Iris analysis

By Krzysztof Kleszcz

Introduction 💡

It is a pleasure to have you here. Let us explore the fascinating realm of irises.

2. This dataset offers insights into the beauty of Iris species, featuring information on three unique varieties.

- Iris setosa
- Iris versicolor
- Iris virginica.

This dataset shows precise measurements of four key features:

- Sepal Length (cm)
- Sepal Width (cm)
- Petal Length (cm)
- Petal Width (cm)is! 🔎

Each row represents an individual flower, with measurement values provided in centimeters. In the following study, we will attempt to identify relationships between the different classes of irises. Are you ready? Let's begin the analysis! 🔎

Just in case, please see table of contents:

1. General Data Overview 📊

- We simplify the names to make them easier to use.
- Displaying 10 sample rows to provide a general overview of the data.
- All data, except for the class column, are numerical.

1. General Data Overview 📊

- We simplify the names to make them easier to use.
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	długość kielicha	szerokość kielicha	długość płatka	szerokość płatka	klasa
66	5.6	3.0	4.5	1.5	Iris-versicolor
8	4.4	2.9	1.4	0.2	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
11	4.8	3.4	1.6	0.2	Iris-setosa
12	4.8	3.0	1.4	0.1	Iris-setosa
31	5.4	3.4	1.5	0.4	Iris-setosa
44	5.1	3.8	1.9	0.4	Iris-setosa
19	5.1	3.8	1.5	0.3	Iris-setosa
43	5.0	3.5	1.6	0.6	Iris-setosa
85	6.0	3.4	4.5	1.6	Iris-versicolor

- We can observe that there are 150 records in each column, and the data is diverse.

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	długość kielicha	szerokość kielicha	długość płatka	szerokość płatka
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

- The values in the first four columns are quite diverse.
- In the last column, we have only three distinct classes.
- This column can be used for grouping the data.

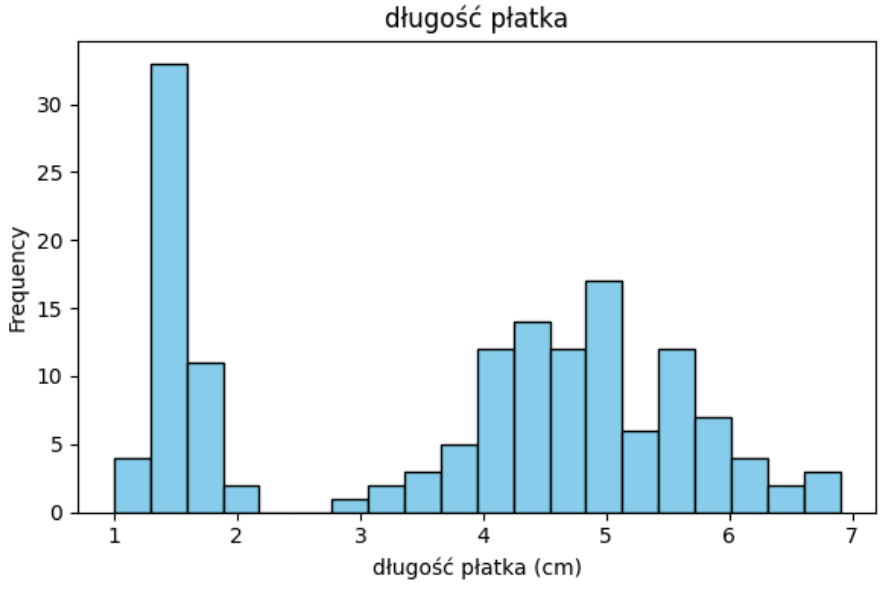
The dataset is very balanced - each class has exactly 50 records. 📊

