                change_mou
                                                                    forgntvl
                                                                               ethnic
                                                              . . .
14
          99.800000
                             0.00
                                                    -200.50
                                                                         0.0
                                       35.4975
                                                                                    Ν
                                                              . . .
20
                             0.00
                                        0.0000
                                                   -1007.00
                                                                         0.0
                                                                                    Ζ
          72.450000
40
          30.225000
                             0.00
                                        1.9375
                                                    -184.00
                                                                         0.0
                                                                                    Ν
                                                             . . .
48
                             0.00
          86.117500
                                        0.0000
                                                    -258.00
                                                                         0.0
                                                                                    Ν
                                                             . . .
123
          66.650000
                             0.00
                                        0.5850
                                                   -2238.75
                                                                         0.0
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                               . . .
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99697
         33.075000
                             0.00
                                        0.0000
                                                      25.75
                                                                         0.0
                                                                                    Ι
                                                              . . .
                             0.00
                                                                                    Ν
99717
        142.500000
                                        0.0000
                                                      30.50
                                                                         0.0
99760
                             0.39
                                        0.0000
                                                   -1288.00
                                                                         0.0
                                                                                    Ζ
        163.166667
                                                              . . .
99872
        485.750000
                             29.25
                                        0.0000
                                                       0.00
                                                                         0.0
                                                                                    Ν
                                                              . . .
99875
          67.900000
                              0.00
                                        0.0000
                                                     272.00
                                                                         0.0
                                                                                    Н
       kid0_2
                kid3 5
                         kid6_10
                                   kid11_15
                                              kid16 17
                                                         creditcd
                                                                     eqpdays
14
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                      U
                                Υ
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                                                                 Υ
                                                                       199.0
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20
                                                                 Υ
                                                                       143.0
             U
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                                                      U
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40
                      H
                                U
                                                                 Υ
48
             U
                      Υ
                                Υ
                                           Υ
                                                      Υ
                                                                 Υ
                                                                       162.0
             U
                                                      U
123
                      U
                                U
                                           U
                                                                 Υ
                                                                       318.0
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99697
             U
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                                                                 Υ
                                                                       980.0
             U
                      Υ
                                Υ
                                           Υ
                                                      U
                                                                 Υ
                                                                       917.0
99717
99760
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       107.0
99872
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                        62.0
                                U
99875
                                                                       958.0
       Customer ID
14
            1000015
20
            1000021
40
            1000041
48
            1000049
123
            1000124
99697
            1099698
99717
            1099718
99760
            1099761
```

99872 1099873 99875 1099876

```
[3365 rows x 100 columns]
```

Outliers in column 'vceovr_Mean':

	rev_Mean	mou_Mean	totmrc_Mean	da_Mean	ovrmou_Mean	ovrrev_Mean	\
14	212.515000	1971.50	84.99	2.2275	249.500000	99.800000	
20	172.440000	1978.00	99.99	0.0000	362.250000	72.450000	
40	82.162500	660.00	50.00	0.0000	100.750000	30.225000	
48	107.235000	782.00	24.99	0.0000	232.750000	86.117500	
123	159.517500	2255.75	82.99	3.2175	666.500000	66.650000	
				• • •		• • •	
99697	69.547500	325.25	34.98	0.7425	110.250000	33.075000	
99717	197.945000	1118.50	50.00	5.4450	475.000000	142.500000	
99760	188.396667	1289.00	24.84	0.0000	653.666667	163.556667	
99872	534.930000	4719.00	10.00	6.9300	2018.000000	515.000000	
99875	105.530000	736.00	44.99	2.6400	194.000000	67.900000	

	vceovr_Mean	datovr_Mean	roam_Mean	change_mou	 forgntvl	ethnic	\
14	99.800000	0.00	35.4975	-200.50	 0.0	N	
20	72.450000	0.00	0.0000	-1007.00	 0.0	Z	
40	30.225000	0.00	1.9375	-184.00	 0.0	N	
48	86.117500	0.00	0.0000	-258.00	 0.0	N	
123	66.650000	0.00	0.5850	-2238.75	 0.0	Н	
996	97 33.075000	0.00	0.0000	25.75	 0.0	I	
997	17 142.500000	0.00	0.0000	30.50	 0.0	N	
997	60 163.166667	0.39	0.0000	-1288.00	 0.0	Z	
998	72 485.750000	29.25	0.0000	0.00	 0.0	N	
998	75 67.900000	0.00	0.0000	272.00	 0.0	Н	

	kid0_2	kid3_5	kid6_10	kid11_15	kid16_17	creditcd	eqpdays	\
14	U	U	Υ	U	U	Υ	199.0	
20	U	U	U	U	U	Υ	143.0	
40	U	U	U	Υ	U	Υ	107.0	
48	U	Υ	Υ	Υ	Υ	Υ	162.0	
123	U	U	U	U	U	Υ	318.0	
99697	U	U	U	U	U	Υ	980.0	
99717	U	Υ	Υ	Υ	U	Υ	917.0	
99760	U	U	U	U	U	Υ	107.0	
99872	U	U	U	U	U	Υ	62.0	
99875	U	U	U	U	U	Υ	958.0	

[3385 rows x 100 columns]

Outliers in column 'datovr_Mean':

	rev_Mean	mou_Mean	totmrc_Mean	da_Mean	ovrmou_Mean	ovrrev_Mean
19	50.965000	162.00	69.9900	0.0000	2.500000	0.975000
39	33.477500	195.50	29.9900	0.0000	0.250000	0.097500
84	93.020000	1348.25	75.0000	0.0000	4.750000	1.852500
101	114.132500	1649.75	83.0000	1.7325	51.500000	14.647500

```
127
       281.330000
                     3807.75
                                  182.9375
                                               8.4150
                                                        759.000000
                                                                        88.500000
                          . . .
                                        . . .
                                                  . . .
                                    69.5850
                                               2.9700
99641
       321.350000
                     1364.50
                                                         630.500000
                                                                       248.450000
99760
       188.396667
                     1289.00
                                    24.8400
                                               0.0000
                                                         653.666667
                                                                       163.556667
99872
       534.930000
                                    10.0000
                                               6.9300
                                                       2018.000000
                                                                       515.000000
                     4719.00
99899
        45.260000
                      149.00
                                    44.4800
                                               0.0000
                                                           2.000000
                                                                         0.780000
99939
                                               2.9700
                                                          18.000000
        49.362500
                      187.75
                                    40.0725
                                                                         6.320000
       vceovr Mean
                     datovr Mean
                                                                  forgntvl
                                                                             ethnic
                                   roam Mean
                                                change mou
                                                             . . .
19
          0.000000
                           0.9750
                                        0.000
                                                    -58.00
                                                                        0.0
                                                                                   S
                                                             . . .
                                                                                   J
39
          0.000000
                           0.0975
                                        2.565
                                                     54.50
                                                                        0.0
84
          0.000000
                           1.8525
                                        1.920
                                                   -165.25
                                                                        0.0
                                                                                   S
                                                             . . .
101
          1.875000
                          12.7725
                                        0.000
                                                   -176.75
                                                                        0.0
                                                                                   U
                                                             . . .
                                        0.000
127
         88.425000
                           0.0750
                                                      5.25
                                                                        0.0
                                                                                   N
                              . . .
                                          . . .
                                                             . . .
                                                                        . . .
                                                       . . .
99641
        199.450000
                          49.0000
                                        0.000
                                                    741.50
                                                                        0.0
                                                                                   G
                                                  -1288.00
                                                                                   Ζ
99760
        163.166667
                           0.3900
                                        0.000
                                                                        0.0
                          29.2500
                                        0.000
                                                      0.00
                                                                        0.0
                                                                                   Ν
99872
        485.750000
                                                             . . .
99899
          0.000000
                           0.7800
                                        0.000
                                                    -86.00
                                                                        0.0
                                                                                   N
                                                             . . .
                                                                                   S
99939
          6.125000
                           0.1950
                                        0.000
                                                   -187.75
                                                            . . .
                                                                        0.0
       kid0_2
               kid3_5
                         kid6_10
                                  kid11_15 kid16_17 creditcd
                                                                   eqpdays
19
             U
                     U
                               Υ
                                          Υ
                                                     Υ
                                                                      253.0
39
             U
                     U
                               U
                                          Υ
                                                     U
                                                                Υ
                                                                      179.0
84
             IJ
                               IJ
                                          U
                                                     IJ
                     П
                                                                Υ
                                                                       10.0
             U
101
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                      306.0
                                                     Υ
127
             U
                     U
                               U
                                          U
                                                                Υ
                                                                       77.0
99641
            U
                     Υ
                               Υ
                                          U
                                                     U
                                                                Υ
                                                                       45.0
             U
                     U
                               U
                                          U
                                                     U
99760
                                                                Υ
                                                                      107.0
             U
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                               U
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99872
                                                                Υ
                                                                       62.0
99899
             U
                     U
                               U
                                          U
                                                     Υ
                                                                Υ
                                                                       75.0
                               U
                                                                      153.0
99939
             U
                                          U
       Customer ID
19
            1000020
39
            1000040
84
            1000085
101
            1000102
127
            1000128
. . .
                . . .
            1099642
99641
99760
            1099761
99872
            1099873
99899
            1099900
99939
            1099940
[3285 rows x 100 columns]
Outliers in column 'roam Mean':
       rev Mean
                     mou Mean totmrc Mean
                                               da Mean
                                                        ovrmou Mean
                                                                       ovrrev Mean
14
       212.5150
                  1971.500000
                                       84.99
                                                2.2275
                                                          249.500000
                                                                         99.800000
16
        63.0175
                   440.250000
                                       59.98
                                                0.0000
                                                            5.750000
                                                                          1.725000
18
        55.2700
                  1212.750000
                                       49.99
                                                0.7425
                                                            0.000000
                                                                          0.000000
                                       29.99
39
        33.4775
                   195.500000
                                                0.0000
                                                            0.250000
                                                                          0.097500
40
        82.1625
                   660.000000
                                       50.00
                                                0.0000
                                                          100.750000
                                                                         30.225000
             . . .
                                         . . .
                                                3.9600
99496
        36.4050
                                                            0.000000
                                                                          0.000000
                   208.000000
                                       30.00
99553
        49.7200
                   155.666667
                                       29.99
                                                0.0000
                                                           21.666667
                                                                          8.666667
99575
        17,1925
                   313.750000
                                       10.00
                                                2,2275
                                                            9.750000
                                                                          3,900000
                                                0.7425
                                                            0.000000
                                                                          0.000000
99580
        52.2625
                   105.250000
                                       50.00
99849
        99.1500
                   927.500000
                                       70.00
                                                5.9400
                                                           32.000000
                                                                          8.000000
       vceovr Mean
                     datovr_Mean
                                    roam_Mean change_mou
                                                             . . .
                                                                  forgntvl
                                                                             ethnic
         99.800000
                           0.0000
                                      35.4975 -200.500000
                                                                        0.0
14
                                                             . . .
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16
           1.725000
                            0.0000
                                         1.3125
                                                  -16.250000
                                                                            0.0
                                                                                        Ν
18
           0.000000
                             0.0000
                                         1.2850
                                                  169.250000
                                                                            0.0
                                                                                        N
39
                                                                                        J
           0.000000
                             0.0975
                                         2.5650
                                                    54.500000
                                                                            0.0
                                                                 . . .
40
          30.225000
                             0.0000
                                         1.9375 -184.000000
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99496
           0.000000
                             0.0000
                                         2.4450
                                                  133.000000
                                                                            0.0
                                                                                        Н
                                                                 . . .
99553
           8.666667
                             0.0000
                                        10.8000 -117.666667
                                                                            0.0
                                                                                        N
                                                                                        Н
99575
           3.900000
                             0.0000
                                         1.0650
                                                  179.250000
                                                                            0.0
99580
           0.000000
                             0.0000
                                                                            0.0
                                                                                        Ν
                                         1.5200
                                                   -88.250000
                                                                 . . .
99849
           8.000000
                             0.0000
                                        15.2100
                                                   -55.500000
                                                                            0.0
                                                                                        Ν
                                                                 . . .
        kid0_2
                 kid3 5
                          kid6_10
                                     kid11_15
                                                kid16_17
                                                            creditcd
                                                                        eqpdays
14
                       U
                                 Υ
                                             U
                                                        U
                                                                          199.0
             U
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             U
                       U
                                             U
                                                        U
16
                                 U
                                                                    Υ
                                                                          530.0
             U
                                                        U
18
                       U
                                 U
                                             U
                                                                    Υ
                                                                          408.0
39
             U
                                             Υ
                                                        U
                                                                    Υ
                                                                          179.0
                       U
                                 U
                                             Υ
40
             U
                       U
                                 U
                                                        U
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            . . .
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             U
                       U
                                 Υ
                                             U
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                                                                    Υ
                                                                          379.0
99496
99553
             U
                       U
                                 U
                                             U
                                                        U
                                                                    Υ
                                                                          834.0
             U
                       U
                                 U
                                             Υ
                                                        Υ
99575
                                                                    Υ
                                                                          238.0
                       U
                                 Υ
                                             Υ
                                                        Υ
                                                                    Υ
                                                                          891.0
99580
             U
99849
             U
                       U
                                 U
                                             U
                                                        U
                                                                          408.0
        Customer_ID
14
            1000015
16
            1000017
18
            1000019
39
            1000040
40
            1000041
99496
            1099497
99553
            1099554
99575
            1099576
99580
            1099581
99849
            1099850
[4888 rows x 100 columns]
Outliers in column 'change mou':
          rev Mean
                      mou Mean
                                 totmrc Mean
                                                da Mean
                                                           ovrmou Mean
                                                                          ovrrev Mean
20
        172.440000
                       1978.00
                                      99.9900
                                                 0.0000
                                                            362.250000
                                                                            72.450000
85
         97.590000
                       1804.00
                                      75.0000
                                                 1.4850
                                                             85.000000
                                                                             8.500000
88
         79.595000
                        828.00
                                      75.0000
                                                 0.0000
                                                              0.000000
                                                                             0.000000
92
         72.810000
                       1306.00
                                      77.8975
                                                  0.0000
                                                              0.000000
                                                                             0.000000
98
                                      84.9900
                                                 0.7425
        103.282500
                       1376.00
                                                             38.000000
                                                                            15.200000
. . .
                . . .
                           . . .
                                           . . .
                                                     . . .
                                                                                   . . .
                                                                    . . .
99641
       321.350000
                       1364.50
                                      69.5850
                                                 2.9700
                                                            630.500000
                                                                           248.450000
99674
         84.355000
                        494.50
                                      45.1500
                                                 8.9100
                                                             22.000000
                                                                             8.800000
99721
         52.020000
                        710.25
                                      46.8600
                                                  2.7225
                                                              0.000000
                                                                             0.000000
99760
        188.396667
                       1289.00
                                      24.8400
                                                  0.0000
                                                            653.666667
                                                                           163.556667
99875
       105.530000
                        736.00
                                      44.9900
                                                  2.6400
                                                            194.000000
                                                                            67.900000
                       datovr_Mean
                                                                      forgntvl
                                                                                  ethnic
        vceovr_Mean
                                      roam_Mean
                                                   change_mou
                                                                 . . .
20
                               0.00
          72.450000
                                         0.0000
                                                     -1007.00
                                                                            0.0
                                                                                        Ζ
85
           8.500000
                               0.00
                                         0.0000
                                                      -343.00
                                                                            0.0
                                                                                        Ν
                                                                 . . .
88
           0.000000
                               0.00
                                                                            0.0
                                                                                        S
                                         2.1150
                                                       299.00
                                                                 . . .
92
                                                                                        0
           0.000000
                               0.00
                                         0.0000
                                                      -462.00
                                                                            0.0
98
          15.200000
                               0.00
                                         7.6625
                                                       355.00
                                                                            0.0
                                                                                        Ν
. . .
                                . . .
                                             . . .
                                                           . . .
                                                                            . . .
                              49.00
         199.450000
                                                                                        G
99641
                                         0.0000
                                                       741.50
                                                                            0.0
99674
                               0.00
                                         0.0000
                                                       482.50
                                                                            0.0
                                                                                        U
           8.800000
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99760
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99875
          67.900000
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kid0_2
                kid3_5
                         kid6_10
                                    kid11_15
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                                                          creditcd
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99641
            1099642
99674
            1099675
99721
            1099722
99760
            1099761
            1099876
99875
[3451 rows x 100 columns]
Outliers in column 'change_rev':
                                                  da Mean
          rev_Mean
                        mou_Mean
                                   totmrc_Mean
                                                             ovrmou_Mean
0
         23.997500
                      219.250000
                                          22.50
                                                    0.2475
                                                                0.000000
14
        212.515000
                     1971.500000
                                           84.99
                                                    2.2275
                                                              249.500000
                                          99.99
20
        172.440000
                     1978.000000
                                                    0.0000
                                                              362.250000
40
         82.162500
                      660.000000
                                          50.00
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48
        107.235000
                      782.000000
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99721
         52.020000
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99739
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99760
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                                                              653.666667
99862
         36.123333
                      158.666667
                                           30.00
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                                                               14.666667
99875
       105.530000
                                           44.99
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          16.625000
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99760
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                       163.166667
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99862
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99875
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99862	0.0	I	U	U	ι	J	U	U			
99875	0.0	Н	U	U	ι	J	U	U			
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14	Υ	199.0	10000	21 5							
20	Υ	143.0	10000								
40	Y	107.0	10000								
48	Y	162.0	10000								
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99721	Y	524.0	10997								
99739	Y	495.0	10997								
99760	Y	107.0	10997								
99862	Y	128.0	10998								
99875	Y	958.0	10998								
33073	r	930.0	10336	370							
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26	rev_Mean	mou_Mean	totmrc_N		a_Mean	ovrmou	_	ovrrev_N		\	
26	51.0250	382.25			1.4850	_	0.75		.075		
127	281.3300	3807.75	182.9		8.4150	,	759.00		.500		
158	83.8250	790.50			4.9500		0.00		.000		
164	75.8750	1060.75			0.0000		0.00		.000		
167	90.2975	1488.75	75.6	9000	4.2075		58.25	5.	.825		
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99537	149.2200	2032.00			5.4450	2	234.50		625		
99590	62.9800	367.75			0.0000		0.00		.000		
99709	46.7300	348.75			0.9900		0.00		.000		
99721	52.0200	710.25			2.7225		0.00	0.	.000		
99849	99.1500	927.50	70.6	0000	5.9400		32.00	8.	.000		
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26	0.0		0.000	0.0		226.75		0.0		N	
26 127	0.0 88.4		0.075	0.0	0	5.25		0.0		N	
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127	88.4	25 00	0.075 0.000 0.000	0.0	0 0	5.25 -60.50 100.25		0.0 0.0 0.0		N	
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127 158 164 167	88.4 0.0 0.0 5.8	25 00 00 25	0.075 0.000 0.000 0.000	0.0 0.0 0.0 2.3	0 0 0 4	5.25 -60.50 100.25 317.25		0.0 0.0 0.0		N G G U	
127 158 164 167	88.4 0.0 0.0 5.8	25 00 00 25 25	0.075 0.000 0.000 0.000	0.0 0.0 0.0 2.3	0 0 0 4	5.25 -60.50 100.25 317.25		0.0 0.0 0.0 0.0		N G G U	
127 158 164 167 99537	88.4 0.0 0.0 5.8	25 00 00 25 25 00	0.075 0.000 0.000 0.000 0.000	0.0 0.0 0.0 2.3 	0 0 0 4	5.25 -60.50 100.25 317.25 442.00		0.0 0.0 0.0 0.0		N G U U	
127 158 164 167 99537 99590	88.4 0.0 0.0 5.8 58.6 0.0	25 00 00 25 25 00	0.075 0.000 0.000 0.000 0.000 0.000	0.0 0.0 0.0 2.3 0.1 0.0	0 0 4 6 0	5.25 -60.50 100.25 317.25 442.00 -49.75		0.0 0.0 0.0 0.0 0.0		N G U U	
127 158 164 167 99537 99590 99709	88.4 0.0 0.0 5.8 58.6 0.0	25 00 00 25 25 00 00	0.075 0.000 0.000 0.000 0.000 0.000	0.0 0.0 0.0 2.3 0.1 0.0	0 0 0 4 6 0 0	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75		0.0 0.0 0.0 0.0 0.0 0.0		N G G U U H S	
127 158 164 167 99537 99590 99709 99721	88.4 0.0 0.0 5.8 58.6 0.0 0.0	25 00 00 25 25 00 00	0.075 0.000 0.000 0.000 0.000 0.000 0.000	0.0 0.0 0.0 2.3 0.1 0.0 0.0	0 0 0 4 6 0 0	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75		0.0 0.0 0.0 0.0 0.0 0.0 0.0		N G U U H S S	
127 158 164 167 99537 99590 99709 99721	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0	25 00 00 25 25 00 00	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2	0 0 4 6 0 0	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50		0.0 0.0 0.0 0.0 0.0 0.0 0.0		N G U U H S S	
127 158 164 167 99537 99590 99709 99721	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0	25 00 00 25 25 00 00 00	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2	0 0 4 6 0 0	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50		0.0 0.0 0.0 0.0 0.0 0.0 0.0		N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849	88.4 0.0 0.0 5.8 58.6 0.0 0.0 0.0 8.0 kid0_2 k	25 00 00 25 25 00 00 00 00	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.0 0.0 2.3 0.1 0.0 0.0 15.2	0 0 4 6 0 0	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50	 	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays		N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k	25 00 00 25 25 00 00 00 00 id3_5 kid	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2	0 0 4 6 0 0	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre	 editcd	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0	`	N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849 26 127 158	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U	25 00 00 25 25 00 00 00 id3_5 kid U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U	0 0 4 6 0 0	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre	 editcd Y Y	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0		N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849 26 127 158 164	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U	25 00 00 25 25 00 00 00 id3_5 kid U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U V	0 0 4 6 0 0	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y	 editcd Y Y Y	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0		N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849 26 127 158 164 167	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U Y	25 00 00 25 25 00 00 00 id3_5 kid U U U V U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 U U Y U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U V U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y Y U	 editcd Y Y Y Y	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0	`	N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849 26 127 158 164 167 	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U Y U U	25 00 00 25 25 00 00 00 id3_5 kid U U U V U V	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U V U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y Y U U	 editcd Y Y Y Y	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0	`	N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849 26 127 158 164 167 	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U Y U U U	25 00 00 25 25 00 00 00 id3_5 kid U U U Y U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 U U Y U U U U U U U U U U U U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U V U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U	 editcd Y Y Y Y Y	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 		N G U U H S S	
127 158 164 167 99537 99590 99721 99849 26 127 158 164 167 99537 99590	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U Y U U U U U	25 00 00 25 25 00 00 00 id3_5 kid U U V U V U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U U Y U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U V U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U	 editcd Y Y Y Y Y	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 122.0		N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849 26 127 158 164 167 99537 99590 99709	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U Y U U U U U U U	25 00 00 25 25 00 00 00 id3_5 kid U U U V U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U V U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U	 editcd Y Y Y Y Y	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 122.0 104.0		N G U U H S S	
127 158 164 167 99537 99590 99721 99849 26 127 158 164 167 99537 99590 99709	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U V U U U U U U U U U U U U U	25 00 00 25 25 00 00 00 id3_5 kid U U V U U U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U U U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U U U	 	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 104.0 524.0		N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849 26 127 158 164 167 99537 99590 99709	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U Y U U U U U U U	25 00 00 25 25 00 00 00 id3_5 kid U U U V U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U V U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U	 editcd Y Y Y Y Y	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 122.0 104.0		N G U U H S S	
127 158 164 167 99537 99590 99721 99849 26 127 158 164 167 99537 99590 99709	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U U U U U U U U U U U	25 00 00 25 25 00 00 00 00 id3_5 kid U U U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U U U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U U U	 	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 104.0 524.0		N G U U H S S	
127 158 164 167 99537 99590 99721 99849 26 127 158 164 167 99537 99590 99709 99721 99849	88.4 0.0 0.0 5.8 . 58.6 0.0 0.0 8.0 kid0_2 k U U V U U U U Customer_	25 00 00 25 25 00 00 00 id3_5 kid U U U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U U U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U U U	 	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 104.0 524.0	`	N G U U H S S	
127 158 164 167 99537 99590 99721 99849 26 127 158 164 167 99537 99590 99709 99721 99849	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U Y U U U U U U U U U U U U U	25 00 00 25 25 00 00 00 id3_5 kid U U V U U U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U U U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U U U	 	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 104.0 524.0	`	N G U U H S S	
127 158 164 167 99537 99590 99721 99849 26 127 158 164 167 99537 99590 99709 99721 99849	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U V U U U U U U U U U U U U U	25 00 00 25 25 00 00 00 id3_5 kid U U V U U U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U U U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U U U	 	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 104.0 524.0		N G U U H S S	
127 158 164 167 99537 99590 99709 99721 99849 26 127 158 164 167 99537 99590 99709 99721 99849	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U U U U U U U U U U U	25 00 00 25 25 00 00 00 id3_5 kid U U U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U U U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U U U	 	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 104.0 524.0		N G U U H S S	
127 158 164 167 99537 99590 99721 99849 26 127 158 164 167 99537 99590 99709 99721 99849	88.4 0.0 0.0 5.8 58.6 0.0 0.0 8.0 kid0_2 k U U U V U U U U U U U U U U U U U	25 00 00 25 25 00 00 00 id3_5 kid U U U U U U U U U U U U U	0.075 0.000 0.000 0.000 0.000 0.000 0.000 0.000 d6_10 kid U V U U U U U U U	0.0 0.0 0.0 2.3 0.1 0.0 0.0 15.2 d11_15 U U U U	0 0 4 6 0 0 1 kid16	5.25 -60.50 100.25 317.25 442.00 -49.75 -85.75 -396.25 -55.50 17 cre Y Y U U U U U U U U	 	0.0 0.0 0.0 0.0 0.0 0.0 0.0 eqpdays 265.0 77.0 638.0 206.0 734.0 250.0 104.0 524.0	•	N G U U H S S	

167

1000168

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               . . .
99537
           1099538
99590
           1099591
99709
           1099710
99721
           1099722
99849
           1099850
[2029 rows x 100 columns]
Outliers in column 'drop dat Mean':
       rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean
101
       114.1325
                  1649.75
                                83.0000
                                         1.7325
                                                   51.500000
                                                                     14.6475
211
        90.7400
                  1155.50
                                89.9900
                                          6.4350
                                                      4.750000
                                                                     1.6625
236
       124.5150
                  593.50
                               101.9250
                                         0.0000
                                                      0.000000
                                                                     0.0000
373
       117.1025 1077.25
                               67.3225
                                         1.7325 152.250000
                                                                     45.8550
                   726.75
                                66.5225 13.1175
777
        81.2525
                                                     28.500000
                                                                     8.5500
                      . . .
98202 108.4650
                                79.9600
                                          1.7325
                                                     72.500000
                   888.00
                                                                     18.3700
98615
        61.2700
                   651.00
                                50.0000
                                          0.0000
                                                                    10.8400
                                                    32.333333
                                                    437.750000
99125 200.3850
                   838.75
                                33.6975
                                          2.4750
                                                                    164.0175
                                84.9900
                                          0.0000
99196
       91.2800
                   945.00
                                                      0.000000
                                                                     0.0000
99480 153.0700
                   165.00
                                84.9900
                                          0.0000
                                                      1.500000
                                                                      0.5850
       vceovr Mean datovr Mean roam Mean change mou
                                                         ... forgntvl ethnic
101
             1.875
                        12.7725
                                     0.0000
                                                 -176.75
                                                                    0.0
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                                                          . . .
211
             0.000
                          1.6625
                                     0.0000
                                                                     0.0
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                                                   -4.50 ...
236
             0.000
                          0.0000
                                     0.0000
                                                  133.50 ...
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                                                 -424.25 ...
373
            45.075
                          0.7800
                                     0.1950
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777
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                                     1.0825
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             8.550
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98202
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                          0.7450
                                     0.8775
                                                  422.00
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             5.900
                          4.9400
                                                 -181.00 ...
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98615
                                     0.1300
                                                                               Н
99125
           123.750
                         40.2675
                                     0.1950
                                                 -739.75
                                                                    0.0
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99196
             0.000
                          0.0000
                                     1.7200
                                                 -274.00
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99480
             0.000
                                     0.0000
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                          0.5850
                                                  381.00
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       kid0_2 kid3_5
                       kid6_10 kid11_15 kid16_17 creditcd
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101
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                                                                   306.0
211
            U
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                                                                   506.0
            U
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236
                    U
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373
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777
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98202
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98615
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99125
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99196
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                    Υ
                                        U
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                                                                   557.0
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                              U
                                        U
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99480
                                                                     9.0
       Customer ID
101
           1000102
211
           1000212
236
           1000237
373
           1000374
777
           1000778
98202
           1098203
98615
           1098616
99125
           1099126
99196
           1099197
99480
           1099481
[545 rows x 100 columns]
Outliers in column 'blck_vce_Mean':
```

rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev Mean \

