

```

1 C:\Users\yashh\anaconda3\python.exe D:\ada-ia4\
  statistical.py
2          SOC (%) Voltage (V) ... EV Model
  Optimal Charging Duration Class
3 count  1000.000000  1000.000000 ... 1000.000000
          1000.000000
4 mean    54.123090    3.854912 ...    1.010000
          1.194000
5 std     26.292363    0.204533 ...    0.822543
          0.747611
6 min     10.416882    3.502253 ...    0.000000
          0.000000
7 25%     31.237594    3.668752 ...    0.000000
          1.000000
8 50%     54.712664    3.863114 ...    1.000000
          1.000000
9 75%     76.988763    4.032326 ...    2.000000
          2.000000
10 max     99.974591    4.199590 ...    2.000000
          2.000000
11
12 [8 rows x 13 columns]
13
14 --- SOC (%) ---
15
16 Feature: SOC (%)
17 Skewness: 0.04
18 Right-skewed Distribution
19 Kurtosis: -1.23
20 Extreme outliers are rare (Platykurtic)
21 Shapiro-Wilk Test p-value: 0.0000
22 Not normally distributed
23 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
  _oldcore.py:1119: FutureWarning: use_inf_as_na option
    is deprecated and will be removed in a future
    version. Convert inf values to NaN before operating
    instead.
24     with pd.option_context('mode.use_inf_as_na', True):
25
26 --- Voltage (V) ---
27

```

```
28 Feature: Voltage (V)
29 Skewness: -0.06
30 Left-skewed Distribution
31 Kurtosis: -1.22
32 Extreme outliers are rare (Platykurtic)
33 Shapiro-Wilk Test p-value: 0.0000
34 Not normally distributed
35 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
    _oldcore.py:1119: FutureWarning: use_inf_as_na option
        is deprecated and will be removed in a future
        version. Convert inf values to NaN before operating
        instead.
36     with pd.option_context('mode.use_inf_as_na', True):
37
38 --- Current (A) ---
39
40 Feature: Current (A)
41 Skewness: -0.02
42 Left-skewed Distribution
43 Kurtosis: -1.19
44 Extreme outliers are rare (Platykurtic)
45 Shapiro-Wilk Test p-value: 0.0000
46 Not normally distributed
47 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
    _oldcore.py:1119: FutureWarning: use_inf_as_na option
        is deprecated and will be removed in a future
        version. Convert inf values to NaN before operating
        instead.
48     with pd.option_context('mode.use_inf_as_na', True):
49
50 --- Battery Temp (°C) ---
51
52 Feature: Battery Temp (°C)
53 Skewness: 0.03
54 Right-skewed Distribution
55 Kurtosis: -1.20
56 Extreme outliers are rare (Platykurtic)
57 Shapiro-Wilk Test p-value: 0.0000
58 Not normally distributed
59 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
    _oldcore.py:1119: FutureWarning: use_inf_as_na option
```

```
59 is deprecated and will be removed in a future
    version. Convert inf values to NaN before operating
    instead.
60 with pd.option_context('mode.use_inf_as_na', True):
61
62 --- Ambient Temp (°C) ---
63
64 Feature: Ambient Temp (°C)
65 Skewness: 0.03
66 Right-skewed Distribution
67 Kurtosis: -1.19
68 Extreme outliers are rare (Platykurtic)
69 Shapiro-Wilk Test p-value: 0.0000
70 Not normally distributed
71 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
    _oldcore.py:1119: FutureWarning: use_inf_as_na option
        is deprecated and will be removed in a future
        version. Convert inf values to NaN before operating
        instead.
72 with pd.option_context('mode.use_inf_as_na', True):
73
74 --- Charging Duration (min) ---
75
76 Feature: Charging Duration (min)
77 Skewness: 0.03
78 Right-skewed Distribution
79 Kurtosis: -1.18
80 Extreme outliers are rare (Platykurtic)
81 Shapiro-Wilk Test p-value: 0.0000
82 Not normally distributed
83 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
    _oldcore.py:1119: FutureWarning: use_inf_as_na option
        is deprecated and will be removed in a future
        version. Convert inf values to NaN before operating
        instead.
84 with pd.option_context('mode.use_inf_as_na', True):
85
86 --- Degradation Rate (%) ---
87
88 Feature: Degradation Rate (%)
89 Skewness: -0.01
```

```
90 Left-skewed Distribution
91 Kurtosis: -0.78
92 Extreme outliers are rare (Platykurtic)
93 Shapiro-Wilk Test p-value: 0.0000
94 Not normally distributed
95 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
  _oldcore.py:1119: FutureWarning: use_inf_as_na
    option is deprecated and will be removed in a future
    version. Convert inf values to NaN before operating
    instead.
96     with pd.option_context('mode.use_inf_as_na', True
97 ):
98 --- Efficiency (%) ---
99
100 Feature: Efficiency (%)
101 Skewness: 0.01
102 Right-skewed Distribution
103 Kurtosis: -0.78
104 Extreme outliers are rare (Platykurtic)
105 Shapiro-Wilk Test p-value: 0.0000
106 Not normally distributed
107 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
  _oldcore.py:1119: FutureWarning: use_inf_as_na
    option is deprecated and will be removed in a future
    version. Convert inf values to NaN before operating
    instead.
108     with pd.option_context('mode.use_inf_as_na', True
109 ):
110 --- Charging Cycles ---
111
112 Feature: Charging Cycles
113 Skewness: -0.07
114 Left-skewed Distribution
115 Kurtosis: -1.22
116 Extreme outliers are rare (Platykurtic)
117 Shapiro-Wilk Test p-value: 0.0000
118 Not normally distributed
119 C:\Users\yashh\anaconda3\Lib\site-packages\seaborn\
  _oldcore.py:1119: FutureWarning: use_inf_as_na
```

119 option is deprecated and will be removed in a future version. Convert inf values to NaN before operating instead.

120 with pd.option_context('mode.use_inf_as_na', True):

121

122 Chi-Square Test between 'Charging Mode' and 'Optimal Charging Duration Class'

123 Contingency Table:

124 Optimal Charging Duration Class 0 1 2

125 Charging Mode

126 Fast 60 143 116

127 Normal 71 136 133

128 Slow 70 125 146

129 Chi2 Statistic: 4.8990

130 p-value: 0.2978

131 No significant association

132

133 Chi-Square Test between 'Battery Type' and 'Optimal Charging Duration Class'

134 Contingency Table:

135 Optimal Charging Duration Class 0 1 2

136 Battery Type

137 Li-ion 99 202 196

138 LiFePO4 102 202 199

139 Chi2 Statistic: 0.0316

140 p-value: 0.9843

141 No significant association

142

143 Chi-Square Test between 'EV Model' and 'Optimal Charging Duration Class'

144 Contingency Table:

145 Optimal Charging Duration Class 0 1 2

146 EV Model

147 Model A 71 141 121

148 Model B 55 124 145

149 Model C 75 139 129

150 Chi2 Statistic: 6.4464

151 p-value: 0.1682

152 No significant association

153

```
154 Process finished with exit code 0
155
```