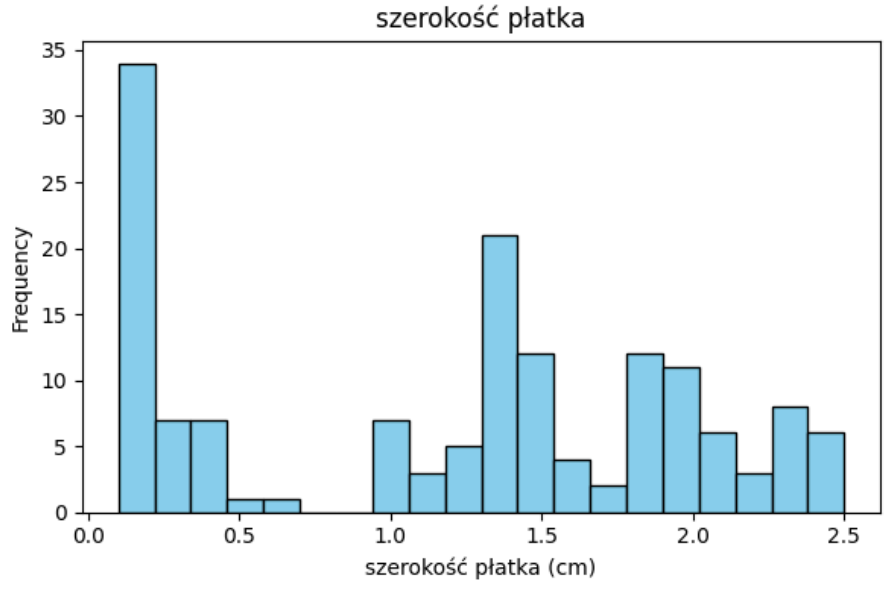
2. Analysis of Missing Values 📈

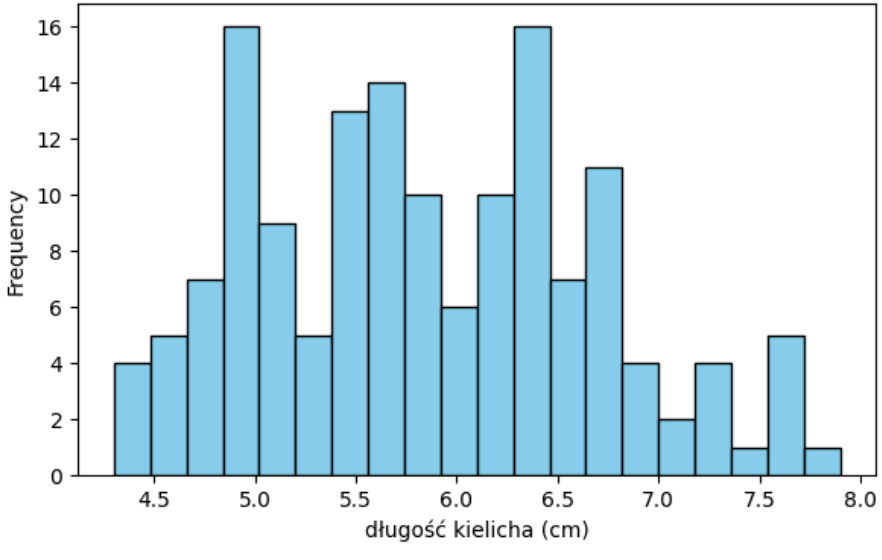
We have no missing values.

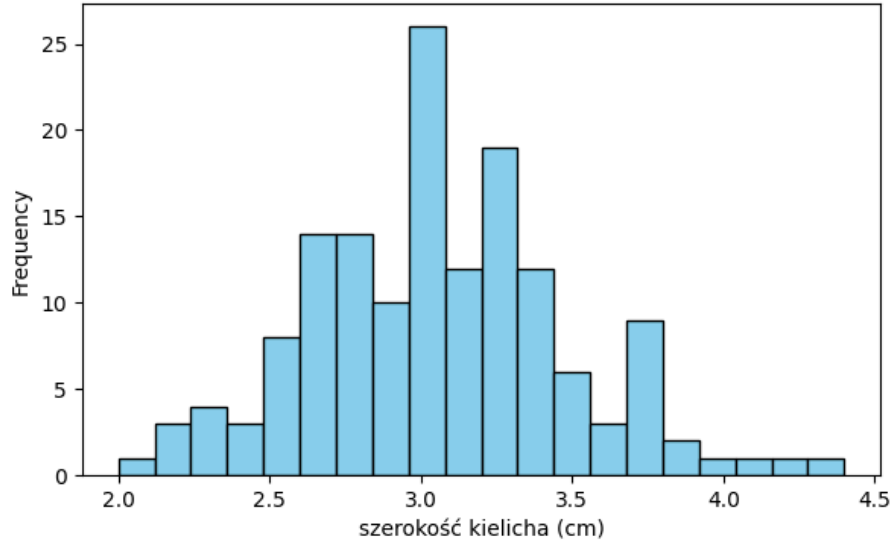
3. Single Variable Analysis 🔍

We can observe that the length and width of the sepal are generally larger than the length and width of the petal.