```
20
       172,440000
                      1978.00
                                       99.99
                                                0.0000
                                                          362.250000
                                                                         72,450000
85
        97.590000
                      1804.00
                                       75.00
                                                1.4850
                                                           85.000000
                                                                          8.500000
94
        49.990000
                                       59.99
                                                0.0000
                                                                          0.000000
                       820.50
                                                            1.500000
109
        94.925000
                      1655.75
                                       75.00
                                                1.4850
                                                           25.500000
                                                                          2.550000
114
       113.522500
                      1807.25
                                       85.00
                                                1.9800
                                                          102.000000
                                                                         10.200000
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98453
       210.710000
                      2421.25
                                      151.24
                                                2 4750
                                                          206.000000
                                                                         41.250000
98564
        52.722500
                      1501.25
                                       61.98
                                                0.7425
                                                            0.000000
                                                                          0.000000
98730
        95.850000
                      1732.75
                                       75.00
                                                0.0000
                                                           78.750000
                                                                         19.687500
                      3140.75
       156.712500
                                      159.99
                                                2.7225
                                                            0.000000
                                                                          0.000000
99509
99760
       188.396667
                      1289.00
                                       24.84
                                                0.0000
                                                          653.666667
                                                                        163.556667
                      datovr_Mean
       vceovr_Mean
                                    roam_Mean
                                                                    forgntvl
                                                                               ethnic
                                                change_mou
                                                              . . .
20
          72.450000
                              0.00
                                        0.0000
                                                   -1007.00
                                                                         0.0
                                                                                    Ζ
                              0.00
85
           8.500000
                                        0.0000
                                                    -343.00
                                                              . . .
                                                                         0.0
                                                                                    Ν
94
           0.000000
                              0.00
                                        0.0000
                                                      26.50
                                                                         1.0
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109
                                                                                     J
           2.550000
                              0.00
                                        0.0000
                                                     -51.75
                                                                         0.0
                                                    -373.25
114
          10.200000
                              0.00
                                        1.0025
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98453
          41.250000
                              0.00
                                        0.1725
                                                     -22.25
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98564
           0.000000
                              0.00
                                        0.0000
                                                     306.75
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                                                                                    Н
98730
          19.687500
                              0.00
                                        0.0000
                                                      20.25
99509
           0.000000
                              0.00
                                        0.0000
                                                    -201.75
                                                                         0.0
                                                                                    Ν
99760
        163.166667
                              0.39
                                        0.0000
                                                   -1288.00
                                                                         0.0
                                                                                    Ζ
                                              kid16_17
                kid3 5
       kid0 2
                         kid6_10
                                   kid11_15
                                                          creditcd
                                                                     eqpdays
20
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                      U
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                                                                       143.0
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                                                                       175.0
85
                      U
                                           U
94
             U
                      U
                                U
                                           Υ
                                                      Υ
                                                                  Υ
                                                                       451.0
             U
                                U
                                           Υ
109
                      U
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                                                                  Υ
                                                                       314.0
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114
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98453
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                                                                         4.0
98564
98730
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                                U
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                                                                       327.0
99509
             U
                      U
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             U
                      П
                                П
                                           U
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99760
                                                                       107.0
       Customer ID
20
            1000021
85
            1000086
94
            1000095
109
            1000110
114
            1000115
98453
            1098454
98564
            1098565
98730
            1098731
99509
            1099510
99760
            1099761
[2825 rows x 100 columns]
Outliers in column 'blck_dat_Mean':
          rev_Mean
                    mou_Mean totmrc_Mean
                                              da_Mean
                                                        ovrmou_Mean
                                                                       ovrrev_Mean
574
        63.377500
                       885.25
                                    66.0375
                                                0.2475
                                                           27.250000
                                                                          7.092500
729
       255.537500
                      1943.25
                                    98.9475
                                                2.9700
                                                          643.250000
                                                                        158.437500
1076
       291.262500
                      5053.00
                                   210.3925
                                                7.6725
                                                          561.250000
                                                                         84.187500
1655
        14.057500
                        29.75
                                    10.0000
                                                0.0000
                                                            0.500000
                                                                          0.500000
2004
         55.017500
                       445.25
                                     39.9900
                                                0.0000
                                                           60.000000
                                                                         21,090000
                                                   . . .
96083
       441.807500
                      5855.00
                                   162.2400
                                                0.0000
                                                          982.750000
                                                                        147.412500
        45.082500
96140
                                    49.9900
                                                0.0000
                       721.75
                                                           12.750000
                                                                          5.092500
96325
       218.620000
                      2488.50
                                    89.9900
                                                1.4850
                                                          364.500000
                                                                        127.575000
                       124.25
                                    27.4925
                                                0.2475
                                                            0.500000
96968
        72.685000
                                                                          0.195000
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99760 188.396667 1289.00 24.8400 0.0000 653.666667 163.556667 datovr Mean roam Mean forgntvl ethnic vceovr Mean change_mou . . . 574 6.312500 0.7800 0.0000 -473.25 0.0 Н . . . 729 F 158.437500 0.0000 0.8075 -20.25 0.0 . . . 1076 83.437500 0.7500 12.1350 -355.00 0.0 Ν . . . -10.75 S 1655 0.500000 0.0000 0.1950 0.0 . . . 20.212500 0.8775 0.0000 2.75 Ζ 2004 0.0 . 60.6375 -572.00 0.0 96083 86.775000 20.7450 Ν . . . 96140 4.800000 0.2925 0.0000 -63.75 0.0 Н 96325 116.637500 10.9375 0.0000 301.50 0.0 U . . . 0.0000 28.75 0.0 Ν 96968 0.000000 0.1950 . . . Ζ 99760 163.166667 0.3900 0.0000 -1288.00 0.0 kid0 2 kid3 5 kid6_10 kid11_15 kid16_17 creditcd eqpdays 574 U U Υ U U Υ 68.0 729 U U U U U Υ 20.0 U 1076 U U U U Υ 126.0 U U U 1655 U U Υ 99.0 U U U U U 55.0 2004 Υ 96083 U U Υ U U Υ 226.0 96140 U U U U U Υ 98.0 IJ U U 96325 П U 216.0 N U Υ Υ Υ U Υ 96968 197.0 99760 U U U U 107.0 Customer_ID 574 1000575 729 1000730 1076 1001077 1655 1001656 2004 1002005 96083 1096084 96140 1096141 96325 1096326 96968 1096969 99760 1099761 [269 rows x 100 columns] Outliers in column 'unan vce Mean': rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev Mean 4 71.9800 55.2300 0.0000 0.0000 570.50 0.00 20 172.4400 1978.00 99.9900 0.0000 362.25 72.4500 109 94.9250 1655.75 75.0000 1.4850 25.50 2.5500 123 82.9900 159.5175 2255.75 3.2175 666.50 66.6500 127 281.3300 3807.75 182.9375 8.4150 759.00 88.5000 . 99364 234.3425 1056.50 44.9900 0.9900 566.75 198.3625 99498 141.4825 1850.75 75.0000 11.6325 195.00 48.7500 99509 156.7125 3140.75 159.9900 2.7225 0.00 0.0000 97.4900 99537 149.2200 2032.00 5.4450 234.50 58.6250 99872 534.9300 4719.00 10.0000 6.9300 2018.00 515.0000 vceovr Mean datovr Mean roam Mean change mou forgntvl ethnic 4 0.0000 0.000 0.000 38.50 0.0 Ι Z 20 72,4500 0.000 0.000 -1007.00 0.0 J 109 2.5500 0.000 0.000 -51.75 0.0 123 66.6500 0.000 0.585 -2238.75 0.0 Н . . . 127 88.4250 0.075 0.000 5.25 0.0 Ν . 198.3625 0.000 0.000 290.50 99364 0.0

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0.000
                                          0.000
99498
            48.7500
                                                       16.25
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99509
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                                          0.000
                                                     -201.75
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99537
            58.6250
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                                          0.160
                                                      442.00
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99872
           485.7500
                            29.250
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                kid3 5
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109
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                                                                        314.0
123
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127
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99364
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99509
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99537
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99872
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       Customer_ID
4
            1000005
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            1000021
109
            1000110
123
            1000124
127
            1000128
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99364
            1099365
99498
            1099499
99509
            1099510
99537
            1099538
99872
            1099873
[1809 rows x 100 columns]
Outliers in column 'unan dat Mean':
       rev_Mean mou_Mean totmrc_Mean
                                            da_Mean ovrmou_Mean ovrrev_Mean
89
         30.0000
                     149.50
                                   30.0000
                                              0.0000
                                                               0.00
                                                                            0.0000
98
       103.2825
                    1376.00
                                   84.9900
                                              0.7425
                                                              38.00
                                                                           15.2000
101
                                                              51.50
       114.1325
                    1649.75
                                   83.0000
                                              1.7325
                                                                           14.6475
166
         41.7925
                     146.75
                                   43.8650
                                              0.0000
                                                               8.50
                                                                            3.1450
236
        124.5150
                     593.50
                                  101.9250
                                              0.0000
                                                               0.00
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       107.2950
                    1089.00
                                   79.9900
                                              0.7425
                                                             112.75
                                                                           45.1000
97108
                                   45.8625
97238
         51.2225
                    1227.25
                                              1.4850
                                                                           4.5825
                                                              11.75
97331
         53.5275
                     639.00
                                   49.9900
                                              0.7425
                                                              49.25
                                                                           19.6950
                                              0.0000
97421
         36.1325
                     436.25
                                   36.2825
                                                               2.00
                                                                            0.7800
                                   19.9900
97672
         31.1125
                     199.50
                                              0.2475
                                                              43.50
                                                                           10.8750
        vceovr_Mean
                      datovr_Mean
                                     roam_Mean
                                                 change_mou
                                                                     forgntvl
                                                                                ethnic
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89
              0.000
                            0.0000
                                        0.0000
                                                       28.50
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98
                                                                                      Ν
             15.200
                            0.0000
                                         7.6625
                                                      355.00
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101
                           12.7725
                                        0.0000
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              1.875
                                                     -176.75
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166
              3.145
                            0.0000
                                         0.0000
                                                      -81.75
                                                                          0.0
                                                                                      N
236
              0.000
                            0.0000
                                         0.0000
                                                      133.50
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97108
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             45.100
                            0.0000
                                                      -49.00
                                        1.4625
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97238
              0.000
                            4.5825
                                         0.0000
                                                       38.75
                                                                           0.0
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97331
             19.500
                            0.1950
                                         0.0975
                                                      -82.00
                                                                           0.0
                                                                                      Ζ
                                                               . . .
              0.000
                                                                                      Ζ
97421
                            0.7800
                                                                           0.0
                                         6.5700
                                                     -221.25
                                                                                      0
97672
             10.875
                            0.0000
                                         0.0000
                                                       45.50
                                                                           0.0
                kid3 5
        kid0 2
                          kid6_10
                                    kid11 15
                                               kid16 17
                                                           creditcd
                                                                      eqpdays
89
             U
                      U
                                U
                                            U
                                                       U
                                                                  Υ
                                                                        129.0
98
             U
                      U
                                U
                                            Υ
                                                       Υ
                                                                   Υ
                                                                        652.0
101
             U
                      U
                                U
                                            U
                                                       U
                                                                   Υ
                                                                        306.0
                      U
                                U
                                            U
                                                       U
                                                                        185.0
166
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• • •	• • •		•	• • •	• •		• • •		• • •				
97108	U		U	U		U	U		Υ	193.0			
97238	U		U	U		U	U		Υ	161.0			
97331	U		U	Υ		U	U		Υ	189.0			
97421	Ü		U	Y		U	U		Y				
97672	U		U	U		U	U		Υ	398.0			
	Custome	r_ID											
89	100	0090											
98	100	0099											
101		0102											
166		0167											
236	1000	0237											
• • •													
97108	109	7109											
97238	109	7239											
97331	109	7332											
97421		7422											
97672	109	7673											
[877 rd	ows x 10	0 colu	ımns]										
Outlier	rs in co	lumn '	plcd v	ce Mea	an':								
			. –	_		da	Mean o	vrmou	Mean	ovrrev_N	1ean	\	
20	172.440				99.99		0000		62.25			`	
	93.020							_					
							0000				3525		
	97.590		804.00		75.00		4850		85.00		000		
109	94.925	0 16	55.75		75.00	1.	4850		25.50	2.5	500		
114	113.522	5 18	807.25		85.00	1.	9800	1	.02.00	10.2	2000		
	97.287		82.50			۵.	0000		86.25	21.5			
99297	237.752		95.25		154.99		7325		36.00				
99498	141.482		350.75		75.00		6325	1	.95.00				
99509	156.712		.40.75		159.99				0.00				
99537	149.220	0 20	32.00		97.49	5.	4450	2	34.50	58.6	250		
	vceovr I	Mean	datovr	Mean	roam M	lean	change	mou		forgntvl	eth	nic	١
20										0.0			
84												S	
		0000		.8525		200		5.25		0.0			
85		5000		.0000		000		3.00		0.0		N	
109		5500		.0000		000		1.75		0.0		J	
114	10.	2000	0	.0000	1.0	025	-37	3.25		0.0		N	
99199	21.	5625	0	.0000	0.0	000	-30	2.50		0.0		N	
99297		4000		.0000		975		8.75		0.0		J	
99498		7500		.0000		000		6.25		0.0		D	
									• • •				
99509		0000		.0000		000		1.75	• • •	0.0		N	
99537	58.0	6250	0	.0000	0.1	.600	44	2.00	• • •	0.0		U	
	kid0_2	kid3_	5 kid	6_10	kid11_1	.5 k	id16_17	cre	ditcd	eqpdays	\		
20	U		U	U		U	U		Υ	143.0			
84	U		U	U		U	U		Υ	10.0			
85	U		U	Ü		U	U		Y	175.0			
	_												
109	U		U	U		Υ	Υ		Υ	314.0			
114	U		U	U		U	U		Υ	387.0			
99199	U		Υ	Υ		U	U		Υ	429.0			
99297	U		U	U		U	U		Υ	76.0			
99498	U		U	Y		Υ	U		Y				
	_						U						
99509	U		U	U		U	_		Y				
99537	U		U	U		U	U		Υ	250.0			

236 U U U U U Y 61.0

Customer_ID 1000021

```
84
           1000085
85
           1000086
109
           1000110
114
           1000115
. . .
99199
           1099200
99297
           1099298
99498
           1099499
99509
           1099510
99537
           1099538
[1424 rows x 100 columns]
Outliers in column 'plcd_dat_Mean':
       rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean \
        50.9650
                   162.00
                               69.9900
                                             0.00
                                                          2.50
                                                                      0.9750
19
39
        33.4775
                   195.50
                                29.9900
                                             0.00
                                                          0.25
                                                                      0.0975
84
        93.0200
                                75.0000
                                             0.00
                                                          4.75
                                                                      1.8525
                  1348.25
89
        30.0000
                   149.50
                                30.0000
                                             0.00
                                                          0.00
                                                                      0.0000
92
        72.8100
                  1306.00
                                77.8975
                                           0.00
                                                          0.00
                                                                      0.0000
            . . .
                   . . .
                                   . . .
                                             . . .
                                                           . . .
        28.5000
                   319.00
                                30.0000
                                             0.00
                                                                      0.0000
99793
                                                          0.00
        99.1500
                   927.50
                                70.0000
                                             5.94
                                                          32.00
                                                                      8.0000
99849
99872 534.9300
                  4719.00
                                10.0000
                                             6.93
                                                       2018.00
                                                                    515.0000
99899
        45.2600
                   149.00
                                44.4800
                                             0.00
                                                          2.00
                                                                      0.7800
99939
       49.3625
                   187.75
                                40.0725
                                             2.97
                                                          18.00
                                                                      6.3200
       vceovr_Mean datovr_Mean roam_Mean change_mou ... forgntvl ethnic
19
             0.000
                          0.9750
                                      0.000
                                                  -58.00 ...
                                                                     0.0
                                                                                S
39
             0.000
                          0.0975
                                      2.565
                                                   54.50
                                                          . . .
                                                                     0.0
                                                                                J
84
             0.000
                          1.8525
                                      1.920
                                                 -165.25
                                                                     0.0
                                                                                S
                                                          . . .
89
                                      0.000
             0.000
                          0.0000
                                                   28.50 ...
                                                                     0.0
                                                                                Ν
92
             0.000
                          0.0000
                                      0.000
                                                 -462.00 ...
                                                                     0.0
                                                                                0
               . . .
                             . . .
                                       . . .
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                                                           . . .
99793
                          0.0000
                                      0.000
                                                                     0.0
                                                                                Ν
             0.000
                                                   11.00
99849
             8.000
                          0.0000
                                     15.210
                                                  -55.50
                                                           . . .
                                                                     0.0
99872
           485.750
                         29.2500
                                      0.000
                                                    0.00
                                                                     0.0
                                                                                Ν
                                                          . . .
             0.000
                          0.7800
                                      0.000
                                                  -86.00
                                                                     0.0
                                                                                Ν
99899
                                                          . . .
99939
             6.125
                          0.1950
                                       0.000
                                                 -187.75
                                                                     0.0
                                                                                S
       kid0 2 kid3 5
                        kid6 10
                                 kid11 15 kid16 17 creditcd
                                                                eqpdays \
19
            U
                     U
                              Υ
                                         Υ
                                                   Υ
                                                                   253.0
                                                              Ν
39
            U
                     U
                              U
                                         Υ
                                                   U
                                                              Υ
                                                                   179.0
84
            U
                    U
                              U
                                         U
                                                   U
                                                              Υ
                                                                   10.0
89
            U
                    U
                              U
                                         U
                                                   U
                                                                   129.0
                                                              Υ
            U
                    U
                              U
                                        U
                                                   U
92
                                                              Υ
                                                                   146.0
                            . . .
                                       . . .
                                                 . . .
. . .
          . . .
                   . . .
                                                                    . . .
99793
            U
                    U
                              Υ
                                        Υ
                                                   U
                                                              Υ
                                                                   101.0
99849
            U
                    U
                              U
                                        U
                                                   U
                                                              Υ
                                                                   408.0
                              U
                                                   U
99872
            U
                    U
                                        U
                                                              Υ
                                                                   62.0
99899
            U
                    U
                              U
                                         U
                                                   Υ
                                                              Υ
                                                                    75.0
                     H
                              U
                                                   U
99939
            U
                                         U
                                                                   153.0
       Customer_ID
19
           1000020
39
           1000040
84
           1000085
89
           1000090
92
           1000093
. . .
               . . .
99793
           1099794
99849
           1099850
99872
           1099873
99899
           1099900
99939
           1099940
```

```
[3648 rows x 100 columns]
Outliers in column 'recv vce Mean':
       rev_Mean mou_Mean totmrc_Mean
                                           da_Mean
                                                     ovrmou_Mean ovrrev_Mean
       212.5150
                                             2.2275
                                                           249.50
                                                                         99.8000
14
                   1971.50
                                    84.99
20
       172.4400
                   1978.00
                                    99.99
                                             0.0000
                                                           362.25
                                                                         72.4500
47
        78.2875
                    851.50
                                    85.00
                                             0.0000
                                                             0.00
                                                                          0.0000
48
       107.2350
                    782.00
                                    24.99
                                             0.0000
                                                           232.75
                                                                         86.1175
84
        93.0200
                   1348.25
                                    75.00
                                             0.0000
                                                             4.75
                                                                          1.8525
             . . .
                       . . .
                                      . . .
                                                . . .
                                                               . . .
                                                                             . . .
99498
       141.4825
                    1850.75
                                    75.00
                                            11.6325
                                                           195.00
                                                                         48.7500
99509
       156.7125
                   3140.75
                                   159.99
                                             2.7225
                                                             0.00
                                                                          0.0000
99510
        84.7125
                    908.75
                                    74.99
                                             0.4950
                                                             2.25
                                                                          0.8775
                                             5.9400
99849
        99.1500
                    927.50
                                    70.00
                                                            32.00
                                                                          8.0000
99872 534.9300
                    4719.00
                                    10.00
                                             6.9300
                                                          2018.00
                                                                        515.0000
                                                                   forgntvl
       vceovr Mean
                      datovr_Mean
                                    roam_Mean
                                                change_mou
                                                                              ethnic
14
            99.8000
                           0.0000
                                      35.4975
                                                   -200.50
                                                                         0.0
                                                              . . .
                           0.0000
                                                                                    Ζ
20
            72.4500
                                       0.0000
                                                   -1007.00
                                                                         0.0
                           0.0000
                                                                         0.0
                                                                                    Н
47
             0.0000
                                       0.0000
                                                   -205.50
                                                             . . .
48
                           0.0000
                                        0.0000
                                                    -258.00
                                                                         0.0
            86.1175
                                                             . . .
84
             0.0000
                           1.8525
                                                                         0.0
                                                                                    S
                                       1.9200
                                                   -165.25
                                                             . . .
                               . . .
                                           . . .
                                                        . . .
                                                              . . .
                                                                         . . .
. . .
                . . .
                                                                                  . . .
99498
            48.7500
                           0.0000
                                       0.0000
                                                      16.25
                                                                         0.0
                                                                                    D
                                                             . . .
                           0.0000
                                       0.0000
                                                    -201.75
                                                                         0.0
99509
             0.0000
                                                                                    N
                                                             . . .
                           0.8775
                                       0.0000
                                                      43.25
                                                                         0.0
                                                                                    Н
99510
             0.0000
99849
             8.0000
                           0.0000
                                      15.2100
                                                     -55.50
                                                             . . .
                                                                         0.0
                                                                                    Ν
99872
           485.7500
                          29.2500
                                       0.0000
                                                       0.00
                                                                         0.0
                                                                                    Ν
                                                             . . .
       kid0 2
               kid3 5
                         kid6_10
                                   kid11_15
                                              kid16_17
                                                         creditcd
                                                                    eqpdays
                      U
                                                     U
                                                                      199.0
14
             U
                                Υ
                                           U
                                                                 Υ
20
             U
                      U
                               U
                                           U
                                                      U
                                                                 Υ
                                                                      143.0
47
             U
                      U
                                U
                                           U
                                                      U
                                                                      151.0
                                                                 Υ
             IJ
                      Υ
                                Υ
                                           Υ
                                                      Υ
                                                                      162.0
48
                                                                 Υ
84
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       10.0
                                                    . . .
. . .
           . . .
                              . . .
                                         . . .
                                                                        . . .
                                          Υ
99498
             U
                     U
                               Υ
                                                     U
                                                                 Υ
                                                                      736.0
99509
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      278.0
             U
                               U
                                          U
                                                      Υ
                                                                 Υ
                                                                      469.0
99510
                      U
             U
                      U
                               U
                                           U
                                                      U
                                                                 Υ
                                                                      408.0
99849
99872
             U
                      U
                               U
                                           U
                                                      U
                                                                       62.0
       Customer ID
14
            1000015
20
            1000021
47
            1000048
48
            1000049
84
            1000085
99498
            1099499
99509
            1099510
99510
            1099511
99849
            1099850
99872
            1099873
[2082 rows x 100 columns]
Outliers in column 'recv sms Mean':
          rev Mean mou Mean totmrc Mean
                                              da Mean
                                                        ovrmou Mean
                                                                      ovrrev Mean
163
        32.270000
                       112.50
                                    31.9800
                                               0.0000
                                                           0.000000
                                                                          0.000000
                                    89.9900
                                               6.4350
211
        90.740000
                      1155.50
                                                           4.750000
                                                                          1.662500
321
        80.972500
                      1270.25
                                    86.9800
                                               0.7425
                                                           0.000000
                                                                          0.000000
373
       117.102500
                      1077.25
                                    67.3225
                                               1.7325
                                                         152.250000
                                                                         45.855000
975
                                    49.9900
                                                          63.000000
       191.787500
                       615.25
                                               0.0000
                                                                         22.050000
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0.0000
98192
        35.950000
                      146.75
                                   36.9900
                                                          5.250000
                                                                        2.047500
98258 101.130000
                      908.75
                                              0.0000
                                   61.2800
                                                        24.250000
                                                                        8.600000
98632
        77.177500
                      264.50
                                   76.9900
                                              0.0000
                                                          0.000000
                                                                        1.562500
99106
        35.237500
                      119.00
                                   31.9900
                                              0.2475
                                                          0.000000
                                                                        3.000000
99163 193.956667
                     1502.00
                                   84.1400
                                              1.3200
                                                        429.333333
                                                                     107.333333
       vceovr_Mean
                     datovr_Mean roam_Mean change_mou
                                                            ... forgntvl ethnic
163
          0.000000
                          0.0000
                                       0.000
                                                    -2.50
                                                                      0.0
                                                                                 Н
211
          0.000000
                          1.6625
                                       0.000
                                                    -4.50
                                                                       0.0
                                                                                 Н
                                                           . . .
321
          0.000000
                          0.0000
                                       0.000
                                                   327.75
                                                                       0.0
                                                                                 Ν
                                                           . . .
373
         45.075000
                          0.7800
                                       0.195
                                                  -424.25
                                                                       0.0
                                                                                 G
975
         16.362500
                          5.6875
                                       0.000
                                                    53.75
                                                                       1.0
                                                           . . .
. . .
               . . .
                              . . .
                                         . . .
                                                      . . .
                                                            . . .
                                                                       . . .
                          2.0475
98192
          0.000000
                                       0.000
                                                   -62.75
                                                                       0.0
                                                                                 G
                                                           . . .
                          0.0000
                                       0.000
                                                   -74.75
98258
          8.600000
                                                           . . .
                                                                       0.0
                                                                                 N
98632
          0.000000
                          0.0000
                                       0.000
                                                   107.50
                                                                       0.0
                                                                                 Н
                                                           . . .
                                                                                 F
                                                   -76.00
                                                                       0.0
99106
          0.000000
                          0.0000
                                       0.000
99163
        107.333333
                          0.0000
                                       0.000
                                                   387.00
                                                                       0.0
                                                                                 Ν
                                                            . . .
                        kid6_10
       kid0_2 kid3_5
                                  kid11_15 kid16_17
                                                      creditcd
                                                                  eqpdays
                     U
                                                    U
                                                                    517.0
163
            U
                               U
                                         Υ
                                                               Ν
                                                    Υ
211
            U
                     U
                               U
                                         U
                                                               Υ
                                                                    506.0
            U
                     U
                               U
                                         U
                                                    U
321
                                                               Υ
                                                                    369.0
373
            IJ
                     IJ
                               U
                                         U
                                                    U
                                                               Ν
                                                                    103.0
975
            IJ
                     IJ
                               Υ
                                         U
                                                    IJ
                                                               Υ
                                                                     32.0
. . .
98192
            U
                     U
                               U
                                         U
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                                                               Υ
                                                                    386.0
98258
            U
                     U
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                                                    U
                                                               Υ
                                                                    169.0
98632
            U
                     U
                               U
                                         U
                                                    U
                                                               Υ
                                                                    577.0
            U
                     U
                               U
                                         U
                                                    U
                                                                    874.0
99106
                                                               Υ
                     IJ
                               IJ
                                                    U
99163
            U
                                         U
                                                                    224.0
       Customer ID
163
           1000164
211
           1000212
321
           1000322
373
           1000374
975
           1000976
98192
           1098193
98258
           1098259
98632
           1098633
99106
           1099107
99163
           1099164
[233 rows x 100 columns]
Outliers in column 'comp_vce_Mean':
       rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev Mean
                                   84.99
                                                          249.50
14
       212.5150
                  1971.50
                                            2.2275
                                                                       99.8000
20
                                   99.99
                                            0.0000
                                                          362.25
                                                                       72.4500
       172.4400
                   1978.00
84
        93.0200
                   1348.25
                                   75.00
                                            0.0000
                                                            4.75
                                                                       1.8525
85
        97.5900
                   1804.00
                                   75.00
                                            1.4850
                                                           85.00
                                                                       8.5000
101
       114.1325
                   1649.75
                                   83.00
                                            1.7325
                                                           51.50
                                                                       14.6475
. . .
            . . .
                                    . . .
                                                             . . .
                                                                          . . .
99498
       141.4825
                   1850.75
                                   75.00
                                          11.6325
                                                          195.00
                                                                       48.7500
99509
       156.7125
                   3140.75
                                  159.99
                                            2.7225
                                                            0.00
                                                                       0.0000
                                   97.49
                                                          234.50
99537
       149.2200
                   2032.00
                                            5.4450
                                                                       58.6250
99852
        37.0300
                    615.00
                                   44.99
                                            0.9900
                                                            3.00
                                                                        1.0500
99872 534.9300
                   4719.00
                                   10.00
                                            6.9300
                                                         2018.00
                                                                     515.0000
       vceovr Mean
                     datovr Mean
                                   roam Mean
                                               change mou
                                                                 forgntvl
                                                                            ethnic
14
            99.800
                          0.0000
                                     35.4975
                                                  -200.50
                                                                       0.0
                                                                                 Ν
                                                           . . .
20
                                                                       0.0
                                                                                 Ζ
            72.450
                          0.0000
                                      0.0000
                                                 -1007.00
                                                            . . .
              0.000
                          1.8525
                                      1.9200
                                                  -165.25
                                                                       0.0
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11/28/24, 1:37 AM Lab6 8.500

0.0000

0.0000

-343.00

0.0

Ν

85

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12.7725
101
                                        0.0000
                                                    -176.75
                                                                                    U
              1.875
                                                                         0.0
                              . . .
                                           . . .
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                                                                         . . .
. . .
                . . .
                                                        . . .
99498
             48.750
                           0.0000
                                        0.0000
                                                      16.25
                                                                         0.0
                                                                                    D
                                                              . . .
99509
                           0.0000
                                                    -201.75
                                                                         0.0
              0.000
                                        0.0000
                                                                                    Ν
99537
             58.625
                           0.0000
                                        0.1600
                                                     442.00
                                                                         0.0
                                                                                    U
                                                       0.00
99852
              1.050
                           0.0000
                                        0.0000
                                                                         0.0
                                                                                    Н
            485.750
                          29.2500
                                                       0.00
                                                                                    N
99872
                                        0.0000
                                                                         0.0
       kid0 2
                kid3 5
                         kid6 10
                                   kid11_15
                                              kid16_17
                                                         creditcd
                                                                     eqpdays
14
             U
                      U
                                Υ
                                           U
                                                      U
                                                                 Υ
                                                                       199.0
20
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       143.0
84
             U
                      U
                                U
                                           U
                                                      U
                                                                        10.0
                                                                 Υ
             U
                                                      U
85
                      U
                                U
                                           U
                                                                  Υ
                                                                       175.0
             U
                                                      U
101
                      U
                                U
                                           U
                                                                 Υ
                                                                       306.0
. . .
                                                                       736.0
99498
             U
                      U
                                Υ
                                           Υ
                                                      U
                                                                 Υ
99509
             U
                      U
                                U
                                           U
                                                      U
                                                                       278.0
                                                                 Υ
99537
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       250.0
                                U
                                                      U
99852
             U
                      U
                                           U
                                                                       140.0
99872
             U
                                U
                                           U
                                                      U
                                                                        62.0
       Customer ID
14
            1000015
20
            1000021
84
            1000085
85
            1000086
101
            1000102
. . .
            1099499
99498
99509
            1099510
99537
            1099538
99852
            1099853
99872
            1099873
[1407 rows x 100 columns]
Outliers in column 'comp_dat_Mean':
                                            da Mean
       rev Mean mou Mean totmrc Mean
                                                      ovrmou Mean ovrrev Mean
19
        50.9650
                     162.00
                                  69.9900
                                             0.0000
                                                              2.50
                                                                          0.9750
39
        33.4775
                     195.50
                                  29.9900
                                             0.0000
                                                              0.25
                                                                          0.0975
84
                                                              4.75
        93.0200
                    1348.25
                                  75.0000
                                             0.0000
                                                                          1.8525
92
                                  77.8975
                                             0.0000
                                                              0.00
        72.8100
                    1306.00
                                                                          0.0000
101
       114.1325
                    1649.75
                                  83.0000
                                             1.7325
                                                             51.50
                                                                         14.6475
                                                               . . .
                        . . .
99793
                     319.00
        28.5000
                                  30.0000
                                             0.0000
                                                              0.00
                                                                          0.0000
99849
        99.1500
                     927.50
                                  70.0000
                                             5.9400
                                                             32.00
                                                                          8.0000
99872
       534.9300
                    4719.00
                                  10.0000
                                             6.9300
                                                           2018.00
                                                                        515.0000
                                  44.4800
99899
        45.2600
                     149.00
                                             0.0000
                                                              2.00
                                                                          0.7800
                                  40.0725
99939
        49.3625
                     187.75
                                             2.9700
                                                             18.00
                                                                          6.3200
       vceovr Mean
                      datovr_Mean
                                                                    forgntvl
                                                                               ethnic
                                    roam_Mean
                                                change_mou
19
              0.000
                           0.9750
                                         0.000
                                                     -58.00
                                                                         0.0
                                                                                    S
                                                              . . .
                                                                                    J
39
              0.000
                           0.0975
                                         2.565
                                                      54.50
                                                                         0.0
                                                              . . .
84
                                                                                    S
              0.000
                           1.8525
                                         1.920
                                                    -165.25
                                                                         0.0
92
              0.000
                           0.0000
                                         0.000
                                                    -462.00
                                                                         0.0
                                                                                    0
                                                              . . .
101
              1.875
                          12.7725
                                         0.000
                                                    -176.75
                                                                         0.0
                                                                                    U
                                                              . . .
                                           . . .
                                                        . . .
                . . .
99793
              0.000
                           0.0000
                                         0.000
                                                      11.00
                                                                         0.0
                                                                                    Ν
99849
              8.000
                           0.0000
                                        15.210
                                                     -55.50
                                                                         0.0
                                                                                    Ν
99872
            485.750
                          29.2500
                                         0.000
                                                       0.00
                                                                                    Ν
                                                                         0.0
99899
              0.000
                           0.7800
                                         0.000
                                                     -86.00
                                                                         0.0
                                                                                    Ν
                                                              . . .
                                                                                    S
99939
              6.125
                            0.1950
                                         0.000
                                                    -187.75
                                                                         0.0
```

kid0 2 kid3 5 kid6 10 kid11 15 kid16 17 creditcd eqpdays \

				Lab6			
19	U	U Y	Υ	Υ	N	253.0	
39	U	U U	Υ	U	Υ	179.0	
84	U	U U	U	U	Υ	10.0	
92	U	U U	U	U	Υ	146.0	
101	U	U U	U	U	Υ	306.0	
99793	U	U Y	Υ	U	Υ	101.0	
99849	Ü	U U	Ü	Ü	Y	408.0	
99872	Ü	U U	Ü	U	Ϋ́	62.0	
99899	U	U U	Ü	Y	Ϋ́	75.0	
99939	U	U U	U	U	Y	153.0	
22222	U	0 0	U	U	ī	133.0	
	Customer_ID						
19	1000020						
39	1000040						
84	1000085						
92	1000093						
101	1000102						
99793	1099794						
99849	1099850						
99872	1099873						
99899	1099900						
99939	1099940						
	rows x 100 co						
Outlie	ers in column	'custcare_Me	an':				
	rev_Mean	mou_Mean to	tmrc_Mean	da_Mean o	vrmou_Mean	ovrrev	_Mean \
4	55.230000	570.50	71.98	0.0000	0.000000	0.0	00000
16	63.017500	440.25	59.98	0.0000	5.750000	1.7	25000
18	55.270000	1212.75	49.99	0.7425	0.000000	0.0	00000
83	55.190000	1087.75	69.99	0.0000	13.000000	5.2	00000
94	49.990000	820.50	59.99	0.0000	1.500000	0.0	00000
		• • •					
99510	84.712500	908.75	74.99	0.4950	2.250000	0.8	77500
99590	62.980000	367.75	69.99	0.0000	0.000000		00000
99760	188.396667	1289.00	24.84		653.666667		56667
99793	28.500000	319.00	30.00	0.0000	0.000000	0.0	00000
99852	37.030000	615.00	44.99	0.9900	3.000000		50000
	vceovr_Mean	datovr_Mean	roam_Mean	change_m	ou fo	orgntvl	ethnic \
4	0.000000	0.0000				0.0	I
16	1.725000	0.0000				0.0	N
18	0.000000	0.0000				0.0	N
83	5.200000	0.0000				1.0	U
94	0.000000	0.0000				1.0	S
•••	•••	•••					• • •
99510	0.000000	0.8775				0.0	Н
99590	0.000000	0.0000				0.0	Н
99760	163.166667	0.3900				0.0	Z
99793	0.000000	0.0000				0.0	N
99852	1.050000	0.0000				0.0	Н
JJ0J2	1.050000	0.0000	0.0000			0.0	
	kid0_2 kid3	3_5 kid6_10	kid11_15	kid16_17	credited 4	eqpdays	\
4	U U	U U	U	U	Y	434.0	\
4 16	U	U U	U	U	Ϋ́Υ	530.0	
18	U	U U	U	U	Ϋ́	408.0	
83	U	U U	U	U	Ϋ́Υ		
94	U		Y		Ϋ́Υ	233.0	
			Y	Υ		451.0	
00510			··· U	· · · Y	Υ	469.0	
99510	U U	U U	U	Y U	Υ Υ		
99590						122.0	
99760	U	U U	U	U	Y	107.0	
99793	U	U Y	Υ	U	Υ	101.0	