długość płatka
Frequency
długość płatka (cm)


szerokość płatka
Frequency
szerokość płatka (cm)


długość kielicha
Frequency
długość kielicha (cm)

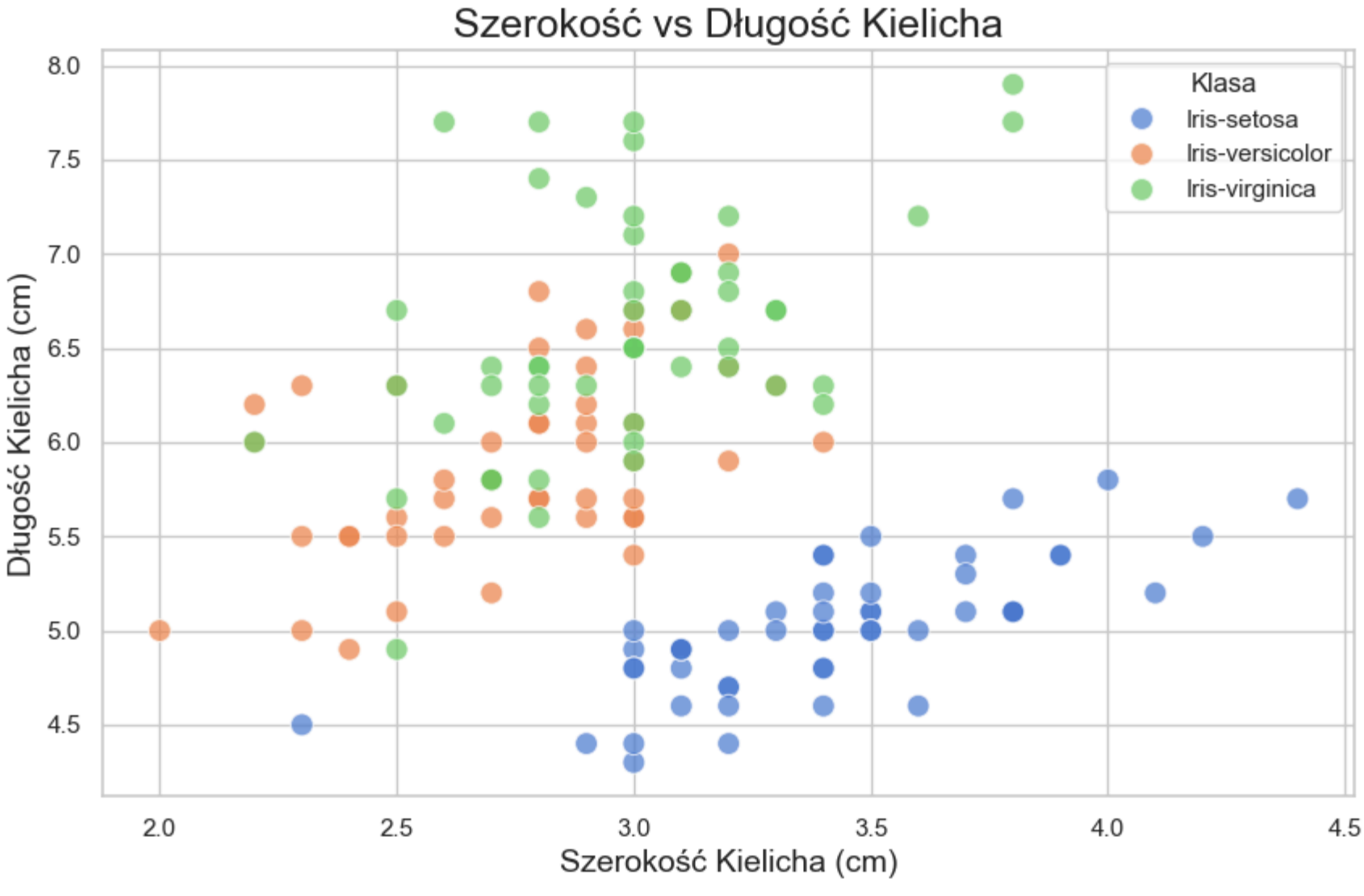

szerokość kielicha
Frequency
szerokość kielicha (cm)

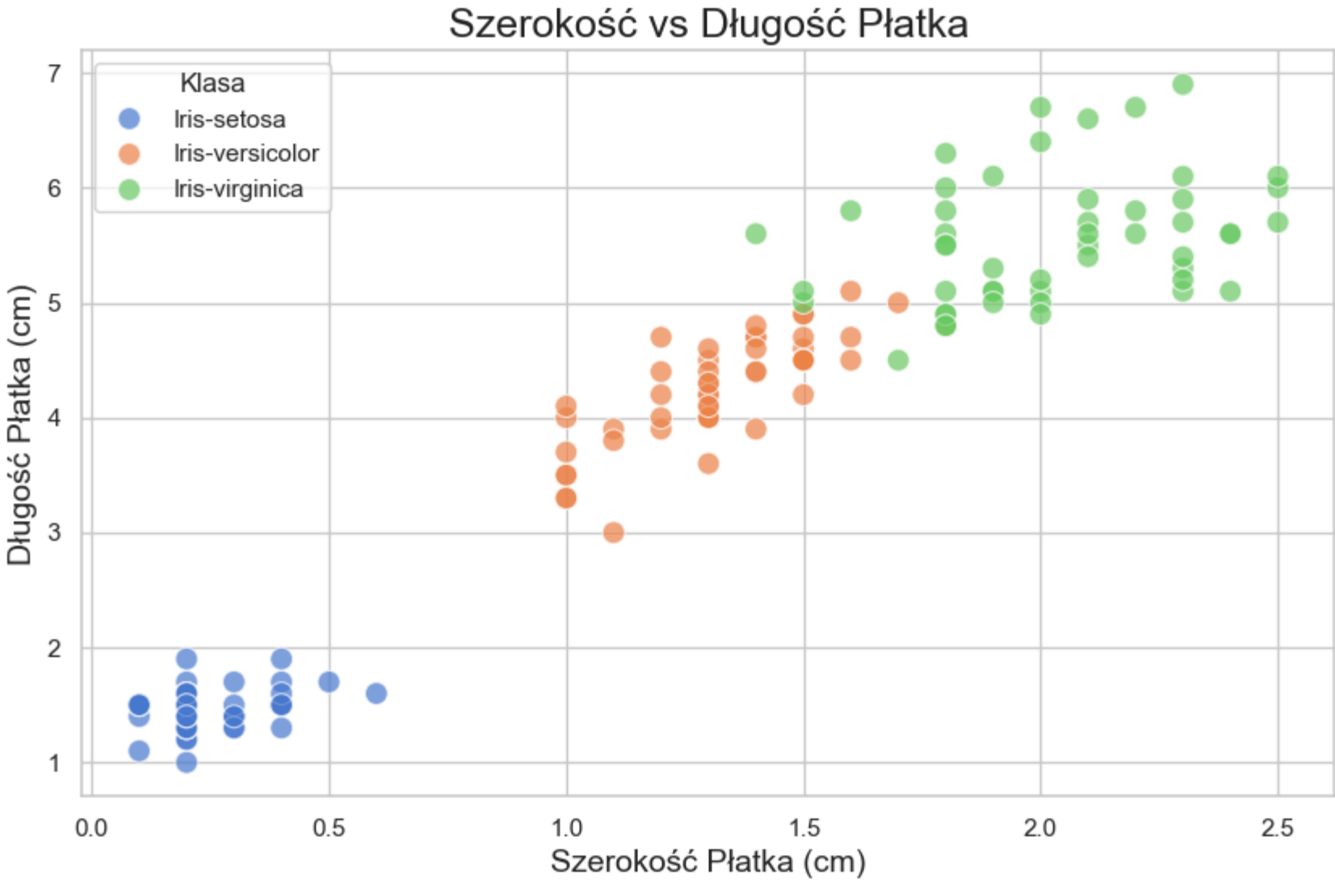
4. Data Transformation 

Not necessary, as we have no missing values.