99852 U U U U 140.0 Customer_ID 4 1000005 16 1000017 18 1000019 83 1000084 94 1000095 1099511 99510 99590 1099591 99760 1099761 99793 1099794 99852 1099853 [3732 rows x 100 columns] Outliers in column 'ccrndmou_Mean': ovrmou_Mean rev Mean mou Mean totmrc Mean da Mean ovrrev_Mean 4 55.230000 570.50 71.98 0.0000 0.000000 0.000000 59.98 0.0000 16 63.017500 440.25 5.750000 1.725000 55.270000 49.99 0.7425 0.000000 1212.75 0.000000 47 78.287500 85.00 0.0000 0.000000 851.50 0.000000 50 30.260000 23.75 29.99 0.0000 0.000000 0.000000 . 0.0000 99760 188.396667 1289.00 24.84 163.556667 653.666667 99793 28.500000 319.00 30.00 0.0000 0.000000 0.000000 99849 99.150000 927.50 70.00 5.9400 32.000000 8.000000 615.00 44.99 0.9900 99852 37.030000 3.000000 1.050000 99876 45.490000 648.00 44.99 0.0000 30.000000 10.500000 vceovr Mean datovr_Mean roam Mean change_mou . . . forgntvl ethnic 4 0.000000 0.00 0.0000 38.50 0.0 Ι . . . 0.00 0.0 Ν 16 1.725000 1.3125 -16.25 . . . 18 0.000000 0.00 1.2850 169.25 0.0 N 47 0.000000 0.00 0.0000 -205.50 0.0 Н 50 0.000000 0.00 0.0000 25.25 1.0 Ι 99760 0.39 0.0000 -1288.00 0.0 Ζ 163.166667 . . . 99793 0.000000 0.00 0.0000 11.00 0.0 Ν -55.50 99849 8.000000 0.00 15.2100 0.0 Ν 99852 1.050000 0.00 0.00 0.0 Н 0.0000 . . . 99876 10.500000 0.00 0.0000 0.00 0.0 . . . kid0 2 kid6 10 kid11 15 kid16 17 creditcd kid3 5 eqpdays 4 U U U U U Υ 434.0 16 U U U U U Υ 530.0 U U U U U 18 Υ 408.0 47 U U U U U Υ 151.0 50 U U U U U 985.0 Υ 99760 U U U U U Υ 107.0 99793 U U Υ Υ U Υ 101.0 U U U U U 99849 Υ 408.0 U 99852 U H U П Υ 140.0 99876 U U U U Υ 351.0 Customer ID 4 1000005 16 1000017 18 1000019 47 1000048 50 1000051 . . . 99760 1099761

```
99793
            1099794
99849
            1099850
99852
            1099853
99876
            1099877
[4016 rows x 100 columns]
Outliers in column 'cc_mou_Mean':
       rev Mean
                  mou Mean totmrc Mean
                                             da_Mean
                                                       ovrmou Mean
                                                                     ovrrev Mean
4
         55.2300
                     570.50
                                     71.98
                                              0.0000
                                                               0.00
                                                                           0.0000
                                                               5.75
16
         63.0175
                     440.25
                                     59.98
                                              0.0000
                                                                           1.7250
18
         55.2700
                    1212.75
                                     49.99
                                              0.7425
                                                               0.00
                                                                           0.0000
47
         78.2875
                     851.50
                                     85.00
                                              0.0000
                                                               0.00
                                                                           0.0000
48
        107.2350
                     782.00
                                     24.99
                                              0.0000
                                                             232.75
                                                                          86.1175
                        . . .
                                       . . .
                                                               . . .
99793
         28.5000
                     319.00
                                     30.00
                                              0.0000
                                                               0.00
                                                                           0.0000
99819
         34.9900
                     167.00
                                     44.99
                                              0.0000
                                                               0.00
                                                                           0.0000
99849
         99.1500
                     927.50
                                     70.00
                                              5.9400
                                                              32.00
                                                                           8.0000
99852
         37.0300
                     615.00
                                     44.99
                                              0.9900
                                                               3.00
                                                                           1.0500
                                                              30.00
99876
         45.4900
                     648.00
                                     44.99
                                              0.0000
                                                                          10.5000
                      datovr_Mean
                                     roam Mean
                                                 change mou
                                                                    forgntvl
       vceovr Mean
                                                                                ethnic
                                                               . . .
4
             0.0000
                               0.0
                                        0.0000
                                                       38.50
                                                                          0.0
                                                                                      Т
             1.7250
                               0.0
                                                                          0.0
                                                                                     Ν
16
                                        1.3125
                                                      -16.25
18
             0.0000
                               0.0
                                        1.2850
                                                      169.25
                                                                          0.0
                                                                                     Ν
47
                               0.0
                                        0.0000
                                                     -205.50
             0.0000
                                                                          a a
                                                                                     Н
                                                               . . .
48
            86.1175
                               0.0
                                        0.0000
                                                     -258.00
                                                                          0.0
                                                                                     Ν
                               . . .
                 . . .
                                            . . .
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99793
                               0.0
                                                       11.00
                                                                          0.0
             0.0000
                                        0.0000
                                                                                     N
                                                               . . .
99819
             0.0000
                               0.0
                                        0.0000
                                                        0.00
                                                                          0.0
                                                                                     Н
                               0.0
                                                                          0.0
                                                                                     Ν
99849
             8.0000
                                       15.2100
                                                      -55.50
99852
             1.0500
                               0.0
                                                        0.00
                                                                          0.0
                                                                                     Н
                                        0.0000
                                                               . . .
99876
            10.5000
                               0.0
                                        0.0000
                                                        0.00
                                                                          0.0
                                                                                     S
                                                              . . .
       kid0 2
                kid3_5
                         kid6 10
                                    kid11_15
                                               kid16_17
                                                          creditcd
                                                                      eqpdays
4
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        434.0
16
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        530.0
             U
                                                       U
18
                      U
                                U
                                           U
                                                                        408.0
                                                                  Υ
47
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        151.0
             U
                      Υ
                                Υ
                                           Υ
                                                       Υ
                                                                  Υ
48
                                                                        162.0
. . .
           . . .
                                          . . .
                                                     . . .
                                                                          . . .
                               . . .
99793
             U
                      U
                                Υ
                                           Υ
                                                       U
                                                                        101.0
                                                                  Υ
99819
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                         31.0
99849
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        408.0
             U
                      U
                                U
                                           U
                                                       U
                                                                        140.0
99852
                                                                  Υ
             U
                      U
                                U
                                           U
                                                       Υ
                                                                        351.0
99876
       Customer_ID
4
            1000005
16
            1000017
18
            1000019
47
            1000048
48
            1000049
. . .
                 . . .
99793
            1099794
99819
            1099820
99849
            1099850
99852
            1099853
99876
            1099877
[4391 rows x 100 columns]
Outliers in column 'inonemin Mean':
          rev_Mean
                     mou_Mean totmrc_Mean
                                               da_Mean
                                                         ovrmou_Mean
                                                                        ovrrev_Mean
14
                                       84.99
        212.515000
                      1971.50
                                                2.2275
                                                          249.500000
                                                                          99.800000
20
       172.440000
                      1978.00
                                       99.99
                                                0.0000
                                                          362.250000
                                                                          72.450000
```

```
84
        93.020000
                      1348.25
                                      75.00
                                               0.0000
                                                           4.750000
                                                                          1.852500
85
        97.590000
                                               1.4850
                      1804.00
                                      75.00
                                                          85.000000
                                                                          8.500000
        90.750000
                      1229.00
                                      69.99
                                                                         20.550000
113
                                               1.4850
                                                         102.750000
. . .
               . . .
                          . . .
                                        . . .
                                                   . . .
                                                                 . . .
99717
       197.945000
                                      50.00
                                               5.4450
                                                         475.000000
                                                                        142.500000
                      1118.50
99760
       188.396667
                      1289.00
                                       24.84
                                               0.0000
                                                         653.666667
                                                                        163.556667
                                      70.00
                                                          32.000000
99849
        99.150000
                       927.50
                                               5.9400
                                                                          8.000000
                                      44.99
                                               0.9900
99852
        37.030000
                       615.00
                                                            3.000000
                                                                          1.050000
99872
       534.930000
                      4719.00
                                      10.00
                                               6.9300
                                                        2018.000000
                                                                        515.000000
       vceovr_Mean
                      datovr_Mean roam_Mean
                                                change_mou
                                                                   forgntvl ethnic
14
         99.800000
                           0.0000
                                      35.4975
                                                   -200.50
                                                                         0.0
                                                                                    Ν
20
         72.450000
                           0.0000
                                        0.0000
                                                   -1007.00
                                                                         0.0
                                                                                    Ζ
                                                                                    S
84
          0.000000
                           1.8525
                                       1.9200
                                                    -165.25
                                                                         0.0
85
           8.500000
                           0.0000
                                        0.0000
                                                    -343.00
                                                             . . .
                                                                         0.0
                                                                                    Ν
          20.550000
                           0.0000
                                        0.0000
                                                    -254.00
113
                                                                         0.0
                                                                                    G
. . .
                               . . .
                                           . . .
                                                        . . .
                                                                         . . .
99717
        142.500000
                           0.0000
                                                      30.50
                                        0.0000
                                                                         0.0
                                                                                    N
                                                              . . .
99760
        163.166667
                           0.3900
                                        0.0000
                                                   -1288.00
                                                                         0.0
                                                                                    Ζ
99849
           8.000000
                           0.0000
                                      15.2100
                                                     -55.50
                                                             . . .
                                                                         0.0
                                                                                    Ν
                                                                         0.0
                                                                                    Н
99852
           1.050000
                           0.0000
                                        0.0000
                                                       0.00
                                                             . . .
                                                       0.00
        485.750000
                          29.2500
                                                                                    Ν
99872
                                        0.0000
                                                                         0.0
                                                             . . .
       kid0 2 kid3 5
                         kid6_10
                                   kid11_15 kid16_17
                                                         creditcd
                                                                    eapdays
                      IJ
                                Υ
                                                      U
                                                                       199.0
14
             U
                                           U
                                                                 Υ
                                                      U
20
             U
                      U
                                U
                                           U
                                                                       143.0
                                                                 Υ
84
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                        10.0
             U
                                                      U
                                                                 Υ
                                                                       175.0
85
                      U
                                U
                                           U
113
             U
                      U
                                U
                                           Υ
                                                      U
                                                                 Υ
                                                                       263.0
. . .
           . . .
                    . . .
                              . . .
                                         . . .
                                                    . . .
                                                               . . .
                                                                         . . .
                                                                      917.0
99717
             U
                      Υ
                                Υ
                                           Υ
                                                      U
                                                                 Υ
99760
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      107.0
                                                      U
99849
             U
                      U
                                U
                                           U
                                                                 Υ
                                                                       408.0
99852
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       140.0
99872
             U
                      U
                                U
                                           U
                                                      U
                                                                        62.0
       Customer_ID
14
            1000015
20
            1000021
84
            1000085
85
            1000086
113
            1000114
99717
            1099718
            1099761
99760
99849
            1099850
99852
            1099853
            1099873
99872
[2388 rows x 100 columns]
Outliers in column 'threeway_Mean':
       rev Mean
                      mou Mean totmrc Mean
                                               da Mean
                                                         ovrmou Mean
                                                                        ovrrev Mean
16
        63.0175
                    440.250000
                                        59.98
                                                   0.00
                                                                 5.75
                                                                             1.7250
20
                                        99.99
                                                   0.00
       172.4400
                  1978.000000
                                                               362.25
                                                                            72.4500
39
        33.4775
                   195.500000
                                        29.99
                                                   0.00
                                                                 0.25
                                                                             0.0975
40
        82.1625
                   660.000000
                                        50.00
                                                   0.00
                                                               100.75
                                                                            30.2250
        55.1900
                  1087.750000
83
                                        69.99
                                                   0.00
                                                                13.00
                                                                             5.2000
. . .
             . . .
                           . . .
                                         . . .
                                                   . . .
                                                                  . . .
                                                                                 . . .
99776
        52.3100
                   157.666667
                                        50.00
                                                   2.31
                                                                 0.00
                                                                             0.0000
        37.0300
                                        44.99
                                                   0.99
                                                                 3.00
                                                                             1.0500
99852
                   615.000000
99872
       534.9300
                  4719.000000
                                        10.00
                                                   6.93
                                                              2018.00
                                                                           515.0000
99881
        56.2500
                    679.000000
                                        75.00
                                                   0.00
                                                                 0.00
                                                                             0.0000
```

29.99

0.00

0.00

0.0000

99919

28.4900

2.000000

```
vceovr_Mean datovr_Mean roam_Mean
                                                  change_mou
                                                                    forgntvl \
              1.725
                           0.0000
16
                                        1.3125
                                                  -16.250000
                                                                          0.0
20
             72.450
                           0.0000
                                        0.0000 -1007.000000
                                                                          0.0
                                                               . . .
39
              0.000
                           0.0975
                                        2.5650
                                                   54.500000
                                                                          0.0
40
             30.225
                           0.0000
                                        1.9375
                                                 -184.000000
                                                                          0.0
83
              5.200
                           0.0000
                                        0.0000
                                                  109.250000
                                                                          1.0
                                                               . . .
                                                   -5.666667
99776
              0.000
                           0.0000
                                        0.0000
                                                                          1.0
                                                               . . .
              1.050
                           0.0000
                                        0.0000
                                                    0.000000
                                                                          0.0
99852
                                                               . . .
                                                    0.000000
            485.750
                          29.2500
                                                                          0.0
99872
                                        0.0000
99881
              0.000
                           0.0000
                                        0.0000
                                                    0.000000
                                                                          0.0
99919
              0.000
                           0.0000
                                        0.0000
                                                    0.000000
                                                                          0.0
                                                               . . .
               kid0 2
                         kid3 5
                                 kid6 10
                                            kid11_15
                                                       kid16 17
                                                                  creditcd
                                                                             eapdays
       ethnic
                      U
                                         U
                                                               U
16
             Ν
                               U
                                                    U
                                                                          Υ
                                                                                530.0
20
             Ζ
                      U
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                                         U
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                                                               U
                                                                          Υ
                                                                                143.0
             J
39
                      U
                                                                                179.0
                               U
                                         U
                                                    Υ
                                                               U
                                                                          Υ
40
             Ν
                      U
                               U
                                         U
                                                    Υ
                                                               U
                                                                          Υ
                                                                                107.0
             U
83
                      U
                               U
                                         U
                                                    U
                                                               U
                                                                          Υ
                                                                                233.0
                                                             . . .
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                    . . .
                                       . . .
                               Υ
                                         Υ
                                                    U
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99776
             G
                      U
                                                                          Υ
                                                                                910.0
                                                                                140.0
                                                               U
99852
             Н
                      U
                               U
                                         U
                                                    U
                                                                          Υ
                                         U
99872
             Ν
                      U
                               U
                                                    U
                                                               U
                                                                          Υ
                                                                                 62.0
99881
             S
                      U
                               U
                                         U
                                                    U
                                                               U
                                                                          Υ
                                                                                324.0
                      IJ
                                         Υ
                                                               IJ
99919
             G
                               П
                                                    П
                                                                                487.0
       Customer_ID
16
            1000017
20
            1000021
39
            1000040
40
            1000041
83
            1000084
99776
            1099777
99852
            1099853
99872
            1099873
99881
            1099882
99919
            1099920
[6308 rows x 100 columns]
Outliers in column 'mou cvce Mean':
       rev_Mean mou_Mean totmrc_Mean
                                            da_Mean
                                                      ovrmou_Mean ovrrev_Mean
20
       172.4400
                   1978.00
                                    99.99
                                             0.0000
                                                            362.25
                                                                         72.4500
83
        55.1900
                   1087.75
                                    69.99
                                             0.0000
                                                             13.00
                                                                          5.2000
                   1376.00
98
       103.2825
                                             0.7425
                                                             38.00
                                                                         15.2000
                                    84.99
101
       114.1325
                    1649.75
                                    83.00
                                             1.7325
                                                             51.50
                                                                         14.6475
109
        94.9250
                   1655.75
                                    75.00
                                             1.4850
                                                             25.50
                                                                          2.5500
                        . . .
                                                               . . .
99355
        31.4850
                     742.00
                                    44.99
                                             0.2475
                                                             26.50
                                                                          9.2750
        91.3400
99362
                    1032.75
                                    80.00
                                             3.4650
                                                             31.50
                                                                          7.8750
99498
       141.4825
                    1850.75
                                    75.00
                                            11.6325
                                                            195.00
                                                                         48.7500
99509
       156.7125
                    3140.75
                                   159.99
                                             2.7225
                                                              0.00
                                                                          0.0000
99537
       149.2200
                    2032.00
                                    97.49
                                             5.4450
                                                            234.50
                                                                         58.6250
       vceovr Mean
                      datovr Mean
                                    roam Mean
                                                 change mou
                                                                    forgntvl
                                                                               ethnic
                                                              . . .
20
             72.450
                           0.0000
                                        0.0000
                                                   -1007.00
                                                                         0.0
                                                                                    Ζ
                                                              . . .
              5.200
                                                                         1.0
                                                                                    U
83
                           0.0000
                                        0.0000
                                                     109.25
98
             15.200
                           0.0000
                                        7.6625
                                                     355.00
                                                                         0.0
                                                                                    Ν
101
              1.875
                          12.7725
                                        0.0000
                                                    -176.75
                                                                         0.0
                                                                                    U
109
              2.550
                           0.0000
                                        0.0000
                                                     -51.75
                                                                         0.0
                                                                                    J
                . . .
                               . . .
                                           . . .
                                                        . . .
                                                              . . .
                                                                         . . .
99355
              9.275
                           0.0000
                                        0.0000
                                                      -6.00
                                                                         0.0
                                                                                    Н
                                                              . . .
99362
              7.875
                           0.0000
                                        0.0000
                                                    -402.75
                                                              . . .
                                                                         0.0
                                                                                    Ν
99498
                           0.0000
                                        0.0000
                                                      16.25
                                                                         0.0
                                                                                    D
             48.750
                                                              . . .
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99509
              0.000
                             0.0000
                                         0.0000
                                                      -201.75
                                                                            0.0
                                                                                       Ν
                                                                                       U
99537
             58.625
                             0.0000
                                         0.1600
                                                       442.00
                                                                            0.0
        kid0 2
                 kid3_5
                          kid6_10
                                     kid11_15
                                                kid16_17
                                                            creditcd
                                                                       eqpdays
20
             U
                       U
                                                        U
                                                                          143.0
                                 U
                                             U
                                                                    Υ
                                                        U
83
             U
                       U
                                 U
                                             U
                                                                    Υ
                                                                          233.0
98
             IJ
                       IJ
                                 U
                                             Υ
                                                        Υ
                                                                          652.0
                                                                    Υ
101
             U
                       U
                                 U
                                             U
                                                        U
                                                                          306.0
                                                                    Υ
109
             U
                       U
                                 U
                                             Υ
                                                        Υ
                                                                    Υ
                                                                          314.0
. . .
                     . . .
                               . . .
                                           . . .
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99355
             U
                       U
                                 U
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                                                        U
                                                                    Υ
                                                                          116.0
99362
             U
                       U
                                 U
                                             U
                                                        U
                                                                    Υ
                                                                          189.0
99498
             U
                       U
                                 Υ
                                             Υ
                                                        U
                                                                    Υ
                                                                          736.0
                                                        U
99509
             U
                       U
                                 U
                                             U
                                                                          278.0
                                                                    Υ
99537
             U
                       IJ
                                 U
                                             U
                                                        U
                                                                          250.0
        Customer_ID
20
            1000021
83
            1000084
98
            1000099
101
            1000102
109
            1000110
. . .
                 . . .
99355
            1099356
99362
            1099363
99498
            1099499
99509
            1099510
99537
            1099538
[1635 rows x 100 columns]
Outliers in column 'mou cdat Mean':
        rev Mean
                  mou Mean totmrc Mean
                                              da Mean
                                                        ovrmou Mean
                                                                       ovrrev Mean
19
         50.9650
                      162.00
                                   69.9900
                                               0.0000
                                                                2.50
                                                                             0.9750
         33.4775
39
                     195.50
                                               0.0000
                                                                0.25
                                                                             0.0975
                                   29.9900
84
         93.0200
                    1348.25
                                   75.0000
                                               0.0000
                                                                4.75
                                                                             1.8525
92
         72.8100
                    1306.00
                                   77.8975
                                               0.0000
                                                                0.00
                                                                             0.0000
101
        114.1325
                    1649.75
                                   83.0000
                                               1.7325
                                                               51.50
                                                                            14.6475
                                                                  . . .
. . .
              . . .
                         . . .
                                        . . .
                                                   . . .
                                                                                 . . .
99793
         28.5000
                      319.00
                                   30.0000
                                               0.0000
                                                                0.00
                                                                             0.0000
99849
         99.1500
                      927.50
                                   70.0000
                                               5.9400
                                                               32.00
                                                                             8.0000
99872
        534.9300
                    4719.00
                                   10.0000
                                               6.9300
                                                             2018.00
                                                                           515.0000
99899
         45.2600
                      149.00
                                   44.4800
                                               0.0000
                                                                2.00
                                                                             0.7800
99939
         49.3625
                      187.75
                                   40.0725
                                               2.9700
                                                               18.00
                                                                             6.3200
                                                                      forgntvl
                       datovr_Mean
                                     roam_Mean
                                                  change_mou
                                                                                  ethnic
        vceovr_Mean
19
               0.000
                            0.9750
                                          0.000
                                                       -58.00
                                                                            0.0
                                                                                       S
39
                                                                                       J
               0.000
                            0.0975
                                          2.565
                                                        54.50
                                                                            0.0
84
               0.000
                             1.8525
                                          1.920
                                                      -165.25
                                                                            0.0
                                                                                       S
92
                                                                                       0
               0.000
                            0.0000
                                          0.000
                                                      -462.00
                                                                            0.0
101
               1.875
                           12.7725
                                          0.000
                                                      -176.75
                                                                            0.0
                                                                                       U
                                                                . . .
                                                           . . .
                 . . .
                                             . . .
99793
               0.000
                             0.0000
                                          0.000
                                                        11.00
                                                                            0.0
                                                                                       Ν
99849
               8.000
                            0.0000
                                         15.210
                                                       -55.50
                                                                            0.0
                                                                                       Ν
                                                                . . .
                                                         0.00
                                                                                       Ν
                                                                            0.0
99872
            485.750
                           29.2500
                                          0.000
                                                                . . .
99899
               0.000
                             0.7800
                                          0.000
                                                       -86.00
                                                                . . .
                                                                            0.0
                                                                                       Ν
99939
               6.125
                             0.1950
                                          0.000
                                                      -187.75
                                                                            0.0
                                                                                       S
        kid0 2
                 kid3 5
                                                kid16 17
                          kid6 10
                                     kid11 15
                                                            creditcd
                                                                       eqpdays
19
             U
                       U
                                 Υ
                                             Υ
                                                        Υ
                                                                    Ν
                                                                          253.0
39
             U
                       U
                                 U
                                             Υ
                                                        U
                                                                    Υ
                                                                          179.0
             U
                       U
                                 U
                                             U
                                                        U
84
                                                                    Υ
                                                                           10.0
             U
                       U
                                 U
                                             U
                                                        U
                                                                    Υ
92
                                                                          146.0
             U
                       U
                                 U
                                             U
                                                        U
                                                                          306.0
101
                                                                    Υ
                     . . .
                               . . .
                                           . . .
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99793
             U
                      U
                                Υ
                                           Υ
                                                      U
                                                                  Υ
                                                                       101.0
                                                      U
99849
             U
                      U
                                U
                                           U
                                                                  Υ
                                                                       408.0
99872
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                        62.0
99899
             U
                      U
                                U
                                           U
                                                      Υ
                                                                  Υ
                                                                        75.0
             U
                      U
                                U
                                                      U
                                                                       153.0
99939
                                           U
       Customer_ID
19
            1000020
39
            1000040
84
            1000085
92
            1000093
101
            1000102
. . .
                . . .
99793
            1099794
99849
            1099850
99872
            1099873
99899
            1099900
99939
            1099940
[3201 rows x 100 columns]
Outliers in column 'mou rvce Mean':
          rev_Mean mou_Mean totmrc_Mean da_Mean
                                                         ovrmou_Mean ovrrev_Mean
14
        212.515000
                      1971.50
                                       84.99
                                                2.2275
                                                          249.500000
                                                                          99.800000
18
        55,270000
                      1212.75
                                       49.99
                                                0.7425
                                                            0.000000
                                                                          0.000000
20
                                       99.99
                                                0.0000
                                                                          72,450000
       172.440000
                      1978.00
                                                          362.250000
40
        82.162500
                                       50.00
                                                0.0000
                                                          100.750000
                                                                          30.225000
                       660.00
47
        78.287500
                       851.50
                                       85.00
                                                0.0000
                                                            0.000000
                                                                          0.000000
                           . . .
                                         . . .
                                                   . . .
99343
        72.825000
                       851.75
                                       59.99
                                                1.2375
                                                           57.000000
                                                                          17.100000
       234.342500
                                       44.99
                                                0.9900
99364
                      1056.50
                                                          566.750000
                                                                        198.362500
                                       75.00
99498
       141.482500
                      1850.75
                                              11.6325
                                                          195.000000
                                                                          48.750000
99510
        84.712500
                      908.75
                                       74.99
                                                0.4950
                                                            2.250000
                                                                           0.877500
                                                0.0000
99760
       188.396667
                      1289.00
                                       24.84
                                                          653.666667
                                                                        163.556667
       vceovr Mean
                      datovr_Mean
                                    roam_Mean
                                                 change_mou
                                                                    forgntvl
                                                                               ethnic
                                                               . . .
14
          99.800000
                           0.0000
                                       35.4975
                                                    -200.50
                                                                          0.0
                                                                                     Ν
18
                           0.0000
                                                                          0.0
                                                                                     Ν
           0.000000
                                        1.2850
                                                     169.25
                                                               . . .
20
          72.450000
                            0.0000
                                        0.0000
                                                   -1007.00
                                                                          0.0
                                                                                     Ζ
                                                              . . .
40
          30.225000
                            0.0000
                                        1.9375
                                                    -184.00
                                                                          0.0
                                                                                     Ν
                                                               . . .
47
           0.000000
                            0.0000
                                        0.0000
                                                    -205.50
                                                                          0.0
                                                                                     Н
                                                               . . .
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                                           . . .
                                                         . . .
                                                               . . .
                                                                                   . . .
          17.100000
                            0.0000
                                                      25.25
                                                                                     Н
99343
                                        0.0000
                                                                          0.0
                                                               . . .
99364
        198.362500
                            0.0000
                                        0.0000
                                                     290.50
                                                                          0.0
                                                                                     Н
                                                              . . .
                                                                                     D
99498
          48.750000
                            0.0000
                                        0.0000
                                                      16.25
                                                                          0.0
                                                               . . .
                            0.8775
                                                                                     Н
99510
           0.000000
                                                                          0.0
                                        0.0000
                                                      43.25
99760
        163.166667
                            0.3900
                                        0.0000
                                                   -1288.00
                                                                          0.0
                                                                                     Ζ
        kid0 2
                kid3 5
                         kid6 10
                                   kid11 15
                                               kid16 17
                                                          creditcd
                                                                     eqpdays
                      U
                                Υ
                                           U
                                                      U
                                                                       199.0
14
             U
                                                                  Υ
18
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       408.0
20
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       143.0
40
             U
                      U
                                U
                                           Υ
                                                      U
                                                                  Υ
                                                                       107.0
             U
                                U
                                                      U
47
                      U
                                           U
                                                                  Υ
                                                                       151.0
                                                                          . . .
99343
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                         4.0
99364
             U
                      U
                                U
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                                                                  Υ
                                                                       971.0
                                Υ
                                           Υ
99498
             U
                      U
                                                      U
                                                                  Υ
                                                                       736.0
             U
                      U
                                U
                                           U
                                                      Υ
99510
                                                                  Υ
                                                                       469.0
                                U
99760
             U
                      U
                                           U
                                                      U
                                                                       107.0
        Customer ID
14
            1000015
18
            1000019
20
            1000021
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40

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47
            1000048
. . .
                . . .
99343
            1099344
99364
            1099365
99498
            1099499
99510
            1099511
99760
            1099761
[2170 rows x 100 columns]
Outliers in column 'owylis_vce_Mean':
       rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean
40
        82.1625
                     660.00
                                    50.00
                                             0.0000
                                                            100.75
                                                                         30.2250
85
        97.5900
                                    75.00
                                             1.4850
                                                             85.00
                                                                          8.5000
                   1804.00
       114.1325
                   1649.75
                                             1.7325
                                                             51.50
101
                                    83.00
                                                                         14.6475
113
        90.7500
                   1229.00
                                    69.99
                                             1.4850
                                                            102.75
                                                                         20.5500
123
                    2255.75
                                    82.99
       159.5175
                                             3.2175
                                                            666.50
                                                                         66.6500
. . .
             . . .
                        . . .
                                       . . .
                                                 . . .
                                                               . . .
                                                                              . . .
                                                                          0.0000
99509
       156.7125
                    3140.75
                                   159.99
                                             2.7225
                                                              0.00
99588
        65.5125
                     664.50
                                    35.00
                                             1.2375
                                                             69.75
                                                                         24.4125
99590
        62.9800
                     367.75
                                             0.0000
                                                              0.00
                                                                          0.0000
                                    69.99
99721
        52.0200
                                             2.7225
                                                              0.00
                                                                          0.0000
                     710.25
                                    46.86
99849
        99.1500
                     927.50
                                    70.00
                                             5.9400
                                                             32.00
                                                                          8.0000
       vceovr_Mean datovr_Mean roam_Mean
                                                                   forgntvl
                                                                              ethnic
                                                change_mou
40
            30.2250
                           0.0000
                                       1.9375
                                                    -184.00
                                                                         0.0
                                                                                    N
85
             8.5000
                           0.0000
                                        0.0000
                                                    -343.00
                                                                         0.0
                                                                                    Ν
                                                             . . .
                          12.7725
                                                    -176.75
                                                                                    U
101
             1.8750
                                        0.0000
                                                                         0.0
                                                              . . .
113
            20.5500
                           0.0000
                                        0.0000
                                                    -254.00
                                                                         0.0
                                                                                    G
                                                              . . .
123
            66.6500
                           0.0000
                                        0.5850
                                                   -2238.75
                                                                         0.0
                                                                                    Н
                                                              . . .
99509
             0.0000
                           0.0000
                                        0.0000
                                                    -201.75
                                                                         0.0
                                                                                    Ν
                                                              . . .
99588
            24.4125
                           0.0000
                                        0.0000
                                                    -144.50
                                                                         0.0
                                                                                    Ν
                                                              . . .
99590
             0.0000
                           0.0000
                                        0.0000
                                                     -49.75
                                                                         0.0
                                                                                    Н
                                                                                    S
99721
             0.0000
                           0.0000
                                        0.0000
                                                    -396.25
                                                                         0.0
99849
             8.0000
                           0.0000
                                       15.2100
                                                     -55.50
                                                                         0.0
                                                                                    Ν
       kid0 2
                kid3 5
                         kid6 10
                                   kid11 15
                                              kid16 17
                                                          creditcd
                                                                     eqpdays
                                           Υ
                                                      U
40
             U
                      U
                                U
                                                                 Υ
                                                                       107.0
85
             U
                      U
                                U
                                           U
                                                      U
                                                                       175.0
                                                                 Υ
101
             U
                      U
                                U
                                           U
                                                      U
                                                                       306.0
                                                                 Υ
113
             U
                      U
                                U
                                           Υ
                                                      U
                                                                 Υ
                                                                       263.0
123
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       318.0
                    . . .
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                                         . . .
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99509
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       278.0
99588
             U
                      U
                                Υ
                                           U
                                                      U
                                                                 Υ
                                                                       518.0
             U
                      U
                                U
                                           U
                                                      U
99590
                                                                 Υ
                                                                       122.0
99721
             U
                      U
                                U
                                           U
                                                      U
                                                                       524.0
                                                                 Υ
                                                      U
             U
                      U
                                U
                                           U
                                                                       408.0
99849
       Customer_ID
40
            1000041
85
            1000086
101
            1000102
113
            1000114
123
            1000124
99509
            1099510
99588
            1099589
99590
            1099591
99721
            1099722
99849
            1099850
```

[1790 rows x 100 columns]

```
Outliers in column 'mouowylisv_Mean':
       rev_Mean mou_Mean totmrc_Mean
                                            da_Mean
                                                      ovrmou_Mean ovrrev_Mean
40
        82.1625
                     660.00
                                  50.0000
                                             0.0000
                                                            100.75
                                                                         30.2250
85
        97.5900
                    1804.00
                                  75.0000
                                             1.4850
                                                            85.00
                                                                          8.5000
113
        90.7500
                    1229.00
                                  69.9900
                                             1.4850
                                                            102.75
                                                                         20.5500
123
        159.5175
                    2255.75
                                  82.9900
                                             3.2175
                                                            666.50
                                                                         66.6500
127
        281.3300
                    3807.75
                                 182.9375
                                             8.4150
                                                            759.00
                                                                         88.5000
                        . . .
99364
        234.3425
                    1056.50
                                  44.9900
                                             0.9900
                                                            566.75
                                                                        198.3625
       156.7125
                                 159.9900
                                                              0.00
                                                                          0.0000
99509
                    3140.75
                                             2.7225
99588
        65.5125
                     664.50
                                  35.0000
                                             1.2375
                                                             69.75
                                                                         24.4125
99721
        52.0200
                     710.25
                                  46.8600
                                             2.7225
                                                              0.00
                                                                          0.0000
99849
        99.1500
                     927.50
                                  70.0000
                                             5.9400
                                                             32.00
                                                                          8.0000
       vceovr Mean
                      datovr Mean
                                    roam Mean
                                                change_mou
                                                                   forgntvl
                                                                              ethnic
                                                              . . .
40
            30.2250
                            0.000
                                        1.9375
                                                    -184.00
                                                                         0.0
                                                                                    Ν
85
                            0.000
                                                                         0.0
                                                                                    Ν
             8.5000
                                        0.0000
                                                    -343.00
113
            20.5500
                            0.000
                                        0.0000
                                                    -254.00
                                                                         0.0
                                                                                    G
                                                              . . .
123
            66.6500
                            0.000
                                        0.5850
                                                   -2238.75
                                                                         0.0
                                                                                    Н
127
            88.4250
                             0.075
                                        0.0000
                                                       5.25
                                                             . . .
                                                                         0.0
                                                                                    Ν
                               . . .
                                           . . .
                                                                         . . .
                . . .
                                                        . . .
                                                              . . .
           198.3625
99364
                            0.000
                                        0.0000
                                                     290.50
                                                                         0.0
                                                                                    Н
                                                              . . .
99509
             0.0000
                            0.000
                                        0.0000
                                                    -201.75
                                                                         0.0
                                                                                    Ν
99588
            24.4125
                            0.000
                                        0.0000
                                                    -144.50
                                                                         0.0
                                                                                    Ν
                                                                                    S
99721
             0.0000
                            0.000
                                        0.0000
                                                    -396.25
                                                                         0.0
             8.0000
                            0.000
                                                     -55.50
                                                                                    Ν
99849
                                       15.2100
                                                                         0.0
       kid0_2
                kid3_5
                                   kid11_15
                                              kid16_17
                                                         creditcd
                                                                    eqpdays
                         kid6_10
40
             U
                      U
                                U
                                           Υ
                                                      U
                                                                 Υ
                                                                       107.0
85
             U
                      U
                                U
                                           U
                                                      U
                                                                       175.0
                                                                 Υ
             U
                                U
                                           Υ
                                                      U
113
                      U
                                                                 Υ
                                                                       263.0
123
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       318.0
             U
                                U
                                                      Υ
127
                      U
                                           U
                                                                 Υ
                                                                        77.0
99364
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       971.0
99509
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       278.0
                                                      U
             U
                      U
                                Υ
                                           U
                                                                 Υ
99588
                                                                       518.0
99721
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       524.0
                      U
                                U
                                                      U
99849
             U
                                           U
                                                                       408.0
        Customer_ID
40
            1000041
85
            1000086
113
            1000114
123
            1000124
127
            1000128
. . .
                . . .
99364
            1099365
99509
            1099510
99588
            1099589
99721
            1099722
99849
            1099850
[2263 rows x 100 columns]
Outliers in column 'iwylis vce Mean':
                     mou_Mean totmrc_Mean
                                              da_Mean
          rev_Mean
                                                        ovrmou_Mean
                                                                       ovrrev_Mean
47
                       851.50
        78.287500
                                    85.0000
                                               0.0000
                                                            0.000000
                                                                          0.000000
84
        93.020000
                      1348.25
                                    75.0000
                                               0.0000
                                                            4.750000
                                                                          1.852500
85
        97,590000
                      1804.00
                                    75.0000
                                               1.4850
                                                          85.000000
                                                                          8.500000
101
        114.132500
                      1649.75
                                    83.0000
                                               1.7325
                                                           51.500000
                                                                         14.647500
114
        113.522500
                      1807.25
                                    85.0000
                                               1.9800
                                                         102.000000
                                                                         10.200000
                          . . .
                                         . . .
                                                   . . .
99588
        65.512500
                       664.50
                                    35.0000
                                               1.2375
                                                           69.750000
                                                                         24.412500
```

99590

62.980000

367.75

69.9900

0.0000

0.000000

0.000000

```
0.9900
99709
         46.730000
                        348.75
                                     46.7825
                                                             0.000000
                                                                            0.000000
99721
         52.020000
                       710.25
                                     46.8600
                                                2.7225
                                                             0.000000
                                                                            0.000000
       188.396667
                      1289.00
                                     24.8400
                                                 0.0000
99760
                                                           653.666667
                                                                          163.556667
        vceovr Mean
                      datovr Mean
                                     roam Mean
                                                 change mou
                                                                     forgntvl
                                                               . . .
                                                                                ethnic
47
           0.000000
                            0.0000
                                         0.0000
                                                     -205.50
                                                                           0.0
                                                                                      Н
                                                               . . .
                                                     -165.25
84
                            1.8525
                                                                           0.0
                                                                                      S
           0.000000
                                         1.9200
                                                               . . .
85
                                                                           0.0
                                                                                      N
           8.500000
                            0.0000
                                         0.0000
                                                     -343.00
                                                               . . .
101
           1.875000
                           12.7725
                                         0.0000
                                                                           0.0
                                                                                      U
                                                     -176.75
                                                               . . .
114
          10.200000
                            0.0000
                                         1.0025
                                                     -373.25
                                                                           0.0
                                                                                      Ν
                                                               . . .
. . .
                               . . .
                                            . . .
                                                          . . .
                                                               . . .
                                                                           . . .
                 . . .
99588
          24.412500
                            0.0000
                                         0.0000
                                                     -144.50
                                                                           0.0
                                                                                      Ν
                                                               . . .
99590
                            0.0000
                                         0.0000
                                                      -49.75
                                                                           0.0
                                                                                      Н
           0.000000
                                                               . . .
                                                                                      S
99709
                            0.0000
                                         0.0000
                                                      -85.75
                                                                           0.0
           0.000000
                                                                                      S
99721
           0.000000
                            0.0000
                                         0.0000
                                                     -396.25
                                                               . . .
                                                                           0.0
99760
         163.166667
                            0.3900
                                         0.0000
                                                    -1288.00
                                                                           0.0
                                                                                      7
        kid0 2
                 kid3 5
                          kid6_10
                                    kid11 15
                                               kid16 17
                                                           creditcd
                                                                      eapdays
47
             U
                      U
                                 U
                                            U
                                                       U
                                                                   Υ
                                                                        151.0
             U
                      U
                                 U
                                            U
                                                       U
84
                                                                   Υ
                                                                         10.0
85
             U
                      U
                                 U
                                            U
                                                       U
                                                                        175.0
                                                                   Υ
             U
                      U
                                 U
                                            U
                                                       U
                                                                   Υ
                                                                        306.0
101
             U
114
                      U
                                 U
                                            U
                                                       U
                                                                   Υ
                                                                        387.0
. . .
            . . .
                    . . .
                               . . .
                                                     . . .
                                                                           . . .
99588
             U
                                 Υ
                                            U
                                                                   Υ
                                                                        518.0
                      U
                                                       U
             U
                      U
                                 U
                                            U
                                                       U
99590
                                                                   Υ
                                                                        122.0
99709
             U
                      U
                                 U
                                            U
                                                       U
                                                                   Υ
                                                                        104.0
             U
                                                       U
                                                                   Υ
                                                                        524.0
99721
                      U
                                 U
                                            U
99760
             U
                      U
                                 U
                                            U
                                                       U
                                                                        107.0
        Customer ID
47
            1000048
84
            1000085
85
            1000086
101
            1000102
114
            1000115
99588
            1099589
99590
            1099591
99709
            1099710
99721
            1099722
            1099761
99760
[2836 rows x 100 columns]
Outliers in column 'mouiwylisv_Mean':
          rev_Mean
                     mou_Mean totmrc_Mean
                                               da Mean
                                                          ovrmou_Mean
                                                                        ovrrev_Mean
47
         78.287500
                       851.50
                                     85.0000
                                                0.0000
                                                             0.000000
                                                                            0.000000
84
                                     75.0000
                                                0.0000
         93.020000
                      1348.25
                                                             4.750000
                                                                            1.852500
85
         97.590000
                      1804.00
                                     75.0000
                                                1.4850
                                                            85.000000
                                                                            8.500000
                                     84.9900
                                                0.7425
98
        103.282500
                      1376.00
                                                            38.000000
                                                                           15.200000
101
        114.132500
                      1649.75
                                     83.0000
                                                1.7325
                                                            51.500000
                                                                           14.647500
. . .
                                          . . .
                                                    . . .
                                                                   . . .
                . . .
                           . . .
                                                                                  . . .
99590
         62.980000
                       367.75
                                     69.9900
                                                0.0000
                                                             0.000000
                                                                            0.000000
99621
         35.700000
                        371.50
                                     15.8875
                                                1.7325
                                                            50.250000
                                                                           15.075000
99709
         46.730000
                        348.75
                                     46.7825
                                                 0.9900
                                                             0.000000
                                                                            0.000000
99721
         52.020000
                       710.25
                                     46.8600
                                                 2.7225
                                                             0.000000
                                                                            0.000000
                                                0.0000
99760
       188.396667
                      1289.00
                                     24.8400
                                                           653.666667
                                                                         163.556667
        vceovr_Mean
                      datovr_Mean
                                     roam_Mean
                                                 change mou
                                                                     forgntvl
                                                                                ethnic
47
                            0.0000
                                         0.0000
                                                                                      Н
           0.000000
                                                     -205.50
                                                                           0.0
                                                                                      S
84
           0.000000
                            1.8525
                                         1.9200
                                                     -165.25
                                                                           0.0
                                                               . . .
85
           8.500000
                            0.0000
                                         0.0000
                                                     -343.00
                                                                           0.0
                                                                                      Ν
                                                               . . .
98
          15.200000
                            0.0000
                                         7.6625
                                                      355.00
                                                               . . .
                                                                           0.0
                                                                                      N
                           12.7725
                                         0.0000
                                                     -176.75
                                                                           0.0
101
           1.875000
                                                               . . .
```

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. . .
                . . .
                               . . .
                                           . . .
                                                        . . .
                                                              . . .
                                                                         . . .
                                                                                  . . .
                                                     -49.75
99590
           0.000000
                           0.0000
                                        0.0000
                                                                                    Н
                                                                         0.0
                           0.0000
                                                                                    Ι
99621
         15.075000
                                        0.0000
                                                    -371.50
                                                             . . .
                                                                         0.0
99709
           0.000000
                           0.0000
                                        0.0000
                                                     -85.75
                                                                         0.0
                                                                                    S
                                                              . . .
                                                                                    S
99721
                                                    -396.25
                                                                         0.0
           0.000000
                           0.0000
                                        0.0000
                                                                                    Ζ
99760
        163.166667
                           0.3900
                                        0.0000
                                                   -1288.00
                                                                         0.0
       kid0 2
                kid3 5
                         kid6_10
                                   kid11_15
                                              kid16_17
                                                          creditcd
                                                                     eapdays
47
                      U
                                                      U
                                                                       151.0
                                           U
                                                                 Υ
84
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                        10.0
85
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       175.0
98
             U
                      U
                                U
                                           Υ
                                                      Υ
                                                                 Υ
                                                                       652.0
101
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       306.0
. . .
99590
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       122.0
99621
             U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       319.0
                      U
                                U
                                                      U
                                                                 Υ
99709
             U
                      U
                                           U
                                                                       104.0
99721
             U
                      U
                                U
                                           U
                                                      U
                                                                       524.0
                                                                 Υ
                                                                       107.0
                                U
                                                      U
99760
             U
                      П
                                           U
       Customer_ID
47
            1000048
84
            1000085
85
            1000086
98
            1000099
101
            1000102
. . .
99590
            1099591
99621
            1099622
99709
            1099710
99721
            1099722
99760
            1099761
[2964 rows x 100 columns]
Outliers in column 'peak_vce_Mean':
       rev_Mean mou_Mean totmrc_Mean
                                            da_Mean ovrmou_Mean
                                                                    ovrrev_Mean
14
       212.5150
                   1971.50
                                84.990000
                                             2.2275
                                                       249.500000
                                                                       99.800000
20
       172.4400
                   1978.00
                                99.990000
                                             0.0000
                                                                       72.450000
                                                       362.250000
84
        93.0200
                   1348.25
                                75.000000
                                             0.0000
                                                         4.750000
                                                                        1.852500
85
        97.5900
                    1804.00
                                75.000000
                                             1.4850
                                                        85.000000
                                                                        8.500000
        79.5950
                     828.00
                                75.000000
                                             0.0000
                                                          0.000000
                                                                        0.000000
88
. . .
             . . .
                        . . .
                                                 . . .
99286
       136.7400
                    1681.00
                                64.723333
                                             4.9500
                                                       192.666667
                                                                       63.216667
99297
       237.7525
                    2495.25
                               154.990000
                                             1.7325
                                                        36.000000
                                                                        5.400000
99362
                                                                        7.875000
        91.3400
                   1032.75
                                80.000000
                                             3.4650
                                                        31.500000
99498
       141.4825
                    1850.75
                                75.000000
                                            11.6325
                                                       195.000000
                                                                       48.750000
99509
       156.7125
                    3140.75
                               159.990000
                                             2.7225
                                                          0.000000
                                                                        0.000000
       vceovr Mean
                      datovr Mean
                                    roam Mean
                                                 change mou
                                                                    forgntvl ethnic
                                                                                    Ν
14
          99.800000
                           0.0000
                                       35.4975
                                                    -200.50
                                                              . . .
                                                                         0.0
20
         72.450000
                           0.0000
                                        0.0000
                                                                         0.0
                                                                                    Ζ
                                                   -1007.00
                                                                                    S
84
           0.000000
                           1.8525
                                        1.9200
                                                    -165.25
                                                                         0.0
                                                              . . .
85
           8.500000
                           0.0000
                                        0.0000
                                                    -343.00
                                                                         0.0
                                                                                    Ν
                                                              . . .
88
           0.000000
                           0.0000
                                        2.1150
                                                     299.00
                                                                                    S
                                                                         0.0
                               . . .
                                                         . . .
                                                                         . . .
                                           . . .
                                                              . . .
99286
          63.216667
                           0.0000
                                                                         0.0
                                                                                    Ν
                                        3.6100
                                                    -616.00
                                                              . . .
                                                                                    J
99297
           5.400000
                           0.0000
                                        0.0975
                                                     258.75
                                                                         0.0
99362
           7.875000
                           0.0000
                                        0.0000
                                                    -402.75
                                                                         0.0
                                                                                    Ν
                           0.0000
                                                      16.25
99498
          48.750000
                                        0.0000
                                                                         0.0
                                                                                    D
                                                              . . .
99509
           0.000000
                           0.0000
                                        0.0000
                                                    -201.75
                                                                         0.0
       kid0 2
                kid3_5
                         kid6_10
                                   kid11_15 kid16_17
                                                         creditcd
                                                                     eqpdays
             U
                      U
                                Υ
                                           U
                                                      U
                                                                 Υ
                                                                       199.0
14
20
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       143.0
```

				Labo				
84	U	UL	U	U	Υ	10.0		
85	U	UL	U	U	Υ	175.0		
88	U	U L	U	U	Υ	350.0		
			• • •					
99286	U	UL	l U	U	Υ	338.0		
99297	U	U		U	Υ	76.0		
99362	U	U		U	Y	189.0		
99498	U	U Y		U	Y	736.0		
99509	U	U		U	Y	278.0		
22303	U	0	0	U	'	270.0		
	Customon T	`						
1.4	Customer_ID							
14	1000015							
20	1000021							
84	1000085							
85	1000086							
88	1000089	9						
• • •	• • •	,						
99286	1099287	7						
99297	1099298	3						
99362	1099363	3						
99498	1099499)						
99509	1099516							
[1532 ı	rows x 100 (columnsl						
		n 'peak_dat_M	lean'•					
Outif	rev_Mean		otmrc_Mean	da_Mean	ovrmou_Mear	n ovrrev	Mean \	
20	33.477500	195.50	29.9900	0.0000	0.250000			
39							97500	
84	93.020000	1348.25	75.0000	0.0000	4.750000		52500	
101	114.132500	1649.75	83.0000	1.7325	51.500000		47500	
127	281.330000	3807.75	182.9375	8.4150	759.000000		00000	
186	29.887500	98.50	36.2850	0.0000	3.000000) 1.1	02500	
• • •	• • •	• • •	• • •	• • •	• • •		• • •	
99641	321.350000	1364.50	69.5850	2.9700	630.500000		50000	
99760	188.396667	1289.00	24.8400	0.0000	653.666667	7 163.5	56667	
99793	28.500000	319.00	30.0000	0.0000	0.000000	0.0	00000	
99849	99.150000	927.50	70.0000	5.9400	32.000000	8.0	00000	
99872	534.930000	4719.00	10.0000	6.9300	2018.000000	515.0	00000	
	vceovr_Mear	n datovr_Mea	n roam_Mear	n change_i	mou f	forgntvl	ethnic	١
39	0.000000	_	_		.50	0.0	J	
84	0.00000					0.0	S	
101	1.875000					0.0	U	
127	88.425006				.25	0.0	N	
186	0.225000				.50	0.0	N	
99641	199.450000				50	0.0	G	
99760	163.166667					0.0	Z	
99793	0.000000				.00	0.0	N	
99849	8.000000					0.0	N	
99872	485.750000	29.250	0.000	9 0	.00	0.0	N	
	kid0_2 kid	d3_5 kid6_10	kid11_15	kid16_17	creditcd	eqpdays	\	
39	U	UL	Υ	U	Υ	179.0		
84	U	UL	U	U	Υ	10.0		
101	U	U L	U	U	Υ	306.0		
127	U	UL	U	Υ	Υ	77.0		
186	U	U L	U	U	Υ	94.0		
99641	U	Y		U	Y	45.0		
99760	U	U		U	Y	107.0		
99793	U	U Y		U	Y	101.0		
99849	U	U		U	Ϋ́	408.0		
99872	U	UL	U U	U	Υ	62.0		

```
Customer_ID
39
            1000040
84
            1000085
101
            1000102
127
            1000128
186
            1000187
. . .
            1099642
99641
99760
            1099761
99793
            1099794
99849
            1099850
99872
            1099873
[2161 rows x 100 columns]
Outliers in column 'mou peav Mean':
       rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean
14
       212.5150
                                   84.99
                                            2.2275
                                                          249.50
                                                                       99.8000
                   1971.50
18
        55.2700
                   1212.75
                                   49.99
                                            0.7425
                                                            0.00
                                                                        0.0000
                                            0.0000
20
       172.4400
                   1978.00
                                   99.99
                                                          362.25
                                                                       72.4500
84
                                            0.0000
        93.0200
                   1348.25
                                   75.00
                                                            4.75
                                                                        1.8525
85
        97.5900
                   1804.00
                                   75.00
                                            1.4850
                                                           85.00
                                                                        8.5000
             . . .
                       . . .
                                     . . .
                                               . . .
                                                             . . .
                                                                            . . .
99498
       141.4825
                   1850.75
                                   75.00
                                           11.6325
                                                          195.00
                                                                       48.7500
99509
       156.7125
                   3140.75
                                  159.99
                                            2.7225
                                                            0.00
                                                                        0.0000
99537
       149.2200
                   2032.00
                                                          234.50
                                   97.49
                                            5.4450
                                                                       58.6250
99717
       197.9450
                   1118.50
                                   50.00
                                            5.4450
                                                          475.00
                                                                      142.5000
99721
        52.0200
                    710.25
                                   46.86
                                            2.7225
                                                            0.00
                                                                        0.0000
       vceovr_Mean datovr_Mean roam_Mean change_mou
                                                            . . .
                                                                  forgntvl
                                                                             ethnic
14
             99.800
                           0.0000
                                      35.4975
                                                   -200.50
                                                                       0.0
                                                            . . .
                           0.0000
18
              0.000
                                      1.2850
                                                    169.25
                                                                       0.0
                                                                                  Ν
                                                            . . .
20
             72.450
                           0.0000
                                       0.0000
                                                  -1007.00
                                                                       0.0
                                                                                  Ζ
                                                            . . .
              0.000
                           1.8525
                                       1.9200
                                                                       0.0
                                                                                  S
84
                                                   -165.25
                                                            . . .
85
              8.500
                           0.0000
                                       0.0000
                                                   -343.00
                                                                       0.0
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99498
             48.750
                           0.0000
                                      0.0000
                                                     16.25
                                                                       0.0
                                                                                  D
                                                            . . .
                                                   -201.75
              0.000
                           0.0000
                                       0.0000
                                                                       0.0
                                                                                  Ν
99509
99537
             58.625
                           0.0000
                                       0.1600
                                                    442.00
                                                                       0.0
                                                                                  U
                                                            . . .
99717
            142.500
                           0.0000
                                       0.0000
                                                     30.50
                                                            . . .
                                                                       0.0
                                                                                  Ν
                                                                                  S
99721
              0.000
                           0.0000
                                       0.0000
                                                   -396.25
                                                                       0.0
                                                                   eqpdays
       kid0 2
               kid3 5
                        kid6_10
                                  kid11_15 kid16_17 creditcd
14
             U
                     U
                               Υ
                                          U
                                                     U
                                                                Υ
                                                                     199.0
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     408.0
18
20
            U
                     U
                               U
                                          U
                                                     U
                                                                     143.0
                                                                Υ
            U
                                                     U
84
                     U
                               U
                                          U
                                                                Υ
                                                                      10.0
85
            U
                     U
                               U
                                          U
                                                     U
                                                                     175.0
                                                                Υ
                                                                       . . .
            U
                               Υ
                                          Υ
99498
                     U
                                                    U
                                                                Υ
                                                                     736.0
99509
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     278.0
99537
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     250.0
                               Υ
                                                     U
99717
            U
                     Υ
                                          Υ
                                                                Υ
                                                                     917.0
                               U
                                          U
                                                     U
                                                                     524.0
99721
       Customer ID
14
            1000015
18
            1000019
20
            1000021
84
            1000085
85
            1000086
                . . .
99498
            1099499
99509
            1099510
```

99537

1099538

```
[1705 rows x 100 columns]
```

[
Outlie	rs in column	'mou_pead	_Mean':							
	rev_Mean	mou_Mean	totmrc_Mean	da_Mean	ovrmou_Mean	ovrrev_Mean	\			
39	33.477500	195.50	29.9900	0.0000	0.250000	0.097500				
84	93.020000	1348.25	75.0000	0.0000	4.750000	1.852500				
101	114.132500	1649.75	83.0000	1.7325	51.500000	14.647500				
127	281.330000	3807.75	182.9375	8.4150	759.000000	88.500000				
186	29.887500	98.50	36.2850	0.0000	3.000000	1.102500				
	• • •			• • •						
99641	321.350000	1364.50	69.5850	2.9700	630.500000	248.450000				
99760	188.396667	1289.00	24.8400	0.0000	653.666667	163.556667				
99793	28.500000	319.00	30.0000	0.0000	0.000000	0.000000				
99849	99.150000	927.50	70.0000	5.9400	32.000000	8.000000				
99872	534.930000	4719.00	10.0000	6.9300	2018.000000	515.000000				

	vceovr_Mean	datovr_Mean	roam_Mean	change_mou	 forgntvl	ethnic	\
39	0.000000	0.0975	2.565	54.50	 0.0	J	
84	0.000000	1.8525	1.920	-165.25	 0.0	S	
101	1.875000	12.7725	0.000	-176.75	 0.0	U	
127	88.425000	0.0750	0.000	5.25	 0.0	N	
186	0.225000	0.8775	0.000	35.50	 0.0	N	
• • •	• • •		• • •	• • •	 • • •	• • •	
99641	199.450000	49.0000	0.000	741.50	 0.0	G	
99760	163.166667	0.3900	0.000	-1288.00	 0.0	Z	
99793	0.000000	0.0000	0.000	11.00	 0.0	N	
99849	8.000000	0.0000	15.210	-55.50	 0.0	N	
99872	485.750000	29.2500	0.000	0.00	 0.0	N	

	kid0_2	kid3_5	kid6_10	kid11_15	kid16_17	creditcd	eqpdays	,
39	U	U	U	Υ	U	Υ	179.0	
84	U	U	U	U	U	Υ	10.0	
101	U	U	U	U	U	Υ	306.0	
127	U	U	U	U	Υ	Υ	77.0	
186	U	U	U	U	U	Υ	94.0	
			• • •			• • •		
99641	U	Υ	Υ	U	U	Υ	45.0	
99760	U	U	U	U	U	Υ	107.0	
99793	U	U	Υ	Υ	U	Υ	101.0	
99849	U	U	U	U	U	Υ	408.0	
99872	U	U	U	U	U	Υ	62.0	

[2161 rows x 100 columns]

Outliers in column 'opk_vce_Mean':

	rev_Mean	mou_Mean	totmrc_Mean	da_Mean	ovrmou_Mean	ovrrev_Mean
123	159.517500	2255.75	82.9900	3.2175	666.500000	66.650000
127	281.330000	3807.75	182.9375	8.4150	759.000000	88.500000
209	166.817500	3206.00	83.0000	3.9600	536.750000	53.675000
246	135.150000	2489.25	84.9900	0.2475	443.250000	44.325000

\

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295
                                             0.0000
        76.465000
                     1262.00
                                   75.0000
                                                         0.750000
                                                                       0.292500
                       . . .
                                      . . .
                                               . . .
99510
                      908.75
                                   74.9900
                                             0.4950
        84.712500
                                                         2.250000
                                                                       0.877500
99537
       149.220000
                     2032.00
                                   97,4900
                                             5.4450
                                                       234.500000
                                                                      58.625000
99760
       188.396667
                     1289.00
                                             0.0000
                                                       653.666667
                                   24.8400
                                                                     163.556667
99852
        37.030000
                     615.00
                                   44.9900
                                             0.9900
                                                         3.000000
                                                                       1.050000
       534.930000
                     4719.00
                                   10.0000
                                             6.9300 2018.000000
99872
                                                                     515.000000
       vceovr Mean
                     datovr Mean
                                   roam Mean change mou
                                                           ... forgntvl ethnic
123
         66.650000
                          0.0000
                                       0.585
                                                -2238.75
                                                                      0.0
                                                                                 Н
                                                           . . .
127
         88.425000
                          0.0750
                                       0.000
                                                     5.25
                                                                      0.0
                                                                                 Ν
209
         53.675000
                          0.0000
                                      15.855
                                                   265.00
                                                                      0.0
                                                                                 Н
                                                           . . .
246
         44.325000
                          0.0000
                                       4.875
                                                 -1597.25
                                                                      0.0
                                                                                 Ν
                                                           . . .
295
                          0.2925
                                       0.000
          0.000000
                                                   -65.00 ...
                                                                      0.0
                                                                                 Н
                             . . .
                                         . . .
                                                      . . .
                                                           . . .
                                                                      . . .
                . . .
99510
                          0.8775
                                       0.000
                                                    43.25
                                                                      0.0
          0.000000
                                                                                 Н
                                                           . . .
99537
         58.625000
                          0.0000
                                       0.160
                                                   442.00
                                                                      0.0
                                                                                 U
                          0.3900
                                       0.000
                                                 -1288.00
                                                                      0.0
                                                                                 Ζ
99760
        163.166667
                                                            . . .
99852
          1.050000
                          0.0000
                                       0.000
                                                     0.00
                                                                      0.0
                                                                                 Н
                                                           . . .
                                                     0.00 ...
99872
        485.750000
                         29.2500
                                       0.000
                                                                      0.0
       kid0_2 kid3_5
                        kid6_10
                                 kid11_15 kid16_17 creditcd
                                                                 eqpdays
123
            U
                     U
                              U
                                         U
                                                    U
                                                               Υ
                                                                    318.0
127
            U
                     U
                              U
                                         U
                                                    Υ
                                                               Υ
                                                                     77.0
209
            Υ
                              Υ
                                         Υ
                                                    IJ
                     V
                                                               Υ
                                                                     77.0
            U
                                                    U
                     U
                              U
                                         U
                                                               Υ
246
                                                                    109.0
295
            U
                     U
                              U
                                         U
                                                    U
                                                               Υ
                                                                     25.0
99510
            U
                     U
                              U
                                         U
                                                    Υ
                                                               Υ
                                                                    469.0
            U
                     U
                              U
                                         U
                                                    U
99537
                                                               Υ
                                                                    250.0
            U
                     U
                              U
                                         U
                                                    U
                                                               Υ
99760
                                                                    107.0
99852
            U
                     U
                              U
                                         U
                                                    U
                                                               Υ
                                                                    140.0
                              U
                                                    U
99872
            U
                                         U
                                                                     62.0
       Customer ID
123
           1000124
127
           1000128
209
           1000210
246
           1000247
295
           1000296
. . .
                . . .
           1099511
99510
99537
           1099538
99760
           1099761
99852
           1099853
99872
           1099873
[2150 rows x 100 columns]
Outliers in column 'opk dat Mean':
                                          da Mean
       rev Mean mou Mean totmrc Mean
                                                    ovrmou Mean ovrrev Mean
19
        50.9650
                    162.00
                                 69.9900
                                           0.0000
                                                           2.50
                                                                       0.9750
92
        72.8100
                   1306.00
                                 77.8975
                                           0.0000
                                                           0.00
                                                                       0.0000
101
       114.1325
                   1649.75
                                 83.0000
                                           1.7325
                                                          51.50
                                                                      14.6475
127
                   3807.75
                                                         759.00
       281.3300
                                182.9375
                                           8.4150
                                                                      88.5000
186
        29.8875
                     98.50
                                 36.2850
                                           0.0000
                                                           3.00
                                                                       1.1025
                      . . .
                                    . . .
                                              . . .
                                                            . . .
                                 94.9900
99544
       101.4475
                   418.75
                                           1.4850
                                                          59.75
                                                                      14.9725
99641
       321.3500
                   1364.50
                                 69.5850
                                           2.9700
                                                         630.50
                                                                     248.4500
99872
       534,9300
                   4719,00
                                 10,0000
                                           6.9300
                                                        2018.00
                                                                     515.0000
99899
       45.2600
                    149.00
                                 44.4800
                                           0.0000
                                                           2.00
                                                                       0.7800
99939
        49.3625
                    187.75
                                 40.0725
                                           2.9700
                                                          18.00
                                                                       6.3200
       vceovr Mean
                     datovr_Mean roam_Mean change_mou ...
                                                                 forgntvl ethnic
             0.000
                          0.9750
                                         0.0
                                                   -58.00 ...
                                                                      0.0
```