5. Analysis of Relationships Between Data 🔍

- The values for Iris-versicolor and Iris-virginica are quite similar when comparing sepal length and sepal width (slightly larger for Iris-virginica).
- Iris-setosa stands out in terms of sepal length and width—it has the largest width and the smallest length.
- When comparing petal length and width, the data for each group is very diverse, with each group having unique values.
- Iris-setosa has the smallest petal length but is characterized by a larger sepal width.
- Iris-versicolor has similar lengths to Iris-virginica.


Szerokość vs Długość Kielicha
Klasa
Iris-setosa
Iris-versicolor
Iris-virginica
Długość Kielicha (cm)
Szerokość Kielicha (cm)
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
2.0
2.5
3.0
3.5
4.0
4.5


Szerokość vs Długość Płatka
Klasa
Iris-setosa
Iris-versicolor
Iris-virginica
Długość Płatka (cm)
Szerokość Płatka (cm)
7
6
5
4
3
2
1
0.0
0.5
1.0
1.5
2.0
2.5

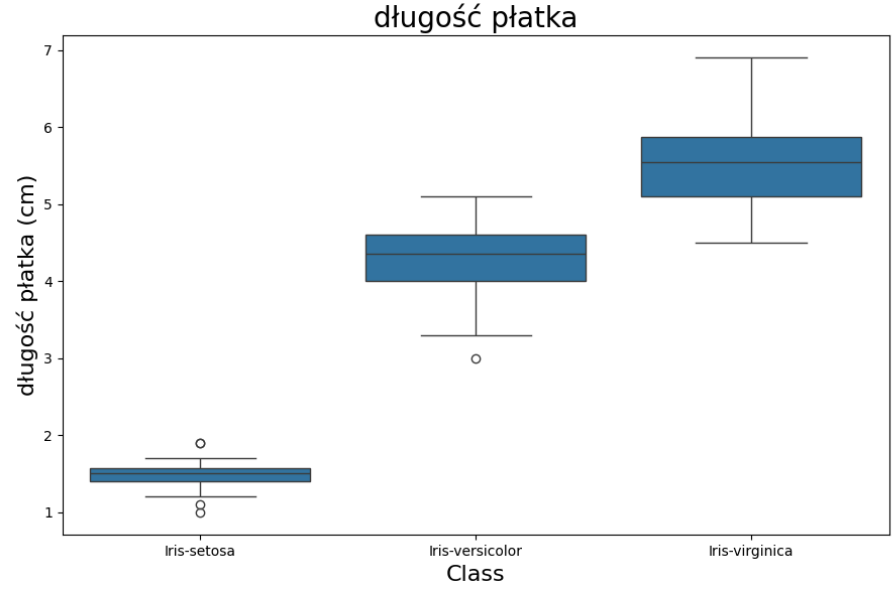
- We can observe a strong correlation between petal length and petal width.
- On the other hand, sepal width and sepal length are the least correlated.