11/28/24, 1:37 AM Lab6 0.000

0.0000

0.0

-462.00

0.0

0

92

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101
                                                                                         U
               1.875
                            12.7725
                                             0.0
                                                       -176.75
                                                                             0.0
                                                                 . . .
127
              88.425
                             0.0750
                                             0.0
                                                          5.25
                                                                 . . .
                                                                             0.0
                                                                                         Ν
186
               0.225
                             0.8775
                                             0.0
                                                         35.50
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99544
              14.875
                             0.0975
                                             0.0
                                                       -100.75
                                                                             0.0
                                                                                         Ν
99641
             199.450
                            49.0000
                                             0.0
                                                        741.50
                                                                             0.0
                                                                                         G
                                                                                         Ν
99872
             485.750
                            29.2500
                                             0.0
                                                          0.00
                                                                             0.0
99899
               0.000
                             0.7800
                                             0.0
                                                        -86.00
                                                                             0.0
                                                                                         Ν
                                                                 . . .
99939
               6.125
                             0.1950
                                             0.0
                                                       -187.75
                                                                             0.0
                                                                                         S
                                                                 . . .
        kid0 2
                 kid3 5
                           kid6_10
                                     kid11_15
                                                 kid16_17
                                                             creditcd
                                                                        eqpdays
19
                       U
                                 Υ
                                             Υ
                                                         Υ
              U
                                                                           253.0
                                                                     N
92
              U
                       U
                                  U
                                             U
                                                         U
                                                                     Υ
                                                                           146.0
              U
                                                         U
101
                       U
                                  U
                                             U
                                                                     Υ
                                                                           306.0
127
              U
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                       U
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              U
186
                       U
                                  U
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                                                                            94.0
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99544
             U
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                                 U
                                             U
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                                                                     Υ
                                                                           273.0
99641
              U
                       Υ
                                  Υ
                                             U
                                                         U
                                                                     Υ
                                                                            45.0
              U
                                  U
                                             U
                                                         U
99872
                       U
                                                                     Υ
                                                                            62.0
              U
                       U
                                  U
                                             U
                                                         Υ
                                                                     Υ
                                                                            75.0
99899
                       U
99939
              U
                                  U
                                             U
                                                         U
                                                                           153.0
        Customer_ID
19
             1000020
92
             1000093
            1000102
101
127
             1000128
186
             1000187
99544
             1099545
99641
             1099642
99872
             1099873
99899
             1099900
99939
             1099940
[2177 rows x 100 columns]
Outliers in column 'mou opkv Mean':
          rev Mean
                      mou Mean
                                  totmrc Mean
                                                 da Mean
                                                           ovrmou Mean
                                                                           ovrrev Mean
14
        212.515000
                       1971.50
                                      84.9900
                                                  2.2275
                                                             249.500000
                                                                             99.800000
48
                        782.00
        107.235000
                                      24.9900
                                                  0.0000
                                                             232.750000
                                                                             86.117500
83
         55.190000
                       1087.75
                                       69.9900
                                                  0.0000
                                                              13.000000
                                                                              5.200000
92
         72.810000
                       1306.00
                                      77.8975
                                                  0.0000
                                                               0.000000
                                                                              0.000000
98
        103.282500
                                      84.9900
                                                  0.7425
                                                              38.000000
                                                                             15.200000
                       1376.00
. . .
                . . .
                            . . .
                                           . . .
                                                      . . .
                                                                     . . .
                                                                                    . . .
99509
        156.712500
                       3140.75
                                     159.9900
                                                  2.7225
                                                               0.000000
                                                                              0.000000
                                      97.4900
                                                             234.500000
99537
        149.220000
                       2032.00
                                                  5.4450
                                                                             58.625000
99760
        188.396667
                       1289.00
                                       24.8400
                                                  0.0000
                                                             653.666667
                                                                            163.556667
                                      44.9900
99852
         37.030000
                        615.00
                                                  0.9900
                                                               3.000000
                                                                              1.050000
99876
         45.490000
                        648.00
                                      44.9900
                                                  0.0000
                                                              30.000000
                                                                             10.500000
                       datovr_Mean
                                       roam_Mean
                                                                       forgntvl
                                                                                   ethnic
        vceovr_Mean
                                                   change mou
                                                                 . . .
14
                               0.00
          99.800000
                                         35.4975
                                                       -200.50
                                                                             0.0
                                                                                         N
48
          86.117500
                               0.00
                                          0.0000
                                                       -258.00
                                                                             0.0
                                                                                         Ν
                                                                 . . .
83
           5.200000
                               0.00
                                          0.0000
                                                        109.25
                                                                             1.0
                                                                                         U
                                                                 . . .
92
                                                                                         0
           0.000000
                               0.00
                                          0.0000
                                                       -462.00
                                                                             0.0
98
          15.200000
                               0.00
                                          7.6625
                                                        355.00
                                                                             0.0
                                                                                         Ν
. . .
                  . . .
                                 . . .
                                              . . .
                                                            . . .
                                                                             . . .
           0.000000
                                                                                         Ν
99509
                               0.00
                                          0.0000
                                                       -201.75
                                                                             0.0
99537
          58.625000
                               0.00
                                                        442.00
                                                                             0.0
                                                                                         U
                                          0.1600
                                                                 . . .
99760
                               0.39
                                          0.0000
                                                      -1288.00
                                                                 . . .
                                                                             0.0
                                                                                         Ζ
         163.166667
                                                                                         Н
99852
            1.050000
                               0.00
                                          0.0000
                                                          0.00
                                                                 . . .
                                                                             0.0
99876
          10.500000
                               0.00
                                          0.0000
                                                          0.00
                                                                                         S
                                                                             0.0
                                                                 . . .
```

```
kid0_2 kid3_5
                         kid6_10
                                   kid11_15
                                               kid16_17
                                                          creditcd
                                                                     eqpdays
14
             U
                      U
                                Υ
                                           U
                                                      U
                                                                  Υ
                                                                       199.0
                                                       Υ
48
             U
                      Υ
                                Υ
                                           Υ
                                                                  Υ
                                                                       162.0
83
             U
                                                                       233.0
                      U
                                U
                                           U
                                                      U
                                                                  Υ
92
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       146.0
98
             IJ
                      IJ
                                U
                                           Υ
                                                      Υ
                                                                  Υ
                                                                       652.0
99509
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       278.0
99537
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       250.0
99760
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       107.0
99852
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       140.0
99876
             U
                      U
                                U
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                                                                       351.0
       Customer ID
14
            1000015
48
            1000049
83
            1000084
92
            1000093
98
            1000099
. . .
99509
            1099510
99537
            1099538
99760
            1099761
            1099853
99852
99876
            1099877
[2418 rows x 100 columns]
Outliers in column 'mou_opkd_Mean':
       rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean
                                  69.9900
19
        50.9650
                     162.00
                                              0.0000
                                                              2.50
                                                                           0.9750
92
        72.8100
                    1306.00
                                  77.8975
                                              0.0000
                                                              0.00
                                                                           0.0000
       114.1325
                                              1.7325
                                                             51.50
101
                    1649.75
                                  83.0000
                                                                          14.6475
127
       281.3300
                    3807.75
                                 182.9375
                                              8.4150
                                                            759.00
                                                                          88.5000
186
        29.8875
                      98.50
                                  36.2850
                                              0.0000
                                                               3.00
                                                                           1.1025
                        . . .
                                                 . . .
. . .
             . . .
                                       . . .
                                                               . . .
                                                                              . . .
                                              1.4850
99544
       101.4475
                     418.75
                                  94.9900
                                                             59.75
                                                                          14.9725
99641
        321.3500
                    1364.50
                                  69.5850
                                              2.9700
                                                            630.50
                                                                         248.4500
                                                           2018.00
99872
       534.9300
                    4719.00
                                  10.0000
                                              6.9300
                                                                         515.0000
99899
        45.2600
                     149.00
                                  44.4800
                                              0.0000
                                                               2.00
                                                                           0.7800
99939
        49.3625
                     187.75
                                  40.0725
                                              2.9700
                                                             18.00
                                                                           6.3200
        vceovr Mean
                      datovr Mean
                                    roam Mean
                                                 change mou
                                                                    forgntvl
                                                                               ethnic
19
                            0.9750
              0.000
                                           0.0
                                                     -58.00
                                                                          0.0
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              0.000
                                           0.0
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92
                            0.0000
                                                     -462.00
101
              1.875
                          12.7725
                                           0.0
                                                     -176.75
                                                                          0.0
                                                                                     U
127
             88.425
                            0.0750
                                           0.0
                                                        5.25
                                                                          0.0
                                                                                     Ν
                                                               . . .
186
              0.225
                            0.8775
                                           0.0
                                                       35.50
                                                                          0.0
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99544
                            0.0975
                                                                          0.0
             14.875
                                           0.0
                                                     -100.75
                                                                                     Ν
99641
            199.450
                          49.0000
                                           0.0
                                                      741.50
                                                                          0.0
                                                                                     G
99872
            485.750
                           29.2500
                                           0.0
                                                        0.00
                                                                          0.0
                                                                                     Ν
99899
              0.000
                            0.7800
                                           0.0
                                                      -86.00
                                                                          0.0
                                                                                     Ν
                                                                                     S
99939
              6.125
                            0.1950
                                           0.0
                                                    -187.75
                                                                          0.0
       kid0 2
                kid3 5
                         kid6 10
                                    kid11 15
                                               kid16_17
                                                          creditcd
                                                                     eqpdays
19
                      U
                                Υ
                                           Υ
                                                      Υ
                                                                       253.0
             U
                                                                  Ν
92
             U
                      U
                                U
                                                      U
                                                                  Υ
                                                                       146.0
                                           U
101
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       306.0
             U
                      U
                                U
                                           U
                                                       Υ
127
                                                                  Υ
                                                                         77.0
             U
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186
                      U
                                U
                                           U
                                                                  Υ
                                                                         94.0
                    . . .
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                                                                        273.0
99544
             U
99641
             U
                      Υ
                                Υ
                                           U
                                                       U
                                                                         45.0
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						UU						
99872	U	U	U		U	U		Υ	62.0			
99899	Ü	U	U		U	Υ		Υ	75.0			
99939	U	U	U		U	U		Υ	153.0			
33333	Ü	Ü	Ü		Ü	Ü		•	133.0			
	Customer_I	D										
19	100002											
92	100002											
101	100003											
127	100010											
186	100012											
 99544	 109954											
99641 99872	109964 109987											
99899 99939	109990 109994											
33333	109994	Ø										
Γ2177	nows v 100	columnel										
_	rows x 100	_	JI. Maa									
Outlie	rs in colum	. –	_		da M		, mm a 1	Moon	avanav. N	loon	`	
20	_	mou_Mean		c_Mean	da_M			_Mean	ovrrev_M		\	
20 127	172.4400	1978.00		9.9900	0.0 8.4			62.25	72.4			
	281.3300	3807.75		2.9375			/	759.00	88.5			
158	83.8250	790.50		5.0000	4.9			0.00		000		
164	75.8750	1060.75		5.0000	0.0		_	0.00		000		
175	109.4650	2297.75	8	4.9900	4.9		2	31.75	23.1			
00100	07 2075	1202 50	0	4 0000		•••		06.25	24 5			
99199	97.2875	1382.50		4.9900	0.0			86.25	21.5			
99297	237.7525	2495.25		4.9900	1.7			36.00		.000		
99509	156.7125	3140.75		9.9900	2.7		7	0.00		000		
99537	149.2200	2032.00		7.4900	5.4		2	234.50	58.6			
99849	99.1500	927.50	/	0.0000	5.9	400		32.00	8.6	000		
	vceovn Mea	n datovr	Moan	поэт М	loan	change	mou		foranty]	ethr	ni c	\
20	vceovr_Mea		0.000	roam_M		_change 1007-		• • •	forgntvl	etiii		\
	72.450				000			• • •	0.0		Z	
127	88.425		0.075		000		5.25	• • •	0.0		N	
158	0.000		0.000		000		3.50	• • •	0.0		G	
164	0.000		0.000		000		2.25	• • •	0.0		G	
175	23.175		0.000	0.0	000	-125	9.75	• • •	0.0		N	
	24 562			0.0		201		• • •		•		
99199	21.562		0.000		000		2.50	• • •	0.0		N	
99297	5.400		0.000		975		3.75	• • •	0.0		J	
99509	0.000		0.000		000		L.75	• • •	0.0		N	
99537	58.625		0.000	0.1			2.00	• • •	0.0		U	
99849	8.000	Ø	0.000	15.2	100	-5:	5.50	• • •	0.0		N	
	1440 2 14	40 F 1/44	lc 10	1.2 411 1	- L-2	416 17		لمصددات		`		
20							CITE		eqpdays	\		
20	U	U	U		U	U		Y	143.0			
127	U	U	U		U	Y		Y	77.0			
158	U Y	U Y	Y		Υ	Y		Y	638.0			
164			U		U	U		Y	206.0			
175	U	U	U		U	U		Υ	153.0			
00100	• • •	٠	•••	• •		• • •		•••	420.0			
99199	U	Y	Y		U	U		Y	429.0			
99297	U	U	U		U	U		Y	76.0			
99509	U	U	U		U	U		Y	278.0			
99537	U	U	U		U	U		Y	250.0			
99849	U	U	U		U	U		Υ	408.0			
		Б										
20	Customer_I											
20	100002											
127	100012											
158	100015											
164	100016											
175	100017	O										

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. . .
               . . .
99199
           1099200
99297
           1099298
99509
           1099510
99537
           1099538
99849
           1099850
[1919 rows x 100 columns]
Outliers in column 'attempt Mean':
       rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean
20
       172.4400
                  1978.00
                                  99.99
                                          0.0000
                                                         362.25
                                                                     72.4500
84
        93.0200
                  1348.25
                                  75.00
                                          0.0000
                                                          4.75
                                                                      1.8525
85
        97.5900
                 1804.00
                                  75.00
                                         1.4850
                                                         85.00
                                                                      8.5000
101
       114.1325 1649.75
                                  83.00
                                         1.7325
                                                         51.50
                                                                     14.6475
109
        94.9250
                                  75.00
                                                         25.50
                 1655.75
                                           1.4850
                                                                      2.5500
. . .
                                   . . .
                                              . . .
99199
        97.2875
                                  94.99
                                           0.0000
                                                         86.25
                                                                     21.5625
                  1382.50
99297
       237.7525
                  2495.25
                                 154.99
                                          1.7325
                                                         36.00
                                                                      5.4000
99498 141.4825
                  1850.75
                                  75.00 11.6325
                                                         195.00
                                                                     48.7500
99509
      156.7125
                  3140.75
                                 159.99
                                           2.7225
                                                           0.00
                                                                      0.0000
99537 149.2200
                  2032.00
                                  97.49
                                           5.4450
                                                         234.50
                                                                     58.6250
       vceovr Mean datovr Mean roam Mean change mou ... forgntvl ethnic
20
           72.4500
                          0.0000
                                     0.0000
                                                -1007.00
                                                                     0.0
                                                                                Ζ
                                                          . . .
84
            0.0000
                          1.8525
                                     1.9200
                                                                                S
                                                 -165.25
                                                                     0.0
                                                          . . .
85
            8.5000
                          0.0000
                                      0.0000
                                                 -343.00 ...
                                                                                Ν
                                                                     0.0
                                                 -176.75 ...
101
            1.8750
                         12.7725
                                     0.0000
                                                                     0.0
                                                                                U
109
                          0.0000
                                     0.0000
            2.5500
                                                  -51.75 ...
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           21.5625
99199
                          0.0000
                                     0.0000
                                                 -302.50
                                                                     0.0
                                                                                Ν
                                                          . . .
99297
                          0.0000
                                                                     0.0
            5.4000
                                      0.0975
                                                  258.75 ...
                                                                                J
99498
           48.7500
                          0.0000
                                      0.0000
                                                   16.25
                                                                     0.0
                                                                                D
                                                          . . .
99509
            0.0000
                          0.0000
                                      0.0000
                                                 -201.75
                                                                     0.0
                                                                                Ν
                                                          . . .
99537
           58.6250
                          0.0000
                                      0.1600
                                                  442.00
                                                                     0.0
                                                                                П
       kid0_2
               kid3_5
                       kid6_10
                                 kid11_15 kid16_17
                                                      creditcd
                                                                eqpdays
20
                    U
                              U
                                         U
                                                   U
                                                                   143.0
            U
                                                              Υ
84
            U
                     U
                              U
                                         U
                                                   U
                                                              Υ
                                                                    10.0
            U
                                                   U
85
                     U
                              U
                                         U
                                                              Υ
                                                                   175.0
            U
                                                   U
101
                    U
                              U
                                         U
                                                              Υ
                                                                   306.0
109
            U
                    U
                              U
                                         Υ
                                                   Υ
                                                              Υ
                                                                   314.0
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99199
            U
                    Υ
                              Υ
                                        U
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                                                              Υ
                                                                   429.0
                                                   U
99297
            U
                    U
                              U
                                         U
                                                              Υ
                                                                   76.0
            U
                    U
                              Υ
                                         Υ
                                                   U
                                                              Υ
99498
                                                                   736.0
                                                                   278.0
99509
            U
                    U
                              U
                                         U
                                                   U
                                                              Υ
                              U
                                         U
                                                   U
99537
            U
                                                                   250.0
       Customer ID
20
           1000021
84
           1000085
85
           1000086
101
           1000102
109
           1000110
99199
           1099200
99297
           1099298
99498
           1099499
99509
           1099510
99537
           1099538
[1429 rows x 100 columns]
Outliers in column 'complete_Mean':
```

rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev Mean \

```
14
       212.5150
                   1971.50
                                    84.99
                                            2.2275
                                                           249.50
                                                                        99.8000
20
                   1978.00
                                    99.99
                                            0.0000
       172.4400
                                                           362.25
                                                                        72.4500
84
        93.0200
                   1348.25
                                    75.00
                                            0.0000
                                                             4.75
                                                                         1.8525
85
        97.5900
                   1804.00
                                    75.00
                                            1.4850
                                                            85.00
                                                                         8.5000
101
       114.1325
                   1649.75
                                    83.00
                                            1.7325
                                                            51.50
                                                                        14.6475
. . .
                                      . . .
             . . .
                        . . .
                                               . . .
                                                              . . .
                                                                            . . .
       141.4825
                   1850.75
                                                           195.00
                                                                        48.7500
99498
                                    75.00
                                           11.6325
99509
       156.7125
                   3140.75
                                   159.99
                                            2.7225
                                                             0.00
                                                                         0.0000
99537
       149.2200
                   2032.00
                                    97.49
                                            5.4450
                                                           234.50
                                                                        58.6250
99852
        37.0300
                    615.00
                                    44.99
                                            0.9900
                                                             3.00
                                                                         1.0500
99872 534.9300
                   4719.00
                                    10.00
                                            6.9300
                                                          2018.00
                                                                       515.0000
       vceovr_Mean datovr_Mean roam_Mean change_mou
                                                            ... forgntvl ethnic
             99.800
                           0.0000
                                      35.4975
14
                                                   -200.50
                                                                        0.0
                                                                                   N
             72.450
                           0.0000
                                       0.0000
                                                  -1007.00 ...
                                                                                   Ζ
20
                                                                        0.0
84
             0.000
                           1.8525
                                       1.9200
                                                   -165.25
                                                                        0.0
                                                                                   S
                                                            . . .
85
                                                                                   Ν
              8.500
                           0.0000
                                       0.0000
                                                   -343.00
                                                                        0.0
101
              1.875
                          12.7725
                                       0.0000
                                                   -176.75
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99498
             48.750
                           0.0000
                                       0.0000
                                                     16.25
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                                                                                   D
                           0.0000
                                       0.0000
                                                                        0.0
99509
              0.000
                                                   -201.75
                                                                                   N
                                                            . . .
                           0.0000
                                                    442.00
                                                                        0.0
                                                                                   U
99537
             58.625
                                       0.1600
                                                            . . .
                                                                                   Н
99852
              1.050
                           0.0000
                                       0.0000
                                                      0.00
                                                                        0.0
99872
            485.750
                          29.2500
                                       0.0000
                                                      0.00
                                                                        0.0
                                                             . . .
       kid0 2
               kid3 5
                        kid6_10
                                  kid11_15 kid16_17
                                                        creditcd
                                                                   eqpdays
                                                     U
14
            U
                     U
                               Υ
                                          U
                                                                Υ
                                                                      199.0
20
             U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     143.0
84
             U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                       10.0
85
             U
                     U
                               U
                                          U
                                                     U
                                                                      175.0
                                                                Υ
             U
                     U
                               U
                                          U
                                                     U
101
                                                                Υ
                                                                      306.0
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                                        . . .
                                                   . . .
                                          Υ
                                                     U
99498
            U
                     U
                               Υ
                                                                Υ
                                                                     736.0
                                                     U
99509
            U
                     П
                               U
                                          U
                                                                Υ
                                                                     278.0
99537
             U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                      250.0
99852
             U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                      140.0
                     IJ
                               U
                                                     U
             U
                                          U
                                                                       62.0
99872
       Customer ID
14
            1000015
20
            1000021
84
            1000085
85
            1000086
101
            1000102
99498
            1099499
99509
            1099510
99537
            1099538
99852
            1099853
            1099873
99872
[1410 rows x 100 columns]
Outliers in column 'callfwdv Mean':
       rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean
1053
        57.6350
                    218.25
                                 55.0000
                                            0.2475
                                                             0.00
                                                                         0.0000
1352
        43.3175
                    340.25
                                 37.4900
                                            0.2475
                                                             0.00
                                                                         0.0000
1437
        51.2125
                    312.00
                                                            37.25
                                                                        11.1750
                                 35.0000
                                            0.2475
2005
        79.7350
                    642.75
                                 39.9900
                                            2.4750
                                                            83.00
                                                                        29.0500
2497
       138.6975
                   1849.25
                                119.9900
                                            5,4450
                                                            80.75
                                                                        12.1125
                        . . .
                                      . . .
                                                             . . .
93884
        47.2550
                    354.75
                                 49.9900
                                            0.2475
                                                             0.50
                                                                         0.2000
94076
       100.2150
                   1599.50
                                 94.9900
                                            0.0000
                                                            43.50
                                                                        15.2250
                                                             0.00
94282
        40.4850
                    862.25
                                 49.9900
                                            0.4950
                                                                         0.0000
```

96399

148.8800

1140.50

58.9425

5.1975

143.00

57.2000

96790 39.9900 755.25 39.9900 0.0000 0.00 0.0000 datovr_Mean roam Mean forgntvl vceovr Mean change_mou . . . ethnic 1053 0.0000 0.0 0.0000 -123.25 0.0 N . . . S 1352 0.0000 0.0 0.0000 -253.25 0.0 1437 11.1750 0.0 0.0000 -149.00 1.0 Н . . . 2005 Н 29.0500 0.0 0.0000 94.25 0.0 . . . -229.25 S 2497 12.1125 0.0 0.0000 0.0 0.0 93884 0.0 0.5175 Ν 0.2000 -260.75 . . . 94076 15.2250 0.0 0.0000 296.50 0.0 S 94282 0.0000 0.0 0.0000 -243.25 0.0 Ν 57.2000 0.0 34.7900 -625.50 D 96399 0.0 96790 0.0000 0.0 0.0000 -144.25 0.0 Н kid0 2 kid3_5 kid6_10 kid11_15 kid16_17 creditcd eqpdays U U U 1053 U U Υ 284.0 1352 U U U U U 842.0 Υ 1437 Υ U U U U Υ 212.0 U U 2005 U U U Υ 323.0 U U U U U 50.0 2497 Υ 93884 U U U U U Υ 126.0 94076 U U U Υ U Υ 70.0 IJ U Υ U 94282 П Υ 269.0 U U U U U 96399 Υ 214.0 96790 U U U U -4.0 Customer_ID 1053 1001054 1352 1001353 1437 1001438 2005 1002006 2497 1002498 1093885 93884 1094077 94076 94282 1094283 96399 1096400 96790 1096791 [94 rows x 100 columns] Outliers in column 'callwait Mean': rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev_Mean 18 1212.75 49.99 0.7425 55.270000 0.000000 0.000000 20 172.440000 1978.00 99.99 0.0000 362.250000 72.450000 26 51.025000 382.25 48.79 1.4850 0.750000 0.075000 0.0000 47 78.287500 851.50 85.00 0.000000 0.000000 84 93.020000 1348.25 75.00 0.0000 4.750000 1.852500 99717 197.945000 50.00 5.4450 475.000000 1118.50 142.500000 99721 52.020000 710.25 46.86 2.7225 0.000000 0.000000 99739 47.420000 565.25 30.00 0.4950 47.500000 16.625000 188.396667 99760 1289.00 24.84 0.0000 653.666667 163.556667 99849 99.150000 927.50 70.00 5.9400 32.000000 8.000000 vceovr Mean datovr Mean roam Mean change mou forgntvl ethnic 18 0.000000 0.0000 1.285 169.25 0.0 Ν 20 72,450000 0.0000 0.000 -1007.00 0.0 Ζ 26 0.075000 0.0000 0.000 226.75 0.0 N 47 0.000000 0.0000 0.000 -205.50 0.0 Н . . . 84 0.000000 1.8525 1.920 -165.25 0.0 S . 142.500000 0.0000 0.000 30.50 99717 0.0

```
0.0000
                                                                                       S
99721
           0.000000
                                          0.000
                                                      -396.25
                                                                           0.0
                                                                                       S
99739
          16.625000
                            0.0000
                                          0.000
                                                     -236.25
                                                                           0.0
99760
         163.166667
                            0.3900
                                          0.000
                                                     -1288.00
                                                                           0.0
                                                                                       Ζ
                                                                . . .
99849
           8.000000
                            0.0000
                                         15.210
                                                       -55.50
                                                                           0.0
                                                                                       Ν
        kid0 2
                 kid3 5
                          kid6 10
                                    kid11 15
                                                kid16 17
                                                           creditcd
                                                                       eapdays
                      IJ
                                 U
                                            U
                                                        U
                                                                         408.0
18
             П
                                                                   Υ
20
             U
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                                 U
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                                                                         143.0
                                                        Υ
26
             U
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                                                                   Υ
                                                                         265.0
             U
                                                        U
47
                      U
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                                            U
                                                                   Υ
                                                                         151.0
84
             U
                      U
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                                                                   Υ
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99717
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                                            Υ
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                                                                         917.0
                      Υ
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                                                                         524.0
99721
                                                                   Υ
99739
             U
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                                            U
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                                                                   Υ
                                                                         495.0
99760
             IJ
                      IJ
                                 U
                                            U
                                                        U
                                                                   Υ
                                                                         107.0
             U
                      IJ
                                 U
                                                        U
                                                                         408.0
99849
                                            U
        Customer_ID
18
            1000019
20
            1000021
26
            1000027
47
            1000048
84
            1000085
99717
            1099718
99721
            1099722
99739
            1099740
99760
            1099761
99849
            1099850
[3268 rows x 100 columns]
Outliers in column 'months':
        rev_Mean mou_Mean totmrc_Mean da_Mean
                                                        ovrmou_Mean
                                                                      ovrrev_Mean
0
         23.9975
                     219.25
                                   22.5000
                                               0.2475
                                                                0.00
                                                                            0.0000
4
         55.2300
                     570.50
                                   71.9800
                                               0.0000
                                                                0.00
                                                                            0.0000
9
                      25.50
                                   29.9900
                                                                0.00
                                                                            0.0000
         31.6625
                                               0.2475
14
        212.5150
                    1971.50
                                   84.9900
                                               2.2275
                                                              249.50
                                                                           99.8000
16
         63.0175
                     440.25
                                   59.9800
                                               0.0000
                                                                5.75
                                                                             1.7250
. . .
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                                                                 . . .
        482.0000
                    3800.00
                                  148.4500
                                               5.1975
                                                              827.25
                                                                          286.5875
98071
98082
         73.0650
                     603.00
                                   39.1875
                                               0.2475
                                                              142.75
                                                                           43.0050
98134
         53.2250
                     244.25
                                   40.0000
                                               0.0000
                                                                0.00
                                                                            0.0000
         22.4950
                                   24.9900
                                               1.9800
                                                                0.00
98159
                      74.75
                                                                             0.0000
         30.0975
                                               0.0000
                                                                0.00
                                                                            0.0000
98170
                     192.75
                                   30.0000
        vceovr_Mean
                      datovr_Mean
                                     roam_Mean
                                                  change_mou
                                                                      forgntvl
                                                                                 ethnic
                                                                . . .
0
              0.000
                            0.0000
                                         0.0000
                                                      -157.25
                                                                           0.0
                                                                                       Ν
                                                                . . .
                                                                                       Ι
4
              0.000
                            0.0000
                                         0.0000
                                                                           0.0
                                                        38.50
9
              0.000
                            0.0000
                                                        59.50
                                                                                       Ν
                                         0.0000
                                                                           1.0
                                                               . . .
14
             99.800
                            0.0000
                                        35.4975
                                                      -200.50
                                                                           0.0
                                                                                       Ν
16
               1.725
                            0.0000
                                         1.3125
                                                       -16.25
                                                                           0.0
                                                                                       Ν
                                                                . . .
                                . . .
. . .
                 . . .
                                             . . .
                                                          . . .
                                                                . . .
                                                                            . . .
            285.800
                            0.7875
                                                       345.00
                                                                                       Н
98071
                                         1.3650
                                                                . . .
                                                                           0.0
98082
             42.225
                            0.7800
                                         0.0000
                                                      -603.00
                                                                . . .
                                                                           0.0
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98134
              0.000
                            0.0000
                                         0.0000
                                                       -96.25
                                                                           0.0
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                                                                . . .
                                                                                       Ι
              0.000
                            0.0000
                                                       -24.75
                                                                           0.0
98159
                                         0.0000
                                                                                       Н
98170
              0.000
                            0.0000
                                         0.0975
                                                        64.25
                                                                           0.0
                kid3 5
        kid0 2
                          kid6 10
                                    kid11 15
                                               kid16 17
                                                           creditcd
                                                                       eqpdays
0
             U
                      U
                                 U
                                            U
                                                        U
                                                                   Υ
                                                                         361.0
4
             U
                      U
                                 U
                                            U
                                                        U
                                                                   Υ
                                                                         434.0
9
             U
                      U
                                 U
                                            U
                                                        U
                                                                   Υ
                                                                         601.0
14
                      U
                                 Υ
                                            U
                                                        U
                                                                         199.0
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U