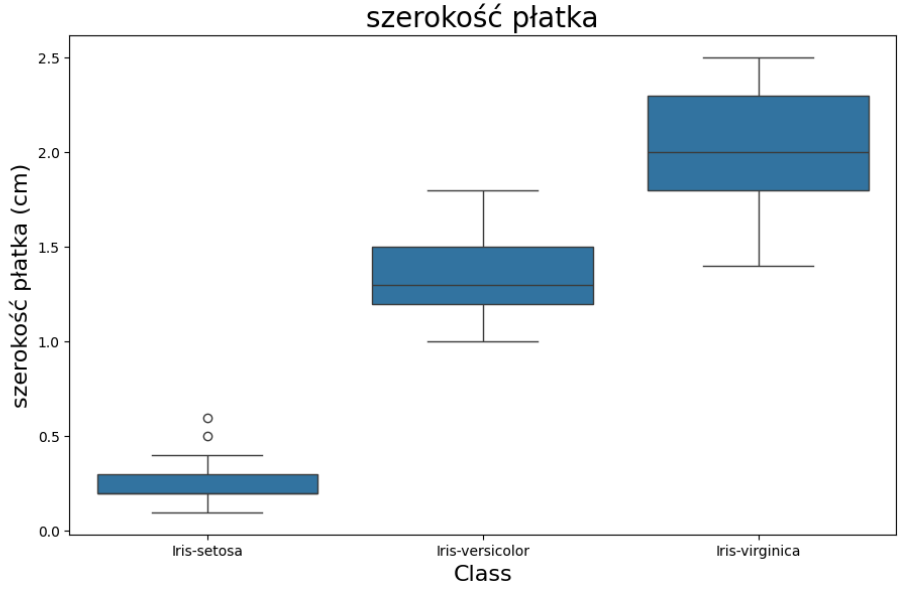
- We can observe a strong correlation between petal length and petal width.
- On the other hand, sepal width and sepal length are the least correlated.

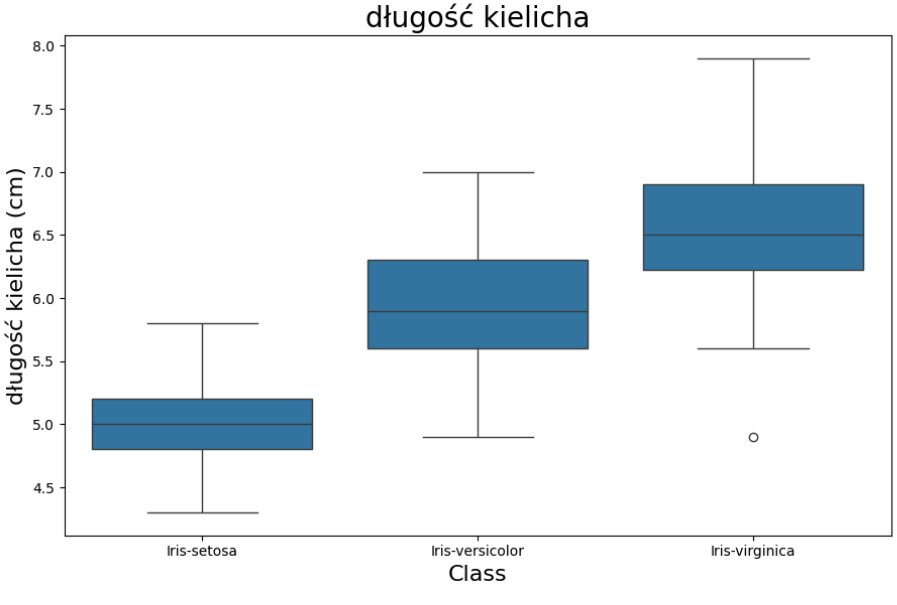
	długość kielicha	szerokość kielicha	długość płatka	szerokość płatka
długość kielicha	1.000000	-0.109369	0.871754	0.817954
szerokość kielicha	-0.109369	1.000000	-0.420516	-0.356544
długość płatka	0.871754	-0.420516	1.000000	0.962757
szerokość płatka	0.817954	-0.356544	0.962757	1.000000

6. Outlier Analysis 📊

- We can observe that Iris virginica has the most distant outliers.
- Significant outliers are also present in Iris-setosa.


długość płatka
długość płatka (cm)
Iris-setosa
Iris-versicolor
Iris-virginica
Class


szerokość płatka
szerokość płatka (cm)
Iris-setosa
Iris-versicolor
Iris-virginica
Class


długość kielicha
długość kielicha (cm)
Iris-setosa
Iris-versicolor
Iris-virginica
Class


szerokość kielicha
szerokość kielicha (cm)
Iris-setosa
Iris-versicolor
Iris-virginica
Class

Analysis Summary

- The data provided for analysis is of very high quality - no missing values and well diversified.
- By excluding data transformation, we preserved their original quality.
- Sepal length and width are generally larger than petal length and width.
- When comparing petal length and width, the data for each group is very diverse, and each group has unique values.

Thank you for your attention! Your interest and time mean a lot.