U

U

16

98071 98082 98134 98159 98170	 U U U U	 U U U U	 U U U U	 U U U		 U U U U	Y Y Y Y	-1.0 274.0 110.0 756.0 776.0		
0 4 9 14 16 	Customer_1 100000 100001 100001 100001	01 05 10 15 17								
98082 98134 98159 98170	109808 109813 109816 109817	33 35 50								
[585 r	ows x 100 d	columns]								
Outlie	rs in colum									
1.4	rev_Mean	mou_Mear			da_Mean		u_Mean	ovrrev_M		
14 47	212.5150 78.2875	1971.50 851.50		84.99 85.00	2.2275 0.0000		249.50 0.00	99.8 a a	1000	
101	114.1325	1649.75		83.00	1.7325		51.50	14.6		
240	47.5000	255.56		50.00	0.0000		0.00		000	
256	78.6375	960.75		75.00	0.2475		0.00		000	
• • •		• • •	,							
98997	27.7375	148.50)	32.49	0.2475		0.00	0.0	000	
99074	51.1500	209.25		50.00	0.9900		0.00		000	
99161	53.9500	691.75		69.99	3.9600		0.00		000	
99196	91.2800	945.00		84.99	0.0000		0.00		000	
99575	17.1925	313.75	5	10.00	2.2275		9.75	3.9	000	
	vceovr Mea	an datos	/r_Mean	roam_Me	an cha	nge_mou		forgntvl	ethnic	. \
14	99.86		0.0000	35.49		-200.50		0.0	N	
47	0.00		0.0000	0.00		-205.50		0.0	H	
101	1.87		12.7725	0.00		-176.75		0.0	U	
240	0.00		0.0000	0.00		-182.50		1.0	N	
256	0.00		0.0000	0.39		-54.75		0.0	U	
• • •		. •								
98997	0.00		0.0000	0.00		23.50		0.0	0	
99074	0.00		0.0000	0.16		94.75		1.0	N	
99161	0.00		0.0000	0.00		-321.75		0.0	N	
99196	0.00		0.0000	1.72		-274.00		1.0	0	
99575	3.96	00	0.0000	1.06	50	179.25	• • •	0.0	Н	
	kid0_2 ki	id3_5 ki	id6_10	kid11_15	kid16	17 cr	editcd	eqpdays	\	
14	U U	U U	Y	U	KIGIO	, c.	Y	199.0	`	
47	Ü	Ü	Ü	U		Ü	Y	151.0		
101	U	U	U	U		U	Υ	306.0		
240	U	U	U	U		U	Υ	1088.0		
256	U	U	Υ	U		U	Υ	643.0		
• • •	• • •	• • •		• • •						
98997	U	Υ	U	U		U	Υ	530.0		
99074	U	Υ	Υ	U		U	Υ	344.0		
99161	U	U	U	U		Y	Y	351.0		
99196	U	Y	U	U		U	Y	557.0		
99575	U	U	U	Y		Υ	Υ	238.0		
	Customas 3	rD								

U

530.0

U

Customer_ID 14 1000015

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47
            1000048
101
            1000102
240
            1000241
256
            1000257
. . .
98997
            1098998
            1099075
99074
99161
            1099162
99196
            1099197
99575
            1099576
[1118 rows x 100 columns]
Outliers in column 'actvsubs':
       rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev Mean \
47
        78.2875
                    851.50
                                    85.00
                                             0.0000
                                                             0.00
                                                                          0.0000
101
       114.1325
                   1649.75
                                    83.00
                                             1.7325
                                                             51.50
                                                                         14.6475
240
        47.5000
                    255.50
                                    50.00
                                             0.0000
                                                             0.00
                                                                          0.0000
256
        78.6375
                    960.75
                                    75.00
                                             0.2475
                                                             0.00
                                                                          0.0000
        86.2500
                                             0.0000
                                                             0.00
                                                                          0.0000
314
                       0.00
                                    83.00
             . . .
                        . . .
                                      . . .
                                                . . .
                                                              . . .
                                                                             . . .
       131.3475
                                    84.99
                                             0.4950
                                                           160.00
                                                                         63.9800
98491
                   1194.50
        72.9450
                                             2.9700
                                                           372.50
98652
                   2712.00
                                    10.00
                                                                         56.7250
98997
        27.7375
                    148.50
                                    32.49
                                             0.2475
                                                             0.00
                                                                          0.0000
99074
        51.1500
                     209.25
                                    50.00
                                             0.9900
                                                             0.00
                                                                          0.0000
99575
        17.1925
                                    10.00
                                             2.2275
                                                             9.75
                                                                          3.9000
                     313.75
       vceovr_Mean datovr_Mean roam_Mean
                                                change_mou
                                                                   forgntvl ethnic
                                                             . . .
47
              0.000
                           0.0000
                                                   -205.50
                                                                         0.0
                                       0.0000
                                                                                    Н
                                                             . . .
101
              1.875
                          12.7725
                                       0.0000
                                                    -176.75
                                                                         0.0
                                                                                    U
                                                              . . .
240
              0.000
                           0.0000
                                                    -182.50
                                       0.0000
                                                                         1.0
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256
              0.000
                           0.0000
                                       0.3900
                                                     -54.75
                                                                         0.0
                                                                                    U
                                                             . . .
314
              0.000
                           0.0000
                                        0.0000
                                                       0.00 ...
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                . . .
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                               . . .
                                           . . .
                                                              . . .
98491
             63.200
                           0.7800
                                       1.6575
                                                     189.50
                                                                         0.0
                                                                                    Ν
98652
             56.725
                           0.0000
                                       0.0000
                                                      24.00
                                                                         0.0
                                                                                    Ν
98997
              0.000
                           0.0000
                                       0.0000
                                                      23.50
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                                                             . . .
              0.000
                           0.0000
                                                                                    Ν
99074
                                       0.1600
                                                      94.75
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                                                             . . .
99575
              3.900
                           0.0000
                                        1.0650
                                                     179.25
                                                                         0.0
                                                                                    Н
                                                             . . .
       kid0 2
               kid3 5
                         kid6 10
                                   kid11 15 kid16 17
                                                         creditcd
                                                                    eqpdays
47
             U
                      U
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                                                                 Υ
                                                                      151.0
101
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                                                                      306.0
240
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                                                                 Υ
                                                                     1088.0
256
             U
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                               Υ
                                           U
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314
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98491
             U
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                                                                      140.0
98652
             U
                     Υ
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                                                                      279.0
                                                      U
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                     Υ
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                                          U
                                                                 Υ
98997
                                                                      530.0
99074
             U
                     Υ
                               Υ
                                           U
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                                                                 Υ
                                                                      344.0
                      H
                               U
                                           Υ
                                                      Υ
99575
             U
                                                                      238.0
       Customer_ID
47
            1000048
101
            1000102
240
            1000241
256
            1000257
314
            1000315
. . .
                . . .
98491
            1098492
98652
            1098653
98997
            1098998
99074
            1099075
99575
            1099576
```

```
[422 rows x 100 columns]
Outliers in column 'totcalls':
       rev_Mean mou_Mean totmrc_Mean
                                           da_Mean ovrmou_Mean ovrrev_Mean
       212.5150
                                             2.2275
                                                           249.50
                                                                         99.8000
14
                   1971.50
                                    84.99
                                                              0.00
18
        55.2700
                   1212.75
                                    49.99
                                             0.7425
                                                                          0.0000
20
       172,4400
                   1978.00
                                    99.99
                                             0.0000
                                                           362.25
                                                                         72,4500
26
        51.0250
                     382.25
                                    48.79
                                             1.4850
                                                              0.75
                                                                          0.0750
47
        78.2875
                     851.50
                                    85.00
                                             0.0000
                                                              0.00
                                                                          0.0000
. . .
             . . .
                        . . .
                                     . . .
                                                . . .
                                                              . . .
                                                                             . . .
99373
        91.3350
                     580.50
                                    32.49
                                             0.4950
                                                           192.00
                                                                         58.2525
99498
       141.4825
                   1850.75
                                    75.00
                                            11.6325
                                                           195.00
                                                                         48.7500
99509
       156.7125
                    3140.75
                                   159.99
                                             2.7225
                                                              0.00
                                                                          0.0000
99510
                                    74.99
                                                              2.25
        84.7125
                     908.75
                                             0.4950
                                                                          0.8775
99872 534.9300
                    4719.00
                                    10.00
                                             6.9300
                                                           2018.00
                                                                        515.0000
                      datovr_Mean
                                    roam_Mean
                                                              . . .
                                                                   forgntvl
       vceovr Mean
                                                change_mou
                                                                              ethnic
14
             99.800
                           0.0000
                                       35.4975
                                                    -200.50
                                                                         0.0
                                                              . . .
                           0.0000
                                                                         0.0
18
              0.000
                                       1.2850
                                                     169.25
                                                                                    N
                                                              . . .
20
                           0.0000
                                                                         0.0
                                                                                    Ζ
             72.450
                                       0.0000
                                                   -1007.00
                                                             . . .
26
              0.075
                           0.0000
                                        0.0000
                                                     226.75
                                                                         0.0
                                                             . . .
47
              0.000
                           0.0000
                                        0.0000
                                                    -205.50
                                                                         0.0
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99373
             55.425
                           2.8275
                                       0.0975
                                                    -580.50
                                                                         0.0
                                                                                    Ν
                                                              . . .
99498
                           0.0000
                                       0.0000
                                                                         0.0
                                                                                    D
             48.750
                                                      16.25
                                                             . . .
99509
                           0.0000
                                       0.0000
                                                    -201.75
                                                                         0.0
                                                                                    Ν
              0.000
99510
              0.000
                           0.8775
                                        0.0000
                                                      43.25
                                                             . . .
                                                                         0.0
                                                                                    Н
99872
            485.750
                          29.2500
                                       0.0000
                                                       0.00
                                                                         0.0
                                                                                    N
                                                             . . .
       kid0 2
                kid3 5
                         kid6_10
                                   kid11_15
                                             kid16_17
                                                         creditcd
                                                                    eqpdays
                      U
                                           U
                                                      U
                                                                      199.0
14
             U
                                Υ
                                                                 Υ
18
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      408.0
20
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      143.0
             IJ
                      IJ
                                U
                                           U
                                                      Υ
                                                                 Υ
                                                                      265.0
26
47
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      151.0
                                                    . . .
                              . . .
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                                                                      317.0
99373
             U
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                                                                 Υ
99498
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                      U
                                Υ
                                           Υ
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                                                                      736.0
             U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      278.0
99509
                      U
             U
                      U
                                U
                                           U
                                                      Υ
                                                                 Υ
                                                                      469.0
99510
99872
             U
                      U
                                U
                                           U
                                                      U
                                                                        62.0
        Customer ID
14
            1000015
18
            1000019
20
            1000021
26
            1000027
47
            1000048
99373
            1099374
99498
            1099499
99509
            1099510
99510
            1099511
99872
            1099873
[1977 rows x 100 columns]
Outliers in column 'totmou':
       rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev Mean
14
        212.5150
                   1971.50
                                    84.99
                                             2,2275
                                                           249.50
                                                                         99.8000
                                    49.99
                                             0.7425
                                                              0.00
                                                                          0.0000
18
        55.2700
                   1212.75
20
        172.4400
                   1978.00
                                    99.99
                                             0.0000
                                                           362.25
                                                                         72.4500
26
        51.0250
                     382.25
                                    48.79
                                             1.4850
                                                              0.75
                                                                          0.0750
47
                                    85.00
                                             0.0000
                                                              0.00
                                                                          0.0000
        78.2875
                     851.50
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3.4650
99362
       91.3400
                   1032.75
                                   80.00
                                                           31.50
                                                                        7.8750
99498 141.4825
                   1850.75
                                   75.00
                                           11.6325
                                                           195.00
                                                                        48.7500
99509
       156.7125
                   3140.75
                                   159.99
                                            2.7225
                                                             0.00
                                                                         0.0000
99510
        84.7125
                    908.75
                                   74.99
                                            0.4950
                                                             2.25
                                                                         0.8775
99721
                    710.25
                                   46.86
                                                             0.00
                                                                         0.0000
        52.0200
                                            2.7225
                                                            ... forgntvl ethnic
       vceovr_Mean datovr_Mean roam_Mean change_mou
14
             99.800
                           0.0000
                                      35.4975
                                                   -200.50
                                                                        0.0
                                                                                  N
18
             0.000
                           0.0000
                                       1.2850
                                                    169.25
                                                                        0.0
                                                                                  Ν
                                                            . . .
20
             72,450
                           0.0000
                                       0.0000
                                                  -1007.00
                                                                        0.0
                                                                                  Ζ
                                                            . . .
26
              0.075
                           0.0000
                                       0.0000
                                                    226.75
                                                                        0.0
                                                                                  Ν
47
              0.000
                           0.0000
                                       0.0000
                                                   -205.50
                                                                        0.0
                                                                                  Н
                                                            . . .
. . .
                . . .
                              . . .
                                          . . .
                                                       . . .
                                                             . . .
                                                                        . . .
                           0.0000
                                       0.0000
99362
              7.875
                                                   -402.75
                                                                        0.0
                                                                                  N
                                                            . . .
                           0.0000
                                       0.0000
                                                                                  D
99498
             48.750
                                                     16.25
                                                            . . .
                                                                        0.0
99509
              0.000
                           0.0000
                                       0.0000
                                                   -201.75
                                                                        0.0
                                                                                  N
                                                            . . .
                                                                        0.0
                                                     43.25
                                                                                  Н
99510
              0.000
                           0.8775
                                       0.0000
99721
              0.000
                           0.0000
                                       0.0000
                                                   -396.25
                                                                        0.0
                                                                                  S
                                                             . . .
       kid0_2 kid3_5
                        kid6_10
                                  kid11_15 kid16_17
                                                        creditcd
                                                                   eqpdays
14
                     U
                                                     U
                                                                     199.0
            U
                               Υ
                                          U
                                                                Υ
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     408.0
18
20
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     143.0
26
            IJ
                     IJ
                               U
                                          U
                                                     Υ
                                                                ٧
                                                                      265.0
47
            IJ
                     IJ
                               U
                                          U
                                                     U
                                                                     151.0
                                                                Υ
. . .
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99362
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     189.0
99498
            U
                               Υ
                                          Υ
                                                     U
                                                                Υ
                                                                     736.0
                     U
99509
            U
                     U
                               U
                                          U
                                                     U
                                                                Υ
                                                                     278.0
            U
                     U
                               U
                                          U
                                                     Υ
                                                                     469.0
99510
                                                                Υ
                     IJ
                               IJ
                                                     U
            U
                                          U
                                                                     524.0
99721
       Customer ID
14
            1000015
18
            1000019
20
            1000021
26
            1000027
47
            1000048
99362
            1099363
99498
            1099499
99509
            1099510
99510
            1099511
99721
            1099722
[1766 rows x 100 columns]
Outliers in column 'totrev':
         rev Mean mou Mean
                               totmrc Mean da Mean
                                                       ovrmou Mean ovrrev Mean
14
       212.515000
                     1971.50
                                      84.99
                                              2.2275
                                                        249.500000
                                                                       99.800000
20
                                      99.99
                                              0.0000
                                                                        72.450000
       172.440000
                     1978.00
                                                        362.250000
26
        51.025000
                      382.25
                                      48.79
                                              1.4850
                                                           0.750000
                                                                        0.075000
40
        82.162500
                      660.00
                                      50.00
                                              0.0000
                                                        100.750000
                                                                        30.225000
47
        78.287500
                      851.50
                                      85.00
                                              0.0000
                                                           0.000000
                                                                         0.000000
. . .
                                        . . .
                                                  . . .
99364
       234.342500
                     1056.50
                                      44.99
                                              0.9900
                                                        566.750000
                                                                      198.362500
99498
       141.482500
                     1850.75
                                      75.00
                                             11.6325
                                                        195.000000
                                                                       48.750000
99509
                                     159.99
                                              2.7225
       156.712500
                     3140.75
                                                          0.000000
                                                                         0.000000
99510
        84.712500
                      908.75
                                      74.99
                                              0.4950
                                                           2.250000
                                                                         0.877500
99760
       188.396667
                     1289.00
                                      24.84
                                              0.0000
                                                        653.666667
                                                                      163.556667
       vceovr Mean
                     datovr Mean
                                   roam Mean
                                               change mou
                                                                  forgntvl
                                                                             ethnic
14
         99.800000
                           0.0000
                                      35.4975
                                                   -200.50
                                                                        0.0
                                                                                  Ν
                                                            . . .
20
         72.450000
                                                                        0.0
                                                                                   Ζ
                           0.0000
                                       0.0000
                                                  -1007.00
                                                             . . .
                           0.0000
                                       0.0000
                                                    226.75
                                                                        0.0
                                                                                  Ν
26
           0.075000
                                                             . . .
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0.0000

1.9375

-184.00

0.0

Ν

30.225000

40

```
-205.50
47
                           0.0000
                                        0.0000
           0.000000
                                                                         0.0
                                                                                     Н
                               . . .
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99364
        198.362500
                           0.0000
                                        0.0000
                                                     290.50
                                                                         0.0
                                                                                     Н
                                                              . . .
99498
                                                                         0.0
                                                                                     D
          48.750000
                           0.0000
                                        0.0000
                                                      16.25
99509
           0.000000
                            0.0000
                                        0.0000
                                                     -201.75
                                                                         0.0
                                                                                     Ν
                                                              . . .
                                                                                     Н
99510
           0.000000
                           0.8775
                                        0.0000
                                                      43.25
                                                                         0.0
                                                                                     Ζ
99760
        163.166667
                            0.3900
                                        0.0000
                                                   -1288.00
                                                                         0.0
                                                          creditcd
       kid0 2
                kid3_5
                         kid6 10
                                   kid11_15
                                              kid16_17
                                                                     eqpdays
14
             U
                      U
                                Υ
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                                                      U
                                                                  Υ
                                                                       199.0
20
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       143.0
26
             U
                      U
                                U
                                           U
                                                      Υ
                                                                       265.0
                                                                  Υ
             U
                                           Υ
40
                      U
                                U
                                                      U
                                                                       107.0
                                                                  Υ
             U
                                                      U
47
                      U
                                U
                                           U
                                                                  Υ
                                                                       151.0
99364
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       971.0
99498
             U
                      U
                                Υ
                                           Υ
                                                      U
                                                                  Υ
                                                                       736.0
99509
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
                                                                       278.0
99510
             U
                      U
                                U
                                           U
                                                      Υ
                                                                  Υ
                                                                       469.0
             U
                                U
                                           U
                                                                       107.0
99760
       Customer ID
14
            1000015
20
            1000021
26
            1000027
40
            1000041
47
            1000048
. . .
99364
            1099365
99498
            1099499
99509
            1099510
99510
            1099511
99760
            1099761
[1538 rows x 100 columns]
Outliers in column 'adjrev':
                                               da Mean
          rev Mean
                    mou Mean
                                totmrc Mean
                                                         ovrmou Mean
                                                                       ovrrev Mean
14
       212.515000
                      1971.50
                                       84.99
                                                2.2275
                                                          249.500000
                                                                         99.800000
20
       172.440000
                      1978.00
                                       99.99
                                                0.0000
                                                          362.250000
                                                                          72.450000
                                       48.79
                                                1.4850
26
        51.025000
                       382.25
                                                            0.750000
                                                                          0.075000
40
                                                0.0000
        82.162500
                       660.00
                                       50.00
                                                          100.750000
                                                                          30.225000
47
        78.287500
                       851.50
                                       85.00
                                                0.0000
                                                            0.000000
                                                                           0.000000
                                                   . . .
99480
       153.070000
                       165.00
                                       84.99
                                                0.0000
                                                            1.500000
                                                                           0.585000
99498
       141.482500
                      1850.75
                                       75.00
                                               11.6325
                                                          195.000000
                                                                          48.750000
99509
       156.712500
                      3140.75
                                      159.99
                                                2.7225
                                                            0.000000
                                                                           0.000000
                                       74.99
99510
        84.712500
                       908.75
                                                0.4950
                                                            2.250000
                                                                           0.877500
99760
       188.396667
                      1289.00
                                       24.84
                                                0.0000
                                                          653.666667
                                                                         163.556667
                      datovr Mean
                                                                    forgntvl
        vceovr_Mean
                                     roam Mean
                                                 change_mou
                                                                               ethnic
14
          99.800000
                           0.0000
                                       35.4975
                                                    -200.50
                                                                         0.0
                                                                                     Ν
                                                              . . .
                                                                                     Ζ
20
          72.450000
                            0.0000
                                        0.0000
                                                   -1007.00
                                                                         0.0
                                                              . . .
26
                                                                                     N
           0.075000
                           0.0000
                                        0.0000
                                                     226.75
                                                                         0.0
40
          30.225000
                            0.0000
                                        1.9375
                                                    -184.00
                                                                         0.0
                                                              . . .
47
           0.000000
                            0.0000
                                        0.0000
                                                    -205.50
                                                                         0.0
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                                                              . . .
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                                           . . .
99480
           0.000000
                            0.5850
                                        0.0000
                                                     381.00
                                                                          0.0
                                                                                     G
99498
          48.750000
                            0.0000
                                        0.0000
                                                      16.25
                                                                         0.0
                                                                                     D
99509
           0.000000
                            0.0000
                                                                                     Ν
                                        0.0000
                                                    -201.75
                                                                          0.0
99510
           0.000000
                            0.8775
                                        0.0000
                                                      43.25
                                                                          0.0
                                                                                     Н
                                                              . . .
99760
        163.166667
                            0.3900
                                        0.0000
                                                   -1288.00
                                                                          0.0
                                                                                     Ζ
```

kid0_2 kid3_5 kid6_10 kid11_15 kid16_17 creditcd eqpdays \

					- 1	Lab6						
14	U	U	Υ		U		U	Υ	199.0			
20	U	U	U		U		U	Υ	143.0			
26	U	U	U		U		Υ	Υ	265.0			
40	U	U	U		Υ		U	Υ	107.0			
47	U	U	U		U		U	Υ	151.0			
• • •	• • •	• • •				•	• •	• • •	• • •			
99480	U	U	U		U		U	Υ	9.0			
99498	U	U	Υ		Υ		U	Υ	736.0			
99509	U	U	U		U		U	Υ	278.0			
99510	U	U	U		U		Υ	Υ	469.0			
99760	U	U	U		U		U	Υ	107.0			
	Customer_:											
14	10000											
20	10000											
26	10000											
40	100004											
47	100004											
00490		• •										
99480 99498	109948											
99509	109949 109953											
99510	10995											
99760	10997											
33700	10007	J_										
Г1542 r	ows x 100	columnsl										
	rs in colur		٠:									
	rev_Mean	mou_Mean		rc_Mean	da	Mean	ovrmou	ı Mean	ovrrev_M	lean	\	
14	212.5150	_ 1971.50		- 84.99		2275		_ 249.50	99.8		•	
18	55.2700	1212.75		49.99		7425		0.00		000		
20	172.4400	1978.00		99.99		0000	3	362.25	72.4			
26	51.0250	382.25		48.79		4850		0.75		750		
47	78.2875	851.50		85.00	0.	0000		0.00	0.0	000		
99362	91.3400	1032.75		80.00	3.	4650		31.50	7.8	750		
99498	141.4825	1850.75		75.00	11.	6325	1	L95.00	48.7	500		
99509	156.7125	3140.75		159.99	2.	7225		0.00	0.0	000		
		908.75		74.99	0.	4950		2.25	0.8	775		
99721	52.0200	710.25		46.86	2.	7225		0.00	0.0	000		
	vceovr_Mea		_	_			ge_mou		forgntvl	ethn		١
14	99.80		.0000	35.4			200.50		0.0		N	
18	0.00		.0000		850		169.25		0.0		N	
20	72.4		.0000	0.0			007.00		0.0		Z	
26	0.07		.0000				226.75		0.0		N	
47	0.00		.0000	0.0			205.50		0.0		Н	
 99362	7.8		.0000	0.0			402.75		0.0	•	 N	
99498	48.7		.0000				16.25		0.0		D	
99509	0.00		.0000				201.75		0.0		N	
99510	0.00		.8775				43.25		0.0		Н	
99721	0.00		.0000		000		396.25		0.0		S	
33,22	0.0		.0000	0.0			330.23	•••	0.0		_	
	kid0_2 k	id3 5 kid	6 10	kid11 1	.5 k	id16 :	17 cre	editcd	egpdays	\		
14	U	U	Υ		U	_	U	Υ	199.0	•		
18	U	U	U		U		U	Υ	408.0			
20	U	U	U		U		U	Υ	143.0			
26	U	U	U		U		Υ	Υ	265.0			
47	U	U	U		U		U	Υ	151.0			
		• • •										
99362	U	U	U		U		U	Υ				
99498	U	U	Υ		Υ		U	Υ	736.0			
99509	U	U	U		U		U	Υ	278.0			
99510	U	U	U		U		Υ	Υ	469.0			

99721 U U U U U 524.0 Customer_ID 14 1000015 18 1000019 20 1000021 26 1000027 47 1000048 99362 1099363 99498 1099499 99509 1099510 99510 1099511 99721 1099722 [1766 rows x 100 columns] Outliers in column 'adjqty': rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean ovrrev_Mean \ 2.2275 249.50 99.8000 14 212.5150 1971.50 84.99 18 55.2700 1212.75 49.99 0.7425 0.00 0.0000 20 172.4400 1978.00 99.99 0.0000 362.25 72.4500 26 51.0250 382.25 48.79 1.4850 0.75 0.0750 47 0.00 0.0000 78.2875 851.50 85.00 0.0000 . 99373 91.3350 580.50 32.49 0.4950 192.00 58.2525 99498 141.4825 1850.75 75.00 11.6325 195.00 48.7500 99509 156.7125 3140.75 159.99 2.7225 0.00 0.0000 99510 84.7125 908.75 74.99 0.4950 2.25 0.8775 99872 534.9300 4719.00 10.00 6.9300 2018.00 515.0000 datovr Mean roam Mean change mou forgntvl ethnic vceovr Mean . . . 14 99.800 0.0000 35.4975 -200.50 0.0 . . . 0.000 0.0000 1.2850 0.0 Ν 18 169.25 . . . 20 72.450 0.0000 0.0 7 0.0000 -1007.00 26 0.075 0.0000 0.0000 226.75 0.0 Ν 47 0.000 0.0000 0.0000 -205.50 0.0 Н 99373 55.425 2.8275 0.0975 -580.50 0.0 . . . 99498 48.750 0.0000 0.0000 16.25 0.0 D -201.75 0.0 99509 0.000 0.0000 0.0000 Ν 99510 0.000 0.8775 0.0000 43.25 0.0 Н . . . 99872 485.750 29.2500 0.0000 0.00 0.0 . . . kid0 2 kid3 5 kid6 10 kid11_15 kid16 17 creditcd eqpdays U Υ U 199.0 14 U U Υ U 18 U U U U Υ 408.0 20 U U U U U 143.0 Υ 26 U U U U Υ Υ 265.0 U 47 U U U U Υ 151.0 99373 U U U U U Υ 317.0 99498 U U Υ Υ U Υ 736.0 U U U U U 278.0 99509 Υ U U U Υ 99510 U Υ 469.0 99872 U U U U U 62.0 Customer ID 14 1000015 18 1000019 20 1000021 26 1000027 47 1000048 99373 1099374

```
99498
            1099499
99509
            1099510
            1099511
99510
99872
            1099873
[1970 rows x 100 columns]
Outliers in column 'avgrev':
                                               da Mean
                                                         ovrmou Mean
          rev Mean
                     mou Mean
                                totmrc_Mean
                                                                       ovrrev Mean
14
        212.515000
                      1971.50
                                     84.9900
                                                2.2275
                                                          249.500000
                                                                          99.800000
20
       172.440000
                      1978.00
                                     99.9900
                                                0.0000
                                                          362.250000
                                                                          72.450000
114
       113.522500
                      1807.25
                                     85.0000
                                                1.9800
                                                          102.000000
                                                                          10.200000
123
       159.517500
                      2255.75
                                     82.9900
                                                3.2175
                                                          666.500000
                                                                          66.650000
127
        281.330000
                      3807.75
                                    182.9375
                                                8.4150
                                                          759.000000
                                                                          88.500000
                          . . .
                                         . . .
                                     75,0000
99498
       141.482500
                      1850.75
                                               11.6325
                                                          195.000000
                                                                          48.750000
99509
       156.712500
                      3140.75
                                    159.9900
                                                2.7225
                                                                           0.000000
                                                            0.000000
                                                          475.000000
99717
       197.945000
                      1118.50
                                     50.0000
                                                5.4450
                                                                         142.500000
       188.396667
                      1289.00
                                     24.8400
                                                0.0000
                                                                         163.556667
99760
                                                          653.666667
99849
        99.150000
                       927.50
                                     70.0000
                                                5.9400
                                                           32.000000
                                                                           8.000000
                      datovr Mean
                                                                    forgntvl
       vceovr Mean
                                     roam Mean
                                                 change_mou
                                                                               ethnic
                                                               . . .
14
          99.800000
                             0.000
                                                    -200.50
                                                                          0.0
                                       35.4975
                                                                                     N
                             0.000
                                                                                     Ζ
20
          72.450000
                                        0.0000
                                                    -1007.00
                                                                          0.0
114
          10.200000
                             0.000
                                        1.0025
                                                     -373.25
                                                                          0.0
                                                                                     Ν
123
                             0.000
                                                    -2238.75
          66.650000
                                        0.5850
                                                                          0.0
                                                                                     Н
                                                               . . .
          88.425000
                             0.075
                                        0.0000
                                                                          0.0
                                                                                     Ν
127
                                                        5.25
                               . . .
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          48.750000
                             0.000
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99498
                                        0.0000
                                                       16.25
                                                                                     D
99509
           0.000000
                             0.000
                                        0.0000
                                                     -201.75
                                                                          0.0
                                                                                     Ν
                                                                                     Ν
99717
        142.500000
                             0.000
                                        0.0000
                                                       30.50
                                                                          0.0
                                                               . . .
                             0.390
                                                    -1288.00
                                                                          0.0
                                                                                     Ζ
99760
        163.166667
                                        0.0000
99849
           8.000000
                             0.000
                                       15.2100
                                                      -55.50
                                                                          0.0
                                                                                     N
                                                               . . .
       kid0 2
                kid3_5
                         kid6 10
                                    kid11_15
                                               kid16_17
                                                          creditcd
                                                                     eqpdays
14
             U
                      U
                                Υ
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                                                                  Υ
                                                                        199.0
20
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                                                       U
                                                                  Υ
                                                                        143.0
             U
                                                       U
114
                      U
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                                                                        387.0
123
             U
                      U
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                                                                  Υ
                                                                        318.0
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127
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99498
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                      U
                                                                  Υ
99509
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                                U
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                                                       U
                                                                  Υ
                                                                        278.0
99717
             U
                      Υ
                                Υ
                                           Υ
                                                       U
                                                                  Υ
                                                                        917.0
             U
                      U
                                U
                                           U
                                                       U
                                                                        107.0
99760
                                                                  Υ
             U
                      U
                                U
                                           U
                                                       U
                                                                        408.0
99849
       Customer_ID
14
            1000015
20
            1000021
114
            1000115
123
            1000124
127
            1000128
. . .
99498
            1099499
99509
            1099510
99717
            1099718
99760
            1099761
99849
            1099850
[1510 rows x 100 columns]
Outliers in column 'avgmou':
                                    totmrc_Mean
                                                  da_Mean
          rev_Mean
                        mou_Mean
                                                            ovrmou_Mean
14
        212.515000
                     1971.500000
                                        84.9900
                                                   2.2275
                                                              249.500000
20
        172.440000
                     1978.000000
                                        99.9900
                                                   0.0000
                                                              362.250000
```

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85
        97.590000 1804.000000
                                       75.0000
                                                 1.4850
                                                            85.000000
                    1306.000000
92
                                       77.8975
                                                 0.0000
        72.810000
                                                             0.000000
                                       83.0000
                                                            51.500000
101
       114.132500
                    1649.750000
                                                  1.7325
. . .
               . . .
                                           . . .
                                                     . . .
99163
       193.956667
                                       84.1400
                                                  1.3200
                                                           429.333333
                    1502.000000
99204
       105.530000
                    1179.333333
                                       96.9900
                                                  4.2900
                                                            14.666667
99255
        46.682500
                     535.500000
                                       85.4900
                                                 6.1875
                                                             0.000000
99498
       141.482500
                    1850.750000
                                       75.0000
                                                11.6325
                                                           195.000000
99509
       156.712500
                   3140.750000
                                      159.9900
                                                  2.7225
                                                              0.000000
       ovrrev_Mean
                    vceovr_Mean datovr_Mean
                                                roam_Mean
                                                              change_mou
14
         99.800000
                       99.800000
                                         0.0000
                                                    35.4975
                                                             -200.500000
20
         72.450000
                       72,450000
                                         0.0000
                                                     0.0000 -1007.000000
85
          8.500000
                        8.500000
                                         0.0000
                                                     0.0000
                                                             -343.000000
92
          0.000000
                        0.000000
                                         0.0000
                                                     0.0000
                                                              -462.000000
101
         14.647500
                        1.875000
                                        12.7725
                                                     0.0000
                                                             -176.750000
. . .
                              . . .
                                            . . .
                                                        . . .
                                                                      . . .
                                                                            . . .
        107.333333
                      107.333333
                                         0.0000
                                                     0.0000
                                                               387.000000
99163
                                                                            . . .
99204
          3.666667
                        3.666667
                                         0.0000
                                                     0.0000
                                                             -178.333333
99255
          0.000000
                         0.000000
                                         0.0000
                                                     0.0000
                                                               150.500000
                                         0.0000
                                                     0.0000
99498
         48.750000
                       48.750000
                                                                16.250000
                                                                           . . .
          0.000000
                                         0.0000
                                                     0.0000
99509
                         0.000000
                                                             -201.750000
       forgntvl ethnic
                           kid0_2
                                   kid3_5
                                            kid6 10
                                                      kid11 15
                                                                 kid16 17
            0.0
14
                       N
                                П
                                         U
                                                   V
                                                             П
                                                                        П
                       Ζ
20
            0.0
                                U
                                         U
                                                   U
                                                             U
                                                                        U
85
            0.0
                       Ν
                                U
                                         U
                                                   U
                                                             U
                                                                        U
92
             0.0
                       0
                                IJ
                                         U
                                                   U
                                                             U
                                                                        U
101
             0.0
                       U
                                U
                                         U
                                                   U
                                                             U
                                                                        U
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                              . . .
                                       . . .
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                                                            . . .
                                                                       . . .
99163
            0.0
                       Ν
                                U
                                         U
                                                   U
                                                             U
                                                                        U
99204
            0.0
                       Ν
                                U
                                         Υ
                                                   U
                                                              U
                                                                        U
                                                              Υ
                                                                        U
99255
             0.0
                       U
                                U
                                         U
                                                   П
                                                             Υ
                                                                        U
99498
             0.0
                       D
                                U
                                         П
                                                   Υ
99509
             0.0
                       Ν
                                U
                                         U
                                                   U
                                                              U
                                                                        U
       creditcd
                  eqpdays Customer_ID
               Υ
                    199.0
                                1000015
14
20
               Υ
                    143.0
                                1000021
85
               Υ
                    175.0
                                1000086
92
               Υ
                    146.0
                                1000093
               Υ
101
                    306.0
                                1000102
                      . . .
99163
               Υ
                    224.0
                                1099164
               Υ
99204
                    185.0
                                1099205
99255
               Υ
                    606.0
                                1099256
99498
               Υ
                    736.0
                                1099499
99509
               Υ
                    278.0
                                1099510
[1466 rows x 100 columns]
Outliers in column 'avgqty':
       rev Mean mou Mean totmrc Mean
                                           da Mean
                                                     ovrmou Mean
                                                                   ovrrev Mean
14
       212.5150
                   1971.50
                                   84.99
                                            2.2275
                                                          249.50
                                                                       99.8000
                                   99.99
20
                                            0.0000
                                                          362.25
       172.4400
                   1978.00
                                                                       72.4500
84
        93.0200
                   1348.25
                                   75.00
                                            0.0000
                                                            4.75
                                                                        1.8525
85
        97.5900
                   1804.00
                                   75.00
                                            1.4850
                                                           85.00
                                                                        8.5000
        79.5950
88
                    828.00
                                   75.00
                                            0.0000
                                                            0.00
                                                                        0.0000
. . .
             . . .
                       . . .
                                     . . .
                                               . . .
                                                             . . .
                                                                            . . .
99255
        46.6825
                    535.50
                                   85.49
                                            6.1875
                                                            0.00
                                                                        0.0000
99498
       141.4825
                                   75.00
                                                                       48.7500
                   1850.75
                                           11.6325
                                                          195.00
                                            2.7225
99509
       156.7125
                   3140.75
                                  159.99
                                                             0.00
                                                                        0.0000
99510
        84.7125
                    908.75
                                   74.99
                                            0.4950
                                                             2.25
                                                                        0.8775
                                   10.00
99872
       534.9300
                   4719.00
                                            6.9300
                                                         2018.00
                                                                      515.0000
```

```
vceovr_Mean datovr_Mean roam_Mean
                                                 change_mou
                                                                    forgntvl ethnic
                                                               . . .
              99.80
                            0.0000
14
                                       35.4975
                                                    -200.50
                                                                          0.0
                                                                                     Ν
20
              72.45
                            0.0000
                                                    -1007.00
                                                                          0.0
                                                                                     Ζ
                                        0.0000
                                                               . . .
                            1.8525
84
               0.00
                                        1.9200
                                                    -165.25
                                                                          0.0
                                                                                     S
                                                               . . .
85
               8.50
                                                     -343.00
                                                                                     Ν
                            0.0000
                                        0.0000
                                                                          0.0
88
               0.00
                            0.0000
                                        2.1150
                                                      299.00
                                                                          0.0
                                                                                     S
                                                               . . .
                                                                          . . .
                                                                                     U
99255
               0.00
                            0.0000
                                        0.0000
                                                      150.50
                                                                          0.0
                                                               . . .
              48.75
                            0.0000
                                                                          0.0
                                                                                     D
99498
                                        0.0000
                                                       16.25
                                                               . . .
                            0.0000
                                                                          0.0
                                                                                     Ν
99509
               0.00
                                        0.0000
                                                     -201.75
99510
               0.00
                            0.8775
                                        0.0000
                                                       43.25
                                                                          0.0
                                                                                     Н
99872
             485.75
                           29.2500
                                        0.0000
                                                        0.00
                                                                          0.0
                                                                                     N
                                                               . . .
       kid0 2
                kid3 5
                         kid6_10
                                   kid11_15 kid16_17
                                                          creditcd
                                                                     eapdays
                      U
                                                       U
14
             U
                                Υ
                                           U
                                                                  Υ
                                                                        199.0
20
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        143.0
             U
84
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                         10.0
85
             U
                      U
                                U
                                           U
                                                       U
                                                                        175.0
                                                                  Υ
88
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        350.0
                                                                          . . .
                                           Υ
99255
             U
                      U
                                U
                                                      U
                                                                  Υ
                                                                        606.0
                                Υ
                                           Υ
99498
             U
                      U
                                                       U
                                                                  Υ
                                                                        736.0
99509
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        278.0
99510
             U
                      U
                                U
                                           U
                                                       Υ
                                                                  Υ
                                                                        469.0
                                U
                                                       U
99872
             U
                      П
                                           U
                                                                         62.0
       Customer_ID
14
            1000015
20
            1000021
84
            1000085
85
            1000086
88
            1000089
99255
            1099256
99498
            1099499
99509
            1099510
            1099511
99510
            1099873
99872
[1552 rows x 100 columns]
Outliers in column 'avg3mou':
                    mou_Mean
          rev_Mean
                                totmrc_Mean
                                               da Mean
                                                                       ovrrev_Mean
                                                         ovrmou_Mean
14
        212.515000
                      1971.50
                                     84.9900
                                                2.2275
                                                          249.500000
                                                                          99.800000
20
       172.440000
                      1978.00
                                     99.9900
                                                0.0000
                                                          362.250000
                                                                          72.450000
        93.020000
                                                            4.750000
84
                      1348.25
                                     75.0000
                                                0.0000
                                                                           1.852500
85
        97.590000
                      1804.00
                                     75.0000
                                                1.4850
                                                           85.000000
                                                                           8.500000
92
        72.810000
                      1306.00
                                     77.8975
                                                0.0000
                                                            0.000000
                                                                           0.000000
                                                    . . .
                                         . . .
99297
        237.752500
                      2495.25
                                    154.9900
                                                1.7325
                                                           36.000000
                                                                           5.400000
99498
       141.482500
                      1850.75
                                     75.0000
                                               11.6325
                                                          195.000000
                                                                          48.750000
99509
       156.712500
                                    159.9900
                      3140.75
                                                2.7225
                                                            0.000000
                                                                           0.000000
99537
        149.220000
                      2032.00
                                     97.4900
                                                5.4450
                                                          234.500000
                                                                          58.625000
99760
       188.396667
                      1289.00
                                     24.8400
                                                0.0000
                                                          653.666667
                                                                         163.556667
       vceovr Mean
                      datovr Mean
                                     roam Mean
                                                 change mou
                                                                    forgntvl
                                                                               ethnic
14
          99.800000
                            0.0000
                                       35.4975
                                                    -200.50
                                                                          0.0
                                                                                     Ν
                                                               . . .
          72.450000
                                                                                     Ζ
20
                            0.0000
                                        0.0000
                                                    -1007.00
                                                                          0.0
                                                                                     S
84
           0.000000
                            1.8525
                                        1.9200
                                                     -165.25
                                                                          0.0
85
           8,500000
                            0.0000
                                        0.0000
                                                    -343.00
                                                                          0.0
                                                                                     Ν
           0.000000
92
                            0.0000
                                        0.0000
                                                     -462.00
                                                                          0.0
                                                                                     0
                               . . .
                                                         . . .
                                                               . . .
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99297
           5.400000
                            0.0000
                                        0.0975
                                                      258.75
                                                                          0.0
                                                                                     J
                                                               . . .
                                                                                     D
99498
          48.750000
                            0.0000
                                        0.0000
                                                       16.25
                                                               . . .
                                                                          0.0
99509
           0.000000
                            0.0000
                                        0.0000
                                                     -201.75
                                                                          0.0
```

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99537
          58.625000
                            0.0000
                                         0.1600
                                                      442.00
                                                                           0.0
                                                                                      U
                            0.3900
                                         0.0000
                                                    -1288.00
                                                                           0.0
                                                                                      Ζ
99760
         163.166667
        kid0 2
                 kid3_5
                          kid6_10
                                    kid11_15
                                                kid16_17
                                                           creditcd
                                                                      eqpdays
             U
                      U
                                                       U
                                                                         199.0
14
                                            U
                                                                   Υ
20
             U
                      U
                                 U
                                            U
                                                       U
                                                                   Υ
                                                                         143.0
84
             IJ
                      IJ
                                 U
                                            U
                                                       U
                                                                   Υ
                                                                          10.0
85
             U
                      U
                                 U
                                            U
                                                        U
                                                                         175.0
                                                                   Υ
92
             U
                      U
                                 U
                                            U
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                                                                   Υ
                                                                         146.0
                     . . .
                                                                           . . .
99297
             U
                      U
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                                            U
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                                                                   Υ
                                                                          76.0
99498
             U
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                                 Υ
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                                                                   Υ
                                                                         736.0
99509
             U
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                                                                   Υ
                                                                         278.0
             U
                      U
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                                            U
                                                       U
99537
                                                                   Υ
                                                                         250.0
             U
                      IJ
                                 U
                                            U
                                                        U
                                                                         107.0
99760
        Customer_ID
14
            1000015
20
            1000021
84
            1000085
85
            1000086
92
            1000093
. . .
                 . . .
99297
            1099298
99498
            1099499
99509
            1099510
99537
            1099538
99760
            1099761
[1621 rows x 100 columns]
Outliers in column 'avg3qty':
          rev Mean
                     mou Mean
                                totmrc Mean
                                                da Mean
                                                          ovrmou Mean
                                                                         ovrrev Mean
                                                 2.2275
14
        212.515000
                      1971.50
                                        84.99
                                                           249.500000
                                                                           99.800000
                                        99.99
20
        172.440000
                      1978.00
                                                 0.0000
                                                           362.250000
                                                                           72,450000
84
         93.020000
                      1348.25
                                        75.00
                                                 0.0000
                                                             4.750000
                                                                            1.852500
85
         97.590000
                      1804.00
                                        75.00
                                                 1.4850
                                                            85.000000
                                                                            8.500000
101
        114.132500
                      1649.75
                                        83.00
                                                 1.7325
                                                            51.500000
                                                                           14.647500
. . .
                                          . . .
                                                    . . .
                                                                                  . . .
99509
        156.712500
                      3140.75
                                      159.99
                                                 2.7225
                                                             0.000000
                                                                            0.000000
99537
        149.220000
                       2032.00
                                        97.49
                                                 5.4450
                                                           234.500000
                                                                           58.625000
                                        24.84
                                                 0.0000
99760
        188.396667
                      1289.00
                                                           653.666667
                                                                          163.556667
99849
                       927.50
                                        70.00
                                                 5.9400
         99.150000
                                                            32.000000
                                                                            8.000000
99872
        534.930000
                       4719.00
                                        10.00
                                                 6.9300
                                                          2018.000000
                                                                          515.000000
                      datovr_Mean
                                                                     forgntvl
        vceovr_Mean
                                     roam_Mean
                                                  change_mou
                                                                                 ethnic
14
          99.800000
                            0.0000
                                        35.4975
                                                     -200.50
                                                                           0.0
                                                                                      Ν
                                                                                       Ζ
20
          72.450000
                            0.0000
                                         0.0000
                                                    -1007.00
                                                                           0.0
84
                                                                           0.0
                                                                                       S
           0.000000
                            1.8525
                                         1.9200
                                                      -165.25
85
           8.500000
                            0.0000
                                         0.0000
                                                      -343.00
                                                                           0.0
                                                                                      Ν
                                         0.0000
                                                                                      U
101
           1.875000
                           12.7725
                                                      -176.75
                                                                           0.0
                                                                . . .
99509
           0.000000
                            0.0000
                                         0.0000
                                                      -201.75
                                                                           0.0
                                                                                      Ν
99537
          58.625000
                            0.0000
                                         0.1600
                                                      442.00
                                                                           0.0
                                                                                      U
                                                                . . .
                                                                                      Ζ
                                                                           0.0
99760
         163.166667
                            0.3900
                                         0.0000
                                                    -1288.00
99849
           8.000000
                            0.0000
                                        15.2100
                                                       -55.50
                                                                           0.0
                                                                                      Ν
                                                                . . .
99872
         485.750000
                           29.2500
                                         0.0000
                                                         0.00
                                                                           0.0
                                                                                      Ν
                                                                . . .
        kid0 2
                kid3 5
                          kid6 10
                                    kid11 15
                                                kid16 17
                                                           creditcd
                                                                       eqpdays
14
             U
                      U
                                 Υ
                                            U
                                                       U
                                                                   Υ
                                                                         199.0
20
             U
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                                            U
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                                                                   Υ
                                                                         143.0
             U
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84
                                            U
                                                                   Υ
                                                                          10.0
             U
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85
                                 U
                                            U
                                                                   Υ
                                                                         175.0
             U
                      U
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                                                        U
101
                                                                   Υ
                                                                         306.0
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U
99509
             U
                      U
                                 U
                                            U
                                                                  Υ
                                                                        278.0
                                                       U
             U
                      U
                                U
                                            U
                                                                  Υ
                                                                        250.0
99537
99760
             U
                      U
                                 U
                                            U
                                                       U
                                                                  Υ
                                                                        107.0
99849
             U
                      U
                                 U
                                            U
                                                       U
                                                                  Υ
                                                                        408.0
             U
                      U
                                 U
                                                       U
                                                                         62.0
99872
                                            U
       Customer_ID
14
            1000015
20
            1000021
84
            1000085
85
            1000086
101
            1000102
. . .
                 . . .
99509
            1099510
99537
            1099538
99760
            1099761
99849
            1099850
99872
            1099873
[1608 rows x 100 columns]
Outliers in column 'avg3rev':
          rev_Mean mou_Mean totmrc_Mean
                                               da_Mean
                                                         ovrmou_Mean
                                                                       ovrrev_Mean
14
        212.515000
                      1971.50
                                       84.99
                                                2.2275
                                                           249.500000
                                                                          99.800000
20
       172.440000
                      1978.00
                                       99.99
                                                0.0000
                                                           362.250000
                                                                          72.450000
48
                                       24.99
                                                0.0000
       107.235000
                       782.00
                                                           232.750000
                                                                          86.117500
                                       85.00
                                                1.9800
                                                           102.000000
114
       113.522500
                      1807.25
                                                                          10.200000
123
       159.517500
                      2255.75
                                       82.99
                                                3.2175
                                                           666.500000
                                                                          66.650000
                           . . .
                                                    . . .
99498
       141.482500
                      1850.75
                                       75.00
                                               11.6325
                                                           195.000000
                                                                          48.750000
                      3140.75
                                      159.99
                                                                           0.000000
99509
       156.712500
                                                2.7225
                                                             0.000000
                                                5.4450
99717
       197.945000
                      1118.50
                                       50.00
                                                           475.000000
                                                                         142.500000
99760
       188.396667
                      1289.00
                                       24.84
                                                0.0000
                                                           653.666667
                                                                         163.556667
                                       70.00
                                                5.9400
                                                            32.000000
99849
         99.150000
                       927.50
                                                                            8.000000
       vceovr Mean
                      datovr_Mean
                                     roam_Mean
                                                 change mou
                                                                     forgntvl
                                                                                ethnic
                                                               . . .
14
          99.800000
                              0.00
                                       35.4975
                                                     -200.50
                                                                          0.0
                                                                                      Ν
                                                    -1007.00
20
                              0.00
                                        0.0000
                                                                          0.0
                                                                                      Ζ
          72.450000
48
          86.117500
                              0.00
                                        0.0000
                                                     -258.00
                                                                          0.0
                                                                                      Ν
                                                               . . .
114
          10.200000
                              0.00
                                        1.0025
                                                     -373.25
                                                                          0.0
                                                                                      Ν
                                                               . . .
                                                    -2238.75
123
          66.650000
                              0.00
                                        0.5850
                                                                          0.0
                                                                                      Н
                                                               . . .
                               . . .
                                                                           . . .
. . .
                 . . .
                                            . . .
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                                                               . . .
                                                                                    . . .
          48.750000
                                                                                      D
99498
                              0.00
                                        0.0000
                                                       16.25
                                                                          0.0
                                                               . . .
99509
           0.000000
                              0.00
                                        0.0000
                                                     -201.75
                                                                          0.0
                                                                                      Ν
                                                               . . .
                                                                                      Ν
99717
         142.500000
                              0.00
                                        0.0000
                                                       30.50
                                                                          0.0
                                                               . . .
99760
                                                                                      Ζ
         163.166667
                              0.39
                                                    -1288.00
                                                                          0.0
                                        0.0000
99849
           8.000000
                              0.00
                                       15.2100
                                                      -55.50
                                                                          0.0
                                                                                      Ν
        kid0 2
                kid3 5
                          kid6 10
                                    kid11 15
                                               kid16 17
                                                           creditcd
                                                                      eqpdays
                      U
                                Υ
                                            U
                                                       U
                                                                        199.0
14
             U
                                                                  Υ
20
             U
                      U
                                 U
                                            U
                                                       U
                                                                  Υ
                                                                        143.0
48
             U
                      Υ
                                 Υ
                                            Υ
                                                       Υ
                                                                  Υ
                                                                        162.0
114
             U
                      U
                                U
                                            U
                                                       U
                                                                  Υ
                                                                        387.0
             U
                                U
                                            U
                                                       U
123
                      U
                                                                  Υ
                                                                        318.0
                                                                           . . .
99498
             U
                      U
                                Υ
                                           Υ
                                                       U
                                                                  Υ
                                                                        736.0
99509
             U
                      U
                                U
                                            U
                                                       U
                                                                  Υ
                                                                        278.0
                                Υ
                                            Υ
                                                       U
99717
             U
                      Υ
                                                                  Υ
                                                                        917.0
             U
                      U
                                U
                                            U
                                                       U
99760
                                                                  Υ
                                                                        107.0
99849
             U
                      U
                                U
                                            U
                                                       U
                                                                        408.0
        Customer ID
14
            1000015
20
            1000021
```

48

1000049

```
114
            1000115
123
            1000124
. . .
                . . .
99498
            1099499
99509
            1099510
99717
            1099718
99760
            1099761
99849
            1099850
[1759 rows x 100 columns]
Outliers in column 'avg6mou':
       rev_Mean mou_Mean totmrc_Mean da_Mean ovrmou_Mean
                                                                   ovrrev Mean
       212.5150
                   1971.50
                                84.990000
                                             2.2275
                                                       249.500000
                                                                      99.800000
14
                                             0.0000
20
       172.4400
                   1978.00
                                99.990000
                                                       362.250000
                                                                      72.450000
        93.0200
                   1348.25
                                             0.0000
84
                                75.000000
                                                         4.750000
                                                                        1.852500
85
        97.5900
                   1804.00
                                75.000000
                                             1.4850
                                                        85.000000
                                                                        8.500000
92
        72.8100
                                             0.0000
                    1306.00
                                77.897500
                                                         0.000000
                                                                        0.000000
. . .
             . . .
                        . . .
                                      . . .
                                                . . .
                                                               . . .
                                                                             . . .
99286
       136.7400
                   1681.00
                                64.723333
                                             4.9500
                                                       192.666667
                                                                      63.216667
99297
       237.7525
                    2495.25
                               154.990000
                                             1.7325
                                                        36.000000
                                                                        5.400000
       141.4825
                                                       195.000000
99498
                   1850.75
                               75.000000
                                            11.6325
                                                                      48.750000
       156.7125
                               159.990000
99509
                    3140.75
                                             2.7225
                                                         0.000000
                                                                        0.000000
99537
       149,2200
                    2032.00
                                97,490000
                                             5.4450
                                                       234.500000
                                                                       58.625000
       vceovr_Mean
                      datovr_Mean roam_Mean
                                                                   forgntvl
                                                                              ethnic
                                                change_mou
                           0.0000
14
          99.800000
                                      35.4975
                                                   -200.50
                                                                         0.0
                                                                                    N
20
          72.450000
                           0.0000
                                       0.0000
                                                   -1007.00
                                                                         0.0
                                                                                    Ζ
                                                             . . .
                                                                                    S
84
           0.000000
                           1.8525
                                       1.9200
                                                   -165.25
                                                                         0.0
85
           8.500000
                           0.0000
                                       0.0000
                                                    -343.00
                                                                         0.0
                                                                                    Ν
92
                           0.0000
                                       0.0000
                                                    -462.00
                                                                                    0
           0.000000
                                                                        0.0
                                                              . . .
                                                        . . .
99286
          63.216667
                           0.0000
                                       3.6100
                                                    -616.00
                                                                         0.0
                                                                                    Ν
                                                             . . .
99297
           5.400000
                           0.0000
                                        0.0975
                                                     258.75
                                                                         0.0
                                                                                    J
         48.750000
99498
                           0.0000
                                                                         0.0
                                                                                    D
                                        0.0000
                                                      16.25
99509
           0.000000
                           0.0000
                                        0.0000
                                                    -201.75
                                                                         0.0
                                                                                    Ν
99537
          58.625000
                           0.0000
                                        0.1600
                                                     442.00
                                                                         0.0
                                                                                    U
       kid0 2
                kid3 5
                         kid6 10
                                   kid11 15
                                              kid16 17
                                                         creditcd
                                                                    eqpdays
14
             U
                     U
                                Υ
                                           U
                                                      U
                                                                 Υ
                                                                      199.0
20
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      143.0
84
             U
                      U
                                U
                                           U
                                                      U
                                                                        10.0
                                                                 Υ
85
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      175.0
92
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      146.0
                    . . .
99286
             U
                     U
                               U
                                          U
                                                      U
                                                                 Υ
                                                                      338.0
99297
             U
                      U
                               U
                                          U
                                                      U
                                                                 Υ
                                                                        76.0
             U
                      U
                               Υ
                                           Υ
                                                      U
99498
                                                                 Υ
                                                                      736.0
99509
             U
                      U
                                U
                                           U
                                                      U
                                                                      278.0
                                                                 Υ
             U
                      U
                                U
                                           U
                                                      U
99537
                                                                      250.0
       Customer_ID
14
            1000015
20
            1000021
84
            1000085
85
            1000086
92
            1000093
99286
            1099287
99297
            1099298
99498
            1099499
99509
            1099510
99537
            1099538
```

[1494 rows x 100 columns]

```
Outliers in column 'avg6qty':
       rev_Mean mou_Mean totmrc_Mean
                                           da_Mean
                                                     ovrmou_Mean ovrrev_Mean
        212.5150
                   1971.50
                                    84.99
                                             2.2275
                                                           249.50
                                                                         99.8000
14
20
       172.4400
                   1978.00
                                    99.99
                                             0.0000
                                                           362.25
                                                                         72,4500
                                                             4.75
84
        93.0200
                   1348.25
                                    75.00
                                             0.0000
                                                                          1.8525
85
        97.5900
                    1804.00
                                    75.00
                                             1.4850
                                                            85.00
                                                                          8.5000
        79.5950
                                             0.0000
88
                     828.00
                                    75.00
                                                             0.00
                                                                          0.0000
                                      . . .
                                                               . . .
        237.7525
                    2495.25
                                   154.99
                                             1.7325
                                                            36.00
                                                                          5.4000
99297
        91.3400
                                    80.00
                                             3.4650
                                                            31.50
                                                                          7.8750
99362
                   1032.75
99498
       141.4825
                    1850.75
                                    75.00
                                            11.6325
                                                           195.00
                                                                         48.7500
99509
       156.7125
                    3140.75
                                   159.99
                                             2.7225
                                                             0.00
                                                                          0.0000
99872
       534.9300
                   4719.00
                                             6.9300
                                                          2018.00
                                                                       515.0000
                                    10.00
       vceovr Mean
                     datovr Mean roam Mean
                                                change mou
                                                                   forgntvl
                                                                              ethnic
                                                              . . .
14
             99.800
                           0.0000
                                      35.4975
                                                   -200.50
                                                                         0.0
                                                                                    Ν
                                                                                    Ζ
20
             72.450
                                                                         0.0
                           0.0000
                                       0.0000
                                                   -1007.00
84
              0.000
                           1.8525
                                                    -165.25
                                                                         0.0
                                                                                    S
                                       1.9200
                                                              . . .
85
              8.500
                           0.0000
                                       0.0000
                                                   -343.00
                                                                         0.0
                                                                                    N
                                                             . . .
                                                                                    S
88
              0.000
                           0.0000
                                        2.1150
                                                     299.00
                                                             . . .
                                                                         0.0
                . . .
                               . . .
                                           . . .
                                                        . . .
                                                                         . . .
. . .
                                                              . . .
                                                                                  . . .
              5.400
                                                                                    J
99297
                           0.0000
                                       0.0975
                                                     258.75
                                                                         0.0
99362
              7.875
                           0.0000
                                        0.0000
                                                    -402.75
                                                                         0.0
                                                                                    Ν
99498
             48.750
                           0.0000
                                       0.0000
                                                      16.25
                                                                         0.0
                                                                                    D
                                                              . . .
99509
              0.000
                           0.0000
                                       0.0000
                                                    -201.75
                                                                         0.0
                                                                                    N
                          29.2500
                                       0.0000
                                                       0.00
                                                                                    N
99872
            485.750
                                                                         0.0
       kid0_2
                kid3_5
                         kid6_10
                                   kid11_15
                                              kid16_17
                                                         creditcd
                                                                    eqpdays
14
             U
                      U
                                Υ
                                           U
                                                     U
                                                                 Υ
                                                                      199.0
20
             U
                      U
                                U
                                           U
                                                      U
                                                                      143.0
                                                                 Υ
84
             U
                      U
                                U
                                           U
                                                      U
                                                                       10.0
                                                                 Υ
85
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      175.0
             U
                                U
                                                      U
88
                      U
                                           U
                                                                 Υ
                                                                      350.0
99297
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                       76.0
99362
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      189.0
                                                     U
             U
                      U
                                Υ
                                           Υ
                                                                 Υ
99498
                                                                      736.0
99509
             U
                      U
                                U
                                           U
                                                      U
                                                                 Υ
                                                                      278.0
             U
                      U
                                U
                                                      U
                                                                 Υ
99872
                                           U
                                                                       62.0
       Customer_ID
14
            1000015
20
            1000021
84
            1000085
85
            1000086
88
            1000089
. . .
                . . .
99297
            1099298
99362
            1099363
99498
            1099499
99509
            1099510
99872
            1099873
[1581 rows x 100 columns]
Outliers in column 'avg6rev':
                    mou_Mean
                                totmrc_Mean
                                              da Mean
                                                        ovrmou Mean
                                                                      ovrrev_Mean
          rev_Mean
14
        212.515000
                      1971.50
                                    84.9900
                                               2.2275
                                                         249.500000
                                                                         99.800000
20
       172.440000
                      1978.00
                                    99.9900
                                               0.0000
                                                         362.250000
                                                                         72.450000
                                                          38.000000
98
       103.282500
                      1376.00
                                    84,9900
                                               0.7425
                                                                         15,200000
114
                      1807.25
                                    85.0000
                                               1.9800
                                                         102.000000
                                                                         10.200000
       113.522500
123
        159.517500
                      2255.75
                                    82.9900
                                               3.2175
                                                         666.500000
                                                                         66.650000
                          . . .
                                         . . .
                                                   . . .
                                                                               . . .
99674
        84.355000
                       494.50
                                    45.1500
                                               8.9100
                                                          22.000000
                                                                          8.800000
```

99704

78.492500

434.25

71.2425

0.0000

59.000000

14.750000

```
5.4450
99717
       197.945000
                      1118.50
                                     50.0000
                                                          475.000000
                                                                         142.500000
                      1289.00
                                                0.0000
99760
       188.396667
                                     24.8400
                                                          653.666667
                                                                         163.556667
99849
         99.150000
                       927.50
                                     70.0000
                                                5.9400
                                                           32.000000
                                                                           8.000000
                      datovr Mean
        vceovr Mean
                                    roam Mean
                                                change mou
                                                                    forgntvl
                                                                               ethnic
                                                               . . .
14
          99.800000
                              0.00
                                       35.4975
                                                    -200.50
                                                                          0.0
                                                                                     Ν
                                                               . . .
20
          72.450000
                              0.00
                                        0.0000
                                                   -1007.00
                                                                          0.0
                                                                                     7
                                                               . . .
98
                              0.00
                                                                          0.0
                                                                                     N
          15.200000
                                        7.6625
                                                      355.00
                                                              . . .
114
          10.200000
                              0.00
                                        1.0025
                                                     -373.25
                                                                          0.0
                                                                                     Ν
                                                              . . .
123
          66.650000
                              0.00
                                        0.5850
                                                   -2238.75
                                                                          0.0
                                                                                     Н
                                                              . . .
. . .
                               . . .
                                            . . .
                                                         . . .
                                                               . . .
                                                                          . . .
                 . . .
99674
           8.800000
                              0.00
                                        0.0000
                                                      482.50
                                                                          0.0
                                                                                     U
                                                               . . .
99704
          14.750000
                              0.00
                                        0.0000
                                                     -178.25
                                                                          0.0
                                                                                     S
                                                              . . .
99717
         142.500000
                              0.00
                                        0.0000
                                                       30.50
                                                                          0.0
                                                                                     N
                              0.39
                                                                                     Ζ
99760
         163.166667
                                        0.0000
                                                    -1288.00
                                                              . . .
                                                                          0.0
99849
           8.000000
                              0.00
                                       15.2100
                                                      -55.50
                                                                          0.0
                                                                                     N
                                                              . . .
        kid0 2
                kid3 5
                         kid6 10
                                   kid11 15
                                              kid16 17
                                                          creditcd
                                                                     eapdays
                                                                        199.0
14
             U
                      U
                                Υ
                                           U
                                                      U
                                                                  Υ
             U
                      U
                                U
                                           U
                                                       U
                                                                        143.0
20
                                                                  Υ
98
             U
                      U
                                U
                                           Υ
                                                       Υ
                                                                        652.0
                                                                  Υ
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        387.0
114
             U
                                                      U
123
                      U
                                U
                                           U
                                                                  Υ
                                                                        318.0
. . .
                    . . .
                              . . .
                                          . . .
                                                     . . .
                                                                          . . .
99674
             U
                                Υ
                                           U
                                                      Υ
                                                                  Υ
                                                                          5.0
                      U
99704
             U
                      U
                                U
                                           Υ
                                                      Υ
                                                                        980.0
                                                                  Υ
                                Υ
                                           Υ
99717
             U
                      Υ
                                                      U
                                                                  Υ
                                                                        917.0
             U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        107.0
99760
                      U
99849
             U
                      U
                                U
                                           U
                                                       U
                                                                        408.0
        Customer ID
14
            1000015
20
            1000021
98
            1000099
114
            1000115
123
            1000124
99674
            1099675
99704
            1099705
99717
            1099718
99760
            1099761
99849
            1099850
[1589 rows x 100 columns]
Outliers in column 'hnd_price':
        rev_Mean mou_Mean totmrc_Mean
                                            da_Mean
                                                      ovrmou_Mean
                                                                     ovrrev_Mean
85
         97.5900
                    1804.00
                                  75.0000
                                              1.4850
                                                             85.00
                                                                           8.5000
127
                    3807.75
                                 182.9375
                                              8.4150
                                                            759.00
                                                                          88.5000
        281.3300
655
         37.2650
                     329.00
                                  31.3275
                                              0.0000
                                                             10.00
                                                                           3.0000
                                  49.9900
                                              0.0000
975
        191.7875
                     615.25
                                                             63.00
                                                                          22.0500
1958
        104.6900
                    1096.50
                                  82.4925
                                              0.4950
                                                            127.25
                                                                          31.8125
. . .
             . . .
                        . . .
                                       . . .
                                                 . . .
                                                               . . .
                                                                              . . .
94046
         66.7325
                    1330.75
                                    9.1950
                                              4.2075
                                                              0.00
                                                                           0.0000
                                  89.9900
                     420.00
                                                              0.00
                                                                           0.0000
96286
         87.1625
                                              0.2475
96323
         49.9900
                     777.50
                                  69.9900
                                              0.0000
                                                               0.00
                                                                           0.0000
97985
        211.5575
                    2045.00
                                 219.9900
                                              0.9900
                                                               0.00
                                                                           0.0000
                    1441.50
                                 109.9800
                                              0.9900
                                                            239.00
                                                                          47.8000
98612
       153.7700
        vceovr_Mean
                      datovr_Mean
                                     roam_Mean
                                                 change mou
                                                                    forgntvl
                                                                               ethnic
                                                              . . .
85
             8.5000
                            0.0000
                                        0.0000
                                                     -343.00
                                                                                     Ν
                                                                          0.0
127
            88.4250
                            0.0750
                                        0.0000
                                                        5.25
                                                                          0.0
                                                                                     Ν
                                                              . . .
655
             3.0000
                            0.0000
                                        0.0000
                                                      463.00
                                                                          0.0
                                                                                     Н
                                                              . . .
                                                                                     Н
975
            16.3625
                            5.6875
                                        0.0000
                                                       53.75
                                                               . . .
                                                                          1.0
1958
                            0.0000
                                        0.0000
                                                      -85.50
            31.8125
                                                                          0.0
                                                               . . .
```

```
. . .
                . . .
                               . . .
                                            . . .
                                                         . . .
                                                                          . . .
                                                                                   . . .
94046
             0.0000
                            0.0000
                                        3.0825
                                                      230.25
                                                                                     J
                                                                          0.0
             0.0000
                            0.0000
                                                      -54.00
                                                                                     Ν
96286
                                        2.4000
                                                              . . .
                                                                          1.0
96323
             0.0000
                            0.0000
                                        0.0000
                                                       60.50
                                                                          0.0
                                                                                     U
                                                                                     S
97985
             0.0000
                                                     -181.00
                                                                          0.0
                            0.0000
                                        0.5775
98612
            47.8000
                            0.0000
                                        0.0000
                                                     -992.50
                                                                          0.0
                                                                                     Н
       kid0 2
                kid3 5
                         kid6_10
                                    kid11_15
                                               kid16_17
                                                          creditcd
                                                                     eapdays
85
                      U
                                           U
                                                      U
                                                                        175.0
                                                                  Υ
                                                       Υ
             U
                      U
                                U
                                           U
                                                                  Υ
                                                                         77.0
127
655
             U
                      U
                                U
                                           U
                                                       U
                                                                  Ν
                                                                        234.0
975
             U
                      U
                                Υ
                                           U
                                                       U
                                                                  Υ
                                                                         32.0
1958
             U
                      U
                                U
                                           U
                                                       Υ
                                                                  Υ
                                                                        164.0
                                                                          . . .
                                                                        214.0
94046
             U
                      U
                                U
                                           U
                                                      U
                                                                  Υ
96286
             Υ
                                U
                                           U
                                                       U
                                                                  Υ
                                                                       217.0
                      U
                      U
                                U
                                                       U
                                                                  Υ
                                                                        216.0
96323
             U
                                           U
97985
             Υ
                      U
                                U
                                           U
                                                       U
                                                                         55.0
                                                                  Υ
                                U
98612
             U
                      U
                                           U
                                                       U
                                                                  Υ
                                                                        169.0
       Customer_ID
85
            1000086
127
            1000128
655
            1000656
975
            1000976
1958
            1001959
. . .
94046
            1094047
96286
            1096287
96323
            1096324
97985
            1097986
98612
            1098613
[94 rows x 100 columns]
Outliers in column 'phones':
          rev_Mean mou_Mean
                                totmrc_Mean
                                               da_Mean
                                                                       ovrrev_Mean
                                                         ovrmou_Mean
4
        55.230000
                       570.50
                                     71.9800
                                                0.0000
                                                            0.000000
                                                                           0.000000
14
        212.515000
                      1971.50
                                     84.9900
                                                2.2275
                                                          249.500000
                                                                          99.800000
18
        55.270000
                      1212.75
                                     49.9900
                                                0.7425
                                                            0.000000
                                                                           0.000000
19
        50.965000
                       162.00
                                     69.9900
                                                0.0000
                                                            2.500000
                                                                           0.975000
        172.440000
                                     99.9900
                                                0.0000
                                                          362.250000
20
                      1978.00
                                                                          72.450000
. . .
                           . . .
                                         . . .
                                                   . . .
99621
         35.700000
                       371.50
                                     15.8875
                                                1.7325
                                                           50.250000
                                                                          15.075000
       188.396667
                                                          653.666667
99760
                      1289.00
                                     24.8400
                                                0.0000
                                                                         163.556667
99849
                                     70.0000
        99.150000
                       927.50
                                                5.9400
                                                           32.000000
                                                                           8.000000
99872
        534.930000
                      4719.00
                                     10.0000
                                                6.9300
                                                         2018.000000
                                                                         515.000000
99899
        45.260000
                       149.00
                                     44.4800
                                                0.0000
                                                            2.000000
                                                                           0.780000
        vceovr Mean
                      datovr Mean
                                     roam Mean
                                                 change mou
                                                                    forgntvl
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4
                             0.000
                                                                                     Ι
           0.000000
                                        0.0000
                                                       38.50
                                                                          0.0
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14
          99.800000
                             0.000
                                       35.4975
                                                     -200.50
                                                                          0.0
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18
           0.000000
                             0.000
                                        1.2850
                                                      169.25
                                                                          0.0
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19
           0.000000
                             0.975
                                        0.0000
                                                      -58.00
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                                                                                     Ζ
20
          72.450000
                             0.000
                                        0.0000
                                                    -1007.00
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99621
         15.075000
                             0.000
                                                    -371.50
                                                                          0.0
                                                                                     Ι
                                        0.0000
                                                               . . .
                                                                                     Ζ
99760
        163.166667
                             0.390
                                        0.0000
                                                    -1288.00
                                                                          0.0
99849
           8.000000
                             0.000
                                       15.2100
                                                      -55.50
                                                                          0.0
                                                                                     Ν
99872
        485.750000
                            29.250
                                        0.0000
                                                        0.00
                                                                          0.0
                                                                                     Ν
99899
           0.000000
                             0.780
                                        0.0000
                                                      -86.00
                                                                          0.0
        kid0 2
                kid3_5
                          kid6_10
                                    kid11_15
                                              kid16_17
                                                          creditcd
                                                                     eqpdays
             U
                      U
                                U
                                           U
                                                       U
                                                                  Υ
                                                                        434.0
4
14
             U
                      U
                                Υ
                                           U
                                                       U
                                                                        199.0
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4.0						400.0	
18	U	U U	U	U	Y	408.0	
19	U	U Y	Υ	Υ	N	253.0	
20	U	U U	U	U	Υ	143.0	
• • •	• • •	• • • • • • • • • • • • • • • • • • • •	• • •	• • •		• • •	
99621	U	U U	U	U	Υ	319.0	
99760	U	U U	U	U	Υ	107.0	
99849	U	U U	U	U	Υ	408.0	
99872	Ü	U U	Ü	Ü	Y	62.0	
99899	Ü	U U	Ü	Y	Y	75.0	
22022	O	0 0	O	'		73.0	
	Ct TD						
4	Customer_ID						
4	1000005						
14	1000015						
18	1000019						
19	1000020						
20	1000021						
99621	1099622						
99760	1099761						
99849	1099850						
99872	1099873						
99899	1099900						
_	rows x 100 c	_					
Outlie	rs in column	'models':					
	rev_Mean	mou_Mean to	otmrc_Mean	da_Mean ov	rmou_Mean	ovrrev	_Mean \
4	55.230000	570.50	71.98	0.0000	0.000000	0.0	00000
14	212.515000	1971.50	84.99		49.500000		00000
18	55.270000	1212.75	49.99	0.7425	0.000000		00000
48	107.235000	782.00	24.99		32.750000		17500
83	55.190000	1087.75	69.99	0.0000	13.000000	5.2	00000
00242	72 025000	0.51 7.5		1 2275		17 1	
99343	72.825000	851.75	59.99		57.000000		00000
99362	91.340000	1032.75	80.00		31.500000		75000
99509	156.712500	3140.75	159.99	2.7225	0.000000		00000
99760	188.396667	1289.00	24.84		53.666667		56667
99872	534.930000	4719.00	10.00	6.9300 20	18.000000	515.0	00000
	vceovr_Mean	datovr_Mea	n roam_Mear	n change_mo	u f	orgntvl	ethnic \
4	0.000000	0.0	0.0000	38.5	0	0.0	I
14	99.800000	0.00	35.4975	-200.5	0	0.0	N
18	0.000000					0.0	N
48	86.117500					0.0	N
83	5.200000					1.0	U
 99343	17.100000	0.00				0.0	н
99362	7.875000					0.0	N
99509	0.000000					0.0	N
99760	163.166667					0.0	Z
99872	485.750000	29.2	5 0.0000	0.0	0	0.0	N
	kid0_2 kid	3_5 kid6_10	kid11_15	kid16_17 c	reditcd	eqpdays	\
4	U	U U	U	U	Υ	434.0	
14	U	U Y	U	U	Υ	199.0	
18	U	U U	U	U	Υ	408.0	
48	U	Y Y	Υ	Υ	Υ	162.0	
83	Ü	U U	U	U	Y	233.0	
			· ·	J			
00242	U	U	U	U	Υ	4.0	
99343							
99362	U	U U	U	U	Y	189.0	
99509	U	U U	U	U	Y	278.0	
99760	U	U U	U	U	Υ	107.0	
99872	U	U U	U	U	Υ	62.0	

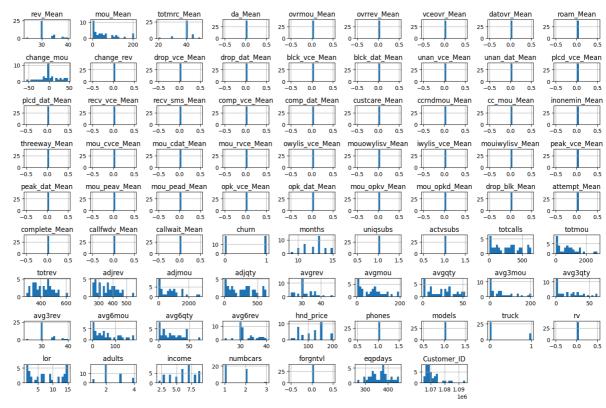
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Customer_ID
4
            1000005
14
            1000015
18
            1000019
48
            1000049
83
            1000084
            1099344
99343
            1099363
99362
99509
            1099510
99760
            1099761
99872
            1099873
[1085 rows x 100 columns]
Outliers in column 'rv':
          rev_Mean
                                   totmrc_Mean
                                                 da_Mean
                        mou_Mean
                                                           ovrmou_Mean
20
                                          99.99
       172.440000
                     1978.000000
                                                  0.0000
                                                             362.250000
39
                      195.500000
                                          29.99
                                                   0.0000
                                                               0.250000
        33.477500
40
        82.162500
                      660.000000
                                          50.00
                                                  0.0000
                                                             100.750000
71
        75.665000
                      241.750000
                                          74.99
                                                   0.0000
                                                               0.000000
        93.020000
                                          75.00
                                                   0.0000
                                                               4.750000
                    1348.250000
                                           . . .
                                                      . . .
97133
        88.472500
                      490.250000
                                          49.99
                                                   1.4850
                                                             117.500000
97425
        10.990000
                      410.750000
                                          10.00
                                                  0.9900
                                                               0.000000
97427
        14.800000
                       21.500000
                                          10.00
                                                  0.0000
                                                               2.000000
                                          49.99
97498
        40.732500
                      205.000000
                                                   0.7425
                                                               0.000000
98916
        79.296667
                    1427.333333
                                          59.99
                                                   1.6500
                                                              62.333333
       ovrrev_Mean
                      vceovr_Mean
                                    datovr_Mean
                                                   roam_Mean
                                                                change_mou
                                          0.0000
20
          72.450000
                        72.450000
                                                    0.000000 -1007.000000
                                          0.0975
39
           0.097500
                         0.000000
                                                    2.565000
                                                                 54.500000
40
          30.225000
                        30.225000
                                          0.0000
                                                    1.937500
                                                               -184.000000
71
           0.000000
                         0.000000
                                          0.0000
                                                    0.000000
                                                                -19.750000
84
           1.852500
                         0.000000
                                          1.8525
                                                    1.920000
                                                               -165.250000
                                                         . . .
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                                             . . .
                                                                        . . .
97133
          46.997500
                        46.900000
                                          0.0975
                                                    0.000000
                                                                276.750000
97425
           0.000000
                         0.000000
                                          0.0000
                                                    0.000000
                                                               -152.750000
97427
           0.800000
                         0.800000
                                          0.0000
                                                    0.000000
                                                                 12.500000
97498
           0.000000
                         0.000000
                                          0.0000
                                                    0.000000
                                                                -71.000000
98916
          24.933333
                        24.933333
                                          0.0000
                                                    2.326667
                                                                  6.666667
                                                                             . . .
                  ethnic
                           kid0_2
                                    kid3 5
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       forgntvl
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39
             0.0
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40
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                                 U
                                          U
                                                    U
71
             1.0
                        Ν
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                                          U
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84
             0.0
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97133
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97425
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97427
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97498
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98916
             0.0
       creditcd
                  eqpdays
                            Customer ID
20
               Υ
                    143.0
                                 1000021
39
               Υ
                     179.0
                                 1000040
40
               Υ
                     107.0
                                 1000041
71
               Υ
                     226.0
                                 1000072
84
               Υ
                     10.0
                                 1000085
                       . . .
97133
               Υ
                     192.0
                                 1097134
               Υ
97425
                     186.0
                                 1097426
97427
                     186.0
                                 1097428
```

97498 Υ 167.0 1097499 98916 Υ 135.0 1098917 [4039 rows x 100 columns] Outliers in column 'adults': rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev Mean 47 78.2875 851.500000 85.00 0.0000 0.00 0.0000 0.0000 88 79.5950 828.000000 75.00 0.00 0.0000 126 75.0000 342.750000 75.00 0.0000 0.00 0.0000 133 83.4950 256.500000 83.00 0.4950 0.00 0.0000 173 63.4075 1181.000000 10.00 4.2075 120.50 48.2000 . 99567 30.0875 24.000000 29.99 0.0000 0.00 0.0000 65.5125 35.00 99588 664.500000 1.2375 69.75 24.4125 33,2400 29.99 0.0000 0.00 0.0000 99772 23.000000 99776 52.3100 157.666667 50.00 2.3100 0.00 0.0000 99875 105.5300 736.000000 44.99 2.6400 194.00 67.9000 vceovr_Mean datovr_Mean roam_Mean change_mou forgntvl ethnic . . . 47 0.0000 0.0 0.0000 -205.500000 . . . 0.0 Н 88 0.0000 0.0 2.1150 299.000000 0.0 S . . . -59.750000 0.0000 0.0 0.0000 0.0 Н 126 . . . G 133 0.0000 0.0 0.0000 -256.500000 0.0 173 48.2000 0.0 0.0000 156.000000 0.0 N 0.0 0.0975 99567 0.0000 -8.000000 0.0 R 99588 24.4125 0.0 0.0000 -144.500000 0.0 Ν 0.0000 0.0 0.0 99772 0.0000 0.000000 Н 99776 0.0000 0.0 0.0000 -5.666667 1.0 G 99875 67.9000 0.0 0.0000 272.000000 0.0 kid0 2 kid3 5 kid6 10 kid11 15 kid16 17 creditcd eapdays 47 151.0 U U U U U Υ U U Υ 350.0 88 U U U 126 U U U U Υ Υ 581.0 133 U U U U U Υ 709.0 U U Υ U U 143.0 173 Υ 569.0 99567 U U U Υ U Υ U U Υ 99588 U U Υ 518.0 99772 U U U U Υ Υ 845.0 99776 U Υ Υ U U Υ 910.0 99875 U U U U U 958.0 Customer_ID 47 1000048 88 1000089 126 1000127 133 1000134 1000174 173 99567 1099568 99588 1099589 99772 1099773 99776 1099777 99875 1099876 [3005 rows x 100 columns] Outliers in column 'income': rev Mean mou Mean totmrc Mean da Mean ovrmou Mean ovrrev Mean 19 50.9650 162.00 69.99 0.0000 2.50 0.9750 119 18.2500 8.00 16.99 0.0000 4.25 1.1050 54.00 189 105.7025 636.25 53.00 0.0000 5.4000 407 5.0000 0.00 5.00 0.0000 0.00 0.0000

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1.4850
582
        93.9750
                   1218.00
                                   114.99
                                                             11.00
                                                                          2.7500
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                                     . . .
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98730
        95.8500
                   1732.75
                                    75.00
                                                             78.75
                                                                         19.6875
                                             0.0000
98736
       102.2575
                   2181.25
                                    89.99
                                             3.2175
                                                            108.00
                                                                         37,8000
                                                            167.25
98831
        88.7850
                     324.00
                                    30.00
                                             0.2475
                                                                         58.5375
99297
       237.7525
                    2495.25
                                   154.99
                                             1.7325
                                                             36.00
                                                                          5.4000
99674
        84.3550
                     494.50
                                    45.15
                                             8.9100
                                                             22.00
                                                                          8.8000
       vceovr Mean
                     datovr Mean roam Mean
                                                change mou
                                                                   forgntvl
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19
             0.0000
                            0.975
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                                                     -58.00
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                                                              . . .
                                                                                    S
119
             1.1050
                            0.000
                                        0.0000
                                                      -8.00
                                                                         0.0
189
             5.4000
                            0.000
                                        1.0025
                                                    -397.25
                                                                         0.0
                                                                                    Н
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407
             0.0000
                            0.000
                                        0.0000
                                                       0.00
                                                                         0.0
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582
             2.7500
                            0.000
                                        0.0000
                                                    -114.00
                                                                                    J
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98730
            19.6875
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                                        0.0000
                                                      20.25
                                                                         0.0
                                                                                    Н
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                                                                                    S
                            0.000
                                                     225.75
98736
            37.8000
                                        0.0000
                                                                         0.0
98831
                            0.000
                                        0.0000
                                                     736.00
                                                                         0.0
                                                                                    Н
            58.5375
                                                              . . .
                                                                                    J
99297
             5.4000
                            0.000
                                        0.0975
                                                     258.75
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99674
             8.8000
                            0.000
                                        0.0000
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       kid0 2
                kid3_5
                         kid6_10
                                   kid11_15 kid16_17 creditcd
                                                                    eqpdays
19
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                                                      Υ
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                                                                       253.0
119
             U
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                                                                       206.0
189
             IJ
                      IJ
                                Υ
                                           Υ
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407
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582
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98730
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98736
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98831
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99674
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       Customer ID
19
            1000020
119
            1000120
189
            1000190
407
            1000408
582
            1000583
. . .
                . . .
            1098731
98730
98736
            1098737
98831
            1098832
99297
            1099298
99674
            1099675
[996 rows x 100 columns]
Outliers in column 'forgntvl':
                                               da Mean
       rev Mean
                      mou Mean
                                totmrc Mean
                                                         ovrmou Mean ovrrev Mean
                                                                                 0.0
9
        31.6625
                     25.500000
                                        29.99
                                                0.2475
                                                                 0.00
50
        30.2600
                     23.750000
                                        29.99
                                                0.0000
                                                                 0.00
                                                                                 0.0
71
        75.6650
                    241.750000
                                        74.99
                                                0.0000
                                                                 0.00
                                                                                 0.0
83
        55.1900
                                        69.99
                                                0.0000
                                                                13.00
                                                                                 5.2
                  1087.750000
94
        49.9900
                    820.500000
                                        59.99
                                                0.0000
                                                                 1.50
                                                                                 0.0
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             . . .
                                         . . .
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99471
        28.2200
                                        38.27
                                                0.0000
                                                                 0.00
                                                                                 0.0
                     60.000000
99472
        23.2600
                   102.000000
                                        39.99
                                                0.0000
                                                                 0.00
                                                                                 0.0
99547
        18.0900
                     21,000000
                                        16.99
                                                0.0000
                                                                 2.75
                                                                                 1.1
99608
        30.8300
                    102.000000
                                        29.99
                                                0.6600
                                                                 0.00
                                                                                 0.0
99776
        52.3100
                    157.666667
                                        50.00
                                                 2.3100
                                                                 0.00
                                                                                 0.0
                                                                   forgntvl
       vceovr Mean
                     datovr_Mean
                                    roam_Mean
                                                change_mou
                                                                               ethnic
9
                0.0
                               0.0
                                     0.000000
                                                  59.500000
                                                                         1.0
                                                              . . .
```

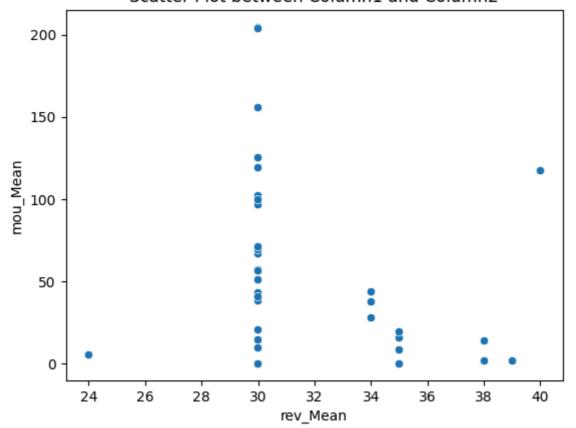
```
50
                 0.0
                                0.0
                                       0.000000
                                                    25.250000
                                                                             1.0
                                                                                        Ι
71
                                                                                        Ν
                 0.0
                                0.0
                                       0.000000
                                                  -19.750000
                                                                             1.0
83
                 5.2
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                                       0.000000
                                                   109.250000
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94
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99471
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99472
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                                       0.470000
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99547
                 1.1
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                                       0.000000
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99608
                 0.0
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                                       0.000000
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99776
                 0.0
                                0.0
                                       0.000000
                                                    -5.666667
                                                                             1.0
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                                                                 . . .
        kid0_2
                 kid3 5
                          kid6_10
                                     kid11_15
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                                                            creditcd
                                                                        eqpdays
9
                       U
                                 U
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                                                                    Υ
                                                                          601.0
50
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71
                                 U
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83
              U
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94
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99471
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99472
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99547
                                                                     Υ
                                                                         1004.0
              U
                       U
                                 U
                                             U
                                                         U
                                                                     Υ
                                                                          825.0
99608
                       Υ
                                  Υ
99776
              U
                                             U
                                                         U
                                                                          910.0
        Customer_ID
9
             1000010
50
             1000051
71
             1000072
83
             1000084
94
             1000095
99471
             1099472
99472
             1099473
99547
             1099548
99608
             1099609
99776
             1099777
[2463 rows x 100 columns]
Outliers in column 'eqpdays':
        rev Mean
                   mou Mean totmrc Mean
                                              da Mean
                                                         ovrmou Mean
                                                                        ovrrev Mean
240
                                               0.0000
                                                                 0.00
                                                                              0.0000
         47.5000
                      255.50
                                      50.00
298
                                                                 0.00
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        [468 rows x 100 columns]
In [ ]: # Remove outliers from the DataFrame
        for col in outlier_dict.keys():
            Q1 = df[col].quantile(0.25)
            Q3 = df[col].quantile(0.75)
            IQR = Q3 - Q1
            lower_bound = Q1 - 1.5 * IQR
            upper_bound = Q3 + 1.5 * IQR
            df = df[(df[col] >= lower_bound) & (df[col] <= upper_bound)]</pre>
In [ ]: from sklearn.preprocessing import StandardScaler
        scaler = StandardScaler()
        scaled_features = scaler.fit_transform(df[numeric_cols]) # Replace with your numer
        df_scaled = pd.DataFrame(scaled_features, columns=numeric_cols)
In [ ]: from sklearn.preprocessing import MinMaxScaler
        scaler = MinMaxScaler()
        scaled_features = scaler.fit_transform(df[numeric_cols]) # Replace with your numer
        df scaled = pd.DataFrame(scaled features, columns=numeric cols)
In [ ]:
        import numpy as np
        import seaborn as sns
        import matplotlib.pyplot as plt
        from sklearn.decomposition import PCA
        from scipy.stats import zscore
        df.hist(bins=20, figsize=(15, 10))
        plt.tight_layout()
        plt.show()
```



In []: sns.scatterplot(x='rev_Mean', y='mou_Mean', data=df)
 plt.title('Scatter Plot between Column1 and Column2')
 plt.show()

Scatter Plot between Column1 and Column2



In []: from sklearn.model_selection import train_test_split
 from sklearn.linear_model import LinearRegression
 from sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score
 import matplotlib.pyplot as plt

```
In [ ]: X = df.drop('churn', axis=1) # This will drop the 'churn' column and keep all othe
         # Define y (target)
        y = df['churn'] # The target column is 'churn'
In [ ]: X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_sta
In [ ]: # Convert categorical columns to numerical using one-hot encoding
         df_encoded = pd.get_dummies(df, drop_first=True) # 'drop_first=True' avoids multic
In [ ]: # Define X (features) and y (target)
        X = df_encoded.drop('churn', axis=1) # Drop the target column
        y = df_encoded['churn'] # Define the target column
         # Split the data into training and testing sets
        X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.3, random_sta
         # Train the model
         model = LinearRegression()
        model.fit(X_train, y_train)
Out[]: 🔻
            LinearRegression •
        LinearRegression()
In [ ]:
        # Make predictions on the test set
        y_pred = model.predict(X_test)
In [ ]: from sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score
         import numpy as np
         # Calculate evaluation metrics
         mae = mean_absolute_error(y_test, y_pred) # Mean Absolute Error
         mse = mean_squared_error(y_test, y_pred) # Mean Squared Error
         rmse = np.sqrt(mse) # Root Mean Squared Error
         r2 = r2_score(y_test, y_pred) # R2 Score
         # Print the evaluation metrics
         print(f'Mean Absolute Error: {mae}')
         print(f'Mean Squared Error: {mse}')
         print(f'Root Mean Squared Error: {rmse}')
         print(f'R2 Score: {r2}')
        Mean Absolute Error: 0.6390251890785702
        Mean Squared Error: 0.770122289955105
        Root Mean Squared Error: 0.8775661171416687
        R<sup>2</sup> Score: -2.168503135815289